11th Grade Textbook Packet
3/30/2020-4/3/2020

[ἀποκρῑναμένη, *replying* σπανίως, *rarely* ἀδύνατον, *(it's) impossible* ὅταν... ἀπῶ, *whenever I'm away*]

ἡ δὲ Μέλιττα, "ἀλλὰ μὴ χαλεπὸς ἴσθι, ὦ πάτερ, ἀλλὰ πείθου ἡμῖν. ἆρ' οὐκ
25 ἐθέλεις καὶ σὺ τὴν ἑορτὴν θεᾶσθαι καὶ τὸν θεὸν τῑμᾶν; ὁ γὰρ Διόνῡσος σῴζει
ἡμῖν τὰς ἀμπέλους. καὶ τὸν Φίλιππον—ἆρ' οὐ βούλει τῑμᾶν τὸν παῖδα, διότι
τὸν λύκον ἀπέκτονεν; βούλεται γὰρ τούς τε ἀγῶνας θεᾶσθαι καὶ τοὺς χοροὺς
καὶ τὰ δράματα, ἄγε οὖν ἡμᾶς πάντας πρὸς τὸ ἄστυ."

[τὰς ἀμπέλους, *the vines* διότι, *because* τοὺς... ἀγῶνας, *the contests* τὰ δράματα, *the plays*]

ὁ δὲ Δικαιόπολις, "ἔστω οὖν, ἐπεὶ οὕτω βούλεσθε. ἀλλὰ λέγω ῡμῖν ὅτι ὁ λῑμὸς
30 ἕπεσθαι ἡμῖν μέλλει—ἀλλ' οὐκ αἴτιος ἔγωγε."

[ἔστω, *let it be! very well!* ἐπεὶ, *here, since* ἔγωγε, *an emphatic* ἐγώ]

WORD STUDY

Identify the Greek stems in the English words below and give the meanings of the English words:

1. politics
2. politburo
3. metropolis (*metr-* is not from μέτρον)
4. necropolis (ὁ νεκρός = *corpse*)
5. cosmopolitan

GRAMMAR

1. Participles: "Present" or Progressive: Middle Voice

In addition to the indicative mood, the imperative, and the infinitive, which you
have studied so far in this course, verbs have adjectival forms known as *participles*
(verbal adjectives). These may be used in several ways:

a.   Participles may describe some circumstance that accompanies the main
action of the sentence, e.g.:

ὁ δοῦλος τῷ δεσπότῃ **ἑπόμενος** τὸ ἄροτρον φέρει.
*The slave, (as/while he is) **following** his master, carries the plow.*

τὸν πάππον ὁρῶσιν ἐν τῷ κήπῳ **ἐργαζόμενον.**
*They see the grandfather **(as/while he is) working** in the garden.*

This use is called *circumstantial*; the participle is in the predicate position
(see Chapter 5, Grammar 7b, pp. 78–79). It agrees with the noun it mod-
ifies in gender, number, and case; and it may be best translated as part of a
subordinate clause (e.g., "as/while he is working").

b.   Participles in the *attributive* position (see Chapter 5, Grammar 7a, pp. 78–79)
may simply modify nouns or pronouns like any other adjective, agreeing in
gender, number, and case. When so used, they are called "attributive" and
may be best translated by a relative clause, e.g.:

οἱ αὐτουργοὶ οἱ ἐν τῷ ἀγρῷ **ἐργαζόμενοι** μάλα κάμνουσιν.
*The farmers who are **working** in the field are very tired.*

Compare the following, which has its participle in the *predicate* position
(circumstantial):

οἱ αὐτουργοὶ ἐν τῷ ἀγρῷ ἐργαζόμενοι μάλα κάμνουσιν.
The farmers (since/because they are) working in the fields are very tired.

c.   Participles may be used to complete the meaning of a verb, e.g.:

ὁ δοῦλος οὐ παύεται **ἐργαζόμενος.**
*The slave does not stop **working**.*

This use is called *supplementary*, since the participle fills out or completes
the meaning of the verb. The participle agrees with the stated or implied
subject of the verb in gender, number, and case.

"Present" participles do not refer to time as such but describe the action
as in process, ongoing, or progressive.

The sentences above contain participles of deponent verbs, which have
their forms in the middle voice. The following charts give the full sets of
forms of *present / progressive middle participles*. Each form has a stem, a the-
matic vowel (o), the suffix -μεν-, and an ending. The endings, which indicate
gender, number, and case, are the same as those of 1st and 2nd declension
adjectives such as καλός, -ή, -όν (see p. 59).

λῡ-ό-μεν-ος

	Masculine	Feminine	Neuter
Nom.	λῡόμενος	λῡομένη	λῡόμενον
Gen.	λῡομένου	λῡομένης	λῡομένου
Dat.	λῡομένῳ	λῡομένῃ	λῡομένῳ
Acc.	λῡόμενον	λῡομένην	λῡόμενον
Voc.	λῡόμενε	λῡομένη	λῡόμενον
Nom., Voc.	λῡόμενοι	λῡόμεναι	λῡόμενα
Gen.	λῡομένων	λῡομένων	λῡομένων
Dat.	λῡομένοις	λῡομέναις	λῡομένοις
Acc.	λῡομένους	λῡομένᾱς	λῡόμενα

Recite all the forms of the present participle of ἕπομαι.

φιλε-ό-μεν-ος > φιλούμενο

Nom.	φιλούμενος	φιλουμένη	
Gen.	φιλουμένου	Φιλουμένης	φιλούμενον
Dat.	φιλουμένῳ	φιλουμένῃ	φιλουμένου
Acc.	φιλούμενον	φιλουμένην	φιλουμένῳ
Voc.	φιλούμενε	Φιλουμένη	φιλούμενον
			φιλούμενον
Nom., Voc.	φιλούμενοι	φιλούμεναι	φιλούμενα
Gen.	φιλουμένων	φιλουμένων	Φιλουμένων
Dat.	φιλουμένοις	φιλουμέναις	Φιλουμένοις
Acc.	φιλουμένους	φιλουμένᾱς	φιλούμενα

τῑμα-ό-μεν-ος> τῑμώμενος

Nom.	τῑμώμενος etc.	τῑμωμένη	τῑμώμενον

[When the accent is on the second of two vowels that contract, the diphthong that results from contraction receives an acute accent, thus φιλε-ό- μενος > φιλούμενος (see Chapter 6, Grammar 3, p. 92).]

Recite all the forms of the present participle of ἡγέομαι and all the forms of τῑμώμενος.

➤ EXERCISE 8α

Fill in the present participles on the three Verb Charts on which you entered forms for Exercise 6β. Keep these charts for reference.

➤ EXERCISE 8β

Read aloud and translate the following sentences. Identify and explain the gender, number, and case of each participle and identify it as circumstantial, attributive, or supplementary:

1. αἱ γυναῖκες παύονται ἐργαζόμεναι.
2. ὁ Φίλιππος τὸν πατέρα ὁρᾷ εἰς τὴν οἰκίᾱν ἀφικνούμενον.
3. βουλόμενοι τὴν ἑορτὴν θεᾱσθαι, πρὸς τὸ ἄστυ σπεύδομεν.
4. ἆρ' ὁρᾶτε τοὺς παῖδας τοὺς ταῖς καλαῖς παρθένοις ἑπομένους;
5. αἱ παρθένοι αἱ μάλα φοβούμεναι ὡς τάχιστα (as quickly as possible) οἴκαδε τρέχουσιν.
6. ἆρ' ἀκούεις τῶν γυναικῶν τῶν ἐν τῇ οἰκίᾳ ἀλλήλαις διαλεγομένων;
7. οἱ παῖδες τῷ πατρὶ ἕπονται πρὸς τὸ ἄστυ πορευομένῳ.
8. ἡ κύων ἡ τὸν λύκον φοβουμένη ἀποφεύγει.
9. ἡ κύων ἐπὶ τὸν λύκον ὁρμωμένη ἀγρίως ὑλακτεῖ (barks).
10. ὁ αὐτουργὸς τὰ πρόβατα εὑρίσκει ἐν τοῖς ὄρεσι πλανώμενα (wandering).

➤ EXERCISE 8γ

Translate into Greek:

1. Do you see the boys (who are) fighting in the road?
2. Dicaeopolis stops working and drives the oxen home.
3. Stop following me and go away (ἄπελθε)!
4. Obeying Myrrhine, Melissa stays at home.
5. (While) bravely leading his comrades, Theseus escapes out of the labyrinth.
6. The men (οἱ ἄνδρες) rejoice (while) journeying to the island.

Athens: A Historical Outline

1. The Bronze Age

Athens grew around the Acropolis, the rocky hill that rises precipitously in the middle of the later city. Archaeologists have shown that in the Bronze Age the Acropolis was fortified and was crowned by a palace, which was no doubt the administrative center of the surrounding district, like the palaces at Mycenae and Pylos. Tradition says that Theseus united Attica in the generation before the Trojan War, but in the *Iliad* there is scant mention of Athenian heroes, and this suggests that Athens was not an important center in the Bronze Age.

Vocabulary Chapters 1–5

See p. xii for advice on how to use these vocabulary lists.

VERBS

ω VERBS

ἄγω	I lead; I take
αἴρω	I lift
ἀκούω	I listen; I listen to; I hear
ἀποφεύγω	I flee away, escape
βαδίζω	I walk; I go
βαίνω	I step; I walk; I go
βλέπω	I look; I see
γιγνώσκω	I get to know, learn
διώκω	I pursue, chase
ἐθέλω	I am willing; I wish
εἰσάγω	I lead in; I take in
ἐκβαίνω	I step out; I come out
ἐλαύνω	I drive
ἔχω	I have; I hold
ἥκω	I have come
θαυμάζω	I am amazed; I wonder at; I admire
καθεύδω	I sleep
καθίζω	I sit
λαμβάνω	I take
λέγω	I say; I tell; I speak
λείπω	I leave
λύω	I loosen, loose
μένω	I stay; I wait; I wait for

πάσχω	I suffer; I experience
πείθω	I persuade
πίπτω	I fall
σπεύδω	I hurry
στενάζω	I groan
συλλαμβάνω	I help
τρέχω	I run
τύπτω	I strike, hit
φέρω	I carry
φεύγω	I flee; I escape
φυλάττω	I guard
χαίρω	I rejoice

-άω CONTRACT VERBS

βοάω	I shout
ὁράω	I see
τῑμάω	I honor

-έω CONTRACT VERBS

ζητέω	I seek, look for
θεωρέω	I watch; I see
καλέω	I call
οἰκέω	I live; I dwell
ποιέω	I make; I do
πονέω	I work
προσχωρέω	I go toward, approach
φιλέω	I love

IMPERATIVES

ἐλθέ	come!
ἴθι/ἴτε	go!

μι VERBS

ἄπειμι	I am away (from)
εἰμί	I am
πάρειμι	I am present; I am here; I am there
φημί	I say

NOUNS

Note that we give the nominative and genitive singular forms.

1ST DECLENSION

γῆ, γῆς, ἡ	land; earth; ground
δεσπότης, -ου, ὁ	master
ἑορτή, -ῆς, ἡ	festival
κόρη, -ης, ἡ	girl
κρήνη, -ης, ἡ	spring
μάχαιρα, -ᾱς, ἡ	knife
μέλιττα, -ης, ἡ	bee
νεᾱνίᾱς, -ου, ὁ	young man
οἰκίᾱ, -ᾱς, ἡ	house; home; dwelling
πολίτης, -ου, ὁ	citizen
ὑδρίᾱ, -ᾱς, ἡ	water jar
φίλη, -ης, ἡ	friend

2ND DECLENSION

ἄγγελος, -ου, ὁ	messenger
ἀγρός, -οῦ, ὁ	field
ἄνθρωπος, -ου, ὁ	man; human being; person
ἄροτρον, -ου, τό	plow
αὐτουργός, -οῦ, ὁ	farmer

δεῖπνον, -ου, τό	dinner
δένδρον, -ου, τό	tree
δοῦλος, -ου, ὁ	slave
ἥλιος, -ου, ὁ	sun
καιρός, -οῦ, ὁ	time; right time
λαγώς, -ώ, ὁ	hare
λίθος, -ου, ὁ	stone
λύκος, -ου, ὁ	wolf
μῦθος, -ου, ὁ	story
νῆσος, -ου, ἡ	island
ὁδός, -οῦ, ἡ	road; way; journey
οἶκος, -ου, ὁ	house; home; dwelling
πάππος, -ου, ὁ	grandfather
πόνος, -ου, ὁ	toil, work
πρόβατα, -ων, τά	sheep
σῖτος, -ου, ὁ	grain; food
φίλος, -ου, ὁ	friend
χορός, -οῦ, ὁ	dance; chorus
χρόνος, -ου, ὁ	time

3RD DECLENSION

ἀνήρ, ἀνδρός, ὁ	man; husband
βοῦς, βοός, ὁ	ox
γυνή, γυναικός, ἡ	woman; wife
θυγάτηρ, θυγατρός, ἡ	daughter
κύων, κυνός, ὁ/ἡ	dog
μήτηρ, μητρός, ἡ	mother
ὄρος, ὄρους, τό	mountain; hill
παῖς, παιδός, ὁ/ἡ	boy; girl; son;
πατήρ, πατρός, ὁ	daughter; child father

PRONOUNS

αὐτά	them
αὐτάς	them
αὐτήν	her; it
αὐτῆς	of her, her; of it, its

αὐτό	it
αὐτόν	him; it
αὐτοῦ	of him, his; of it, its
αὐτούς	them
αὐτῶν	of them; their
ἐγώ	I
ἡμεῖς	we
σύ	you (sing.)
τί;	what?
ὑμεῖς	you (pl.)

ADJECTIVES

1ST AND 2ND DECLENSION

ἀγαθός, -ή, -όν	good
ἄγριος, ᾱ, -ον	savage; wild; fierce
αἴτιος, -ᾱ, -ον	responsible (for); to blame
ἄκρος, -ᾱ, -ον	top (of)
ἄλλος, -η, -ο	other, another
ἀνδρεῖος, -ᾱ, -ον	brave
αὐτός, -ή, -ό	-self, -selves
δυνατός, -ή, -όν	possible
ἐμός, -ή, -όν	my; mine
ἡμέτερος, -ᾱ, -ον	our; ours
ἰσχῡρός, -ᾱ́, -όν	strong
καλός, -ή, -όν	beautiful
μακρός, -ᾱ́, -όν	long; large
μέγας, μεγάλη, μέγα	big, large; great
μῑκρός, -ᾱ́, -όν	small
πολλοί, -αί, -ά	many
πολύς, πολλή, πολύ	much
πρῶτος, -η, -ον	first
ῥᾴδιος, -ᾱ, -ον	easy
σός, -ή, -όν	your; yours (sing.)

τοσοῦτος, τοσαύτη, τοσοῦτο	so great; pl., so great; so many
ὑμέτερος, -ᾱ, -ον	your; yours (pl.)
φίλος, -η, -ον	dear
χαλεπός, -ή, -όν	difficult

2ND DECLENSION

ἀργός, -όν	not working, idle, lazy
ῥᾴθῡμος, -ον	careless

PREPOSITIONS

ἀνά	+ acc., up
ἀπό	+ gen., from
κατά	+ acc., down
πρός	+ dat., at, near, by; + acc., to, toward
εἰς	+ acc., into; to; at
ἐκ, ἐξ	+ gen., out of
ἐν	+ dat., in; on
ἐπί	+ dat., upon, on; + acc., at; against
ὑπό	+ dat., under; + acc., under

PREFIX

ἀπο-	away

ADVERBS

ἀεί	always
αὖθις	again
βραδέως	slowly
δεῦρο	here, hither
ἐνταῦθα	then; here; hither; there; thither

ἔπειτα	then, thereafter
ἔτι	still
ἤδη	already; now
ἰδού	look!
καί	even; also, too
μάλα	very
μάλιστα	most, most of all; very much; especially
μή	not; don't . . . !
μηκέτι	don't . . . any longer!
μόλις	with difficulty; scarcely; reluctantly
νῦν	now
οἴκαδε	homeward, to home
οὐ, οὐκ, οὐχ	not
οὐκέτι	no longer
οὖν	so; then
οὕτω(ς)	so, thus
ποῦ;	where?
πρῶτον	first
ταχέως	quickly, swiftly
τί;	why?

CONJUNCTIONS

ἀλλά	but
γάρ	for
ἐπεί	when
καί	and
καί . . . καί	both . . . and
ὅτι	that
οὐδέ	and . . . not; nor; not even; but not
οὔτε . . . οὔτε	neither . . . nor
ὥστε	so that, that, so as to

PARTICLES

ἆρα	introduces a question
δέ	and, but
μέν . . . δέ . . .	on the one hand . . . and on the other hand; on the one hand . . . but on the other hand
τε . . . καί	both . . . and

EXPRESSIONS

ἄκρον τὸ ὄρος	the top of the mountain/hill
δι᾽ ὀλίγου	soon
ἐν νῷ ἔχω	I have in mind; I intend
ἐν ταῖς Ἀθήναις	in Athens
ἐνταῦθα δή	at that very moment, then
ἑορτὴν ποιῶ	I celebrate a festival
ἴθι δή	go on!
τὰ Διονύσια ποιῶ	I celebrate the festival of Dionysus
χαῖρε/χαίρετε	greetings!
ὦ Ζεῦ	O Zeus

PROPER NAMES AND ADJECTIVES

Ἀθηναῖος, -ᾱ, -ον	Athenian
Ἄργος, -ου ὁ	Argus
Δικαιόπολις, Δικαιοπόλιδος ὁ	Dicaeopolis
Διονύσια, -ων τά	the festival of Dionysus
Μέλιττα, -ης ἡ	Melissa
Μυρρίνη, -ης ἡ	Myrrhine
Ξανθίᾱς, -ου, ὁ	Xanthias
Φίλιππος, -ου ὁ	Philip

Vocabulary Chapters 6–9

VERBS

-ω VERBS

ἀναβαίνω	*I go up, get up;* + ἐπί + *acc., I climb, go up onto*
ἀποκτείνω	*I kill*
αὐξάνω	*I increase*
βάλλω	*I throw; I put; I pelt; I hit, strike*
βασιλεύω	*I rule*
ἐγείρω	*active, transitive, I wake X up; middle, intransitive, I wake up*
ἐκφεύγω	*I flee out, escape*
ἐπαίρω	*I lift, raise*
ἐσθίω	*I eat*
εὑρίσκω	*I find*
καθίζω	*active, transitive, I make X sit down; I set; I place; active, intransitive, I sit; middle, intransitive, I seat myself, sit down*
καίω or κᾱ́ω	*active, transitive, I kindle, burn; middle, intransitive, I burn am on fire*
κάμνω	*I am sick; I am tired*
κελεύω	+ *acc. and infin., I order, tell (someone to do something)*
μέλλω	+ *infin., I am about (to); I am destined (to); I intend (to)*
παρασκευάζω	*I prepare*
παρέχω	*I hand over; I supply, provide*
παύω	*active, transitive, I stop X; middle, intransitive, I stop doing X;* + *gen., I cease from*
παῦε	*stop!*
πείθω	*I persuade*
πέμπω	*I send*
πίνω	*I drink*
σῴζω	*I save*
τέρπω	*I delight, gladden, cheer X*

DEPONENT OR MIDDLE -ω VERBS

ἀποκρίνομαι	*I answer*
βούλομαι	+ *infin., I want; I wish*
γίγνομαι	*I become*

γίγνεται	he / she / it becomes; it happens
δέχομαι	I receive
διαλέγομαι	+ dat., I talk to, converse with
ἕπομαι	+ dat., I follow
ἐργάζομαι	I work; I accomplish
ἔρχομαι	I come; I go
ἀπέρχομαι	I go away
ἐξέρχομαι	+ ἐκ + gen., I come out of; I go out of
ἐπανέρχομαι	I come back, return; + εἰς or πρός + acc., I return to
εὔχομαι	I pray; + dat., I pray to; + acc. and infin., I pray (that)
μάχομαι	I fight
πείθομαι	+ dat., I obey
πορεύομαι	I go; I walk; I march; I journey
τέρπομαι	I enjoy myself; + dat., I enjoy X; + participle, I enjoy doing X

-άω Contract Verbs

| ὁρμάω | active, transitive, I set X in motion; active, intransitive, I start; I rush; middle, intransitive, I set myself in motion; I start; I rush; I hasten |
| σῑγάω | I am silent |

Deponent -άω Contract Verbs

| θεάομαι | I see, watch, look at |

-έω Contract Verbs

αἱρέω	I take
βοηθέω	I come to the rescue; + dat., I come to X's aid, I come to rescue/aid X
πλέω	I sail
προχωρέω	I go forward; I come forward, advance
φοβέω	I put X to flight; I terrify X

Deponent or Middle -έω Contract Verbs

ἀφικνέομαι	I arrive; + εἰς + acc., I arrive at
ἡγέομαι	+ dat., I lead
φοβέομαι	intransitive, I am frightened, am afraid; transitive, I fear, am afraid of (something or someone)

Imperatives and Infinitives Listed Separately

| ἄγε; pl., ἄγετε | come on! |
| ἰέναι | to go |

-μι Verbs

| φᾱσί(ν) | they say |

NOUNS

1st Declension

ἀγορᾱ́, -ᾶς, ἡ	agora, city center, market place
ἀριστερᾱ́, -ᾶς, ἡ	left hand
δεξιᾱ́, -ᾶς, ἡ	right hand

ἑσπέρᾱ, -ᾶς, ἡ	evening
ἡμέρᾱ, -ᾶς, ἡ	day
θάλαττα, -ης, ἡ	sea
θύρᾱ, -ᾶς, ἡ	door
νεᾱνίᾱς, -ου, ὁ	young man
ποιητής, -οῦ, ὁ	poet
πολίτης, -ου, ὁ	citizen
πομπή, -ῆς, ἡ	procession
πύλαι, -ῶν, αἱ	pl., double gates

2nd Declension

βωμός, -οῦ, ὁ	altar
δῆμος, -ου, ὁ	the people
ἔργον, -ου, τό	work; deed
ἑταῖρος, -ου, ὁ	comrade, companion
θεός, -οῦ, ἡ	goddess
θεός, -οῦ, ὁ	god
ἱερεῖον, -ου, τό	sacrificial victim
ἱερόν, -οῦ, τό	temple
κίνδῡνος, -ου, ὁ	danger
νῆσος, -ου, ἡ	island
ξένος, -ου, ὁ	foreigner; stranger
οἶνος, -ου, ὁ	wine
οὐρανός, -οῦ, ὁ	sky, heaven
ὀφθαλμός, -οῦ, ὁ	eye
πάππας, -ου, ὁ	papa
παρθένος, -ου, ἡ	maiden; girl

3rd Declension

αἴξ, αἰγός, ὁ or ἡ	goat
ἄστυ, ἄστεως, τό	city
βασιλεύς, βασιλέως, ὁ	king
γέρων, γέροντος, ὁ	old man
ἱερεύς, ἱερέως, ὁ	priest
κῆρυξ, κήρῡκος, ὁ	herald
ναῦς, νεώς, ἡ	ship
νύξ, νυκτός, ἡ	night
ὄνομα, ὀνόματος, τό	name
πόλις, πόλεως, ἡ	city
πῦρ, πυρός, τό	fire
χειμών, χειμῶνος, ὁ	storm; winter
χείρ, χειρός, ἡ	hand

PRONOUNS

ἐμαυτοῦ, σεαυτοῦ, ἑαυτοῦ	of myself, of yourself, of him-, her-, itself
οὐδείς, οὐδεμία, οὐδέν	no one; nothing
τις, τινός	someone; something; anyone; anything
τίς; τινός	who?

ADJECTIVES

1st and 2nd Declension

ἄριστος, -η, -ον	best; very good; noble
δεινός, -ή, -όν	terrible
δύο	two
ἕτοιμος, -η, -ον	ready
κάλλιστος, -η, -ον	most beautiful; very beautiful
μέγιστος, -η, -ον	very big, very large; very great; biggest; largest; greatest
μέσος, -η, -ον	middle (of)

ATTIC DECLENSION

ἵλεως, -ω   propitious

3RD DECLENSION

γέρων, γέροντος   old

σώφρων, σῶφρον   of sound mind; pru-
                     dent; self-controlled

τις, τινός   a certain; some; a, an

τίς; τίνος;   which...? what...?

3RD AND 1ST DECLENSION

εἷς, μία, ἕν   one

οὐδείς, οὐδεμία,   no
οὐδέν

πᾶς, πᾶσα, πᾶν   all; every; whole

PREPOSITIONS

διά   + gen., through

ἐπί   + dat., upon, on; +
                     acc., at; against; onto,
                     upon

μετά   + gen., with; + acc.,
                     after

περί   + gen., about, concern-
                     ing; + acc., around

ὑπέρ   + gen., on behalf of,
                     for

ADVERBS

ἐκεῖ   there

ἐκεῖσε   to that place, thither

ἐνθάδε   here; hither; there;
                     thither

εὖ   well

οἴκοι   at home

οὐδαμῶς   in no way, no

πόθεν;   from where? whence?

πολλάκις   many times, often

πῶς;   how?

τέλος   in the end, finally

ὡς   in exclamations,
                     how...!

ὥσπερ   just as

CONJUNCTION

ὅμως   nevertheless

PARTICLES

γε   at least; indeed

δή   indeed, in fact

EXPRESSIONS

ἐν...τούτῳ   meanwhile

ἐν ᾧ   while

ἐπαίρω ἐμαυτόν   I get up

εὖ γε   good! well done!

τῇ ὑστεραίᾳ   on the next day

PROPER NAMES

Ἀγαμέμνων,   Agamemnon
Ἀγαμέμνονος, ὁ

Ἀθηνᾶ, -ᾶς, ἡ   Athena (daughter of
                     Zeus)

Ἀθῆναι, -ῶν, αἱ   Athens

Αἰγεύς, Αἰγέως, ὁ   Aegeus (king of
                     Athens)

Ἀκρόπολις,   the Acropolis (the
Ἀκροπόλεως, ἡ   citadel of Athens)

Ἀριάδνη, -ης, ἡ   Ariadne (daughter of
                     King Minos)

Ἀχαιοί, -ῶν, οἱ   Achaeans; Greeks

Βρόμιος, -ου, ὁ   the Thunderer (a
                     name of Dionysus)

Διόνυσος, -ου, ὁ   Dionysus

Ζεύς, Διός, ὁ   Zeus (king of the
                     gods)

Θησεύς,   Theseus (son of King
Θησέως, ὁ   Aegeus)

Κνωσός, -οῦ, ἡ   Knossos

Κρήτη, -ης, ἡ   Crete

Κύκλωψ,   Cyclops (one-eyed
Κύκλωπος, ὁ   monster)

Μίνως, Μίνω, ὁ   Minos (king of Crete)

Μινώταυρος,   Minotaur
-ου, ὁ

Νίκη, -ης, ἡ   Nike (the goddess of
                     victory)

Ὀδυσσεύς,   Odysseus
Ὀδυσσέως, ὁ

Παρθένος, -ου, ἡ   the Maiden (= the
                     goddess Athena)

Παρθενών,   the Parthenon (the
Παρθενῶνος, ὁ   temple of Athena
                     on the Acropolis in
                     Athens)

Τροία, -ᾱς, ἡ   Troy

ὁ Φειδίᾱς, -ου, ὁ   Pheidias (the great
                     Athenian sculptor)

AESCHYLUS
THE ORESTEIA

TRANSLATED BY

ROBERT FAGLES

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INTRODUCTORY ESSAY, NOTES

AND GLOSSARY BY

ROBERT FAGLES AND

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PENGUIN BOOKS

Illustrations by Sylvia Allman

AGAMEMNON

CHARACTERS

WATCHMAN

CLYTAEMNESTRA

HERALD

AGAMEMNON

CASSANDRA

AEGISTHUS

CHORUS, THE OLD MEN OF ARGOS
AND THEIR LEADER

*Attendants of Clytaemnestra and of Agamemnon,
bodyguard of Aegisthus*

TIME AND SCENE: *A night in the
tenth and final autumn of the Trojan
war. The house of Atreus in Argos.
Before it, an altar stands unlit; a
watchman on the high roofs fights to
stay awake.*

WATCHMAN:
Dear gods, set me free from all the pain,
the long watch I keep, one whole year awake . .
propped on my arms, crouched on the roofs of Atreus
like a dog.
         I know the stars by heart,
the armies of the night, and there in the lead   5
the ones that bring us snow or the crops of summer,
bring us all we have –
our great blazing kings of the sky,
I know them, when they rise and when they fall . . .
and now I watch for the light, the signal-fire   10
breaking out of Troy, shouting Troy is taken.
So she commands, full of her high hopes.
That woman – she manoeuvres like a man.

And when I keep to my bed, soaked in dew,
and the thoughts go groping through the night   15
and the good dreams that used to guard my sleep . . .
not here, it's the old comrade, terror, at my neck.
I mustn't sleep, no –

               Shaking himself awake.

     Look alive, sentry.

And I try to pick out tunes, I hum a little,
a good cure for sleep, and the tears start,
I cry for the hard times come to the house,
no longer run like the great place of old.

Oh for a blessed end to all our pain,
some godsend burning through the dark –

           *Light appears slowly in the east; he
           struggles to his feet and scans it.*

                I salute you!
You dawn of the darkness, you turn night to day –   25
I see the light at last.
They'll be dancing in the streets of Argos
thanks to you, thanks to this new stroke of –
                     Aieeeeee!
There's your signal clear and true, my queen!
Rise up from bed – hurry, lift a cry of triumph   30
through the house, praise the gods for the beacon,
if they've taken Troy . . .
             But there it burns,
fire all the way. I'm for the morning dances.
Master's luck is mine. A throw of the torch
has brought us triple-sixes – we have won!   35
My move now –

           *Beginning to dance, then breaking off,
           lost in thought.*

        Just bring him home. My king,
I'll take your loving hand in mine and then . . .
the rest is silence. The ox is on my tongue.
Aye, but the house and these old stones,
give them a voice and what a tale they'd tell.   40
And so would I, gladly . . .
I speak to those who know; to those who don't
my mind's a blank. I never say a word.

He climbs down from the roof and disappears into the palace through a side entrance. A CHORUS, the old men of Argos who have not learned the news of victory, enters and marches round the altar.

CHORUS:

Ten years gone, ten to the day
our great avenger went for Priam –   45
   Menelaus and lord Agamemnon,
two kings with the power of Zeus,
the twin throne, twin sceptre,
Atreus' sturdy yoke of sons
launched Greece in a thousand ships,   50
armadas cutting loose from the land,
armies massed for the cause, the rescue –

*From within the palace CLYTAEM-
NESTRA raises a cry of triumph.*

the heart within them screamed for all-out war!
Like vultures robbed of their young,
   the agony sends them frenzied,   55
soaring high from the nest, round and
round they wheel, they row their wings,
stroke upon churning thrashing stroke,
but all the labour, the bed of pain,
   the young are lost forever.   60
Yet someone hears on high – Apollo,
Pan or Zeus – the piercing wail
these guests of heaven raise,
and drives at the outlaws, late
but true to revenge, a stabbing Fury!   65

*CLYTAEMNESTRA appears at the
doors and pauses with her entourage.*

So towering Zeus the god of guests
drives Atreus' sons at Paris,
all for a woman manned by many
the generations wrestle, knees
grinding the dust, the manhood drains,   70
the spear snaps in the first blood rites
   that marry Greece and Troy.
And now it goes as it goes
and where it ends is Fate.
And neither by singeing flesh   75
nor tipping cups of wine
nor shedding burning tears can you
enchant away the rigid Fury.

*CLYTAEMNESTRA lights the altar-
fires.*

We are the old, dishonoured ones,
the broken husks of men.   80
Even then they cast us off,
the rescue mission left us here
to prop a child's strength upon a stick.
What if the new sap rises in his chest?
He has no soldiery in him,   85
   no more than we,
and we are aged past ageing,
gloss of the leaf shrivelled,
three legs at a time we falter on.
Old men are children once again,   90
   a dream that sways and wavers
into the hard light of day.
                    But you,
daughter of Leda, queen Clytaemnestra,
what now, what news, what message
drives you through the citadel   95
   burning victims? Look,
the city gods, the gods of Olympus,
gods of the earth and public markets –
all the altars blazing with your gifts!

Argos blazes! Torches   100
race the sunrise up her skies –
drugged by the lulling holy oils,
   unadulterated,
run from the dark vaults of kings.
   Tell us the news!   105
What you can, what is right –
Heal us, soothe our fears!
Now the darkness comes to the fore,
now the hope glows through your victims,
beating back this raw, relentless anguish   110
   gnawing at the heart.

                CLYTAEMNESTRA *ignores them and*
                pursues her rituals; they assemble for
                the opening chorus.

O but I still have power to sound the god's command at the
   roads
that launched the kings. The gods breathe power through
   my song,
   my fighting strength, Persuasion grows with the years –
I sing how the flight of fury hurled the twin command,   115
      one will that hurled young Greece
and winged the spear of vengeance straight for Troy!
The kings of birds to kings of the beaking prows, one black,
   one with a blaze of silver
      skimmed the palace spearhand right ·   120
        and swooping lower, all could see,
          plunged their claws in a hare, a mother
bursting with unborn young – the babies spilling,
quick spurts of blood – cut off the race just dashing into life!
Cry, cry for death, but good win out in glory in the end.   125

But the loyal seer of the armies studied Atreus' sons,
two sons with warring hearts – he saw two eagle-kings
   devour the hare and spoke the things to come,
'Years pass, and the long hunt nets the city of Priam,
      the flocks beyond the walls,
a kingdom's life and soul – Fate stamps them out.   130
Just let no curse of the gods lour on us first,
      shatter our giant armour
        forged to strangle Troy. I see
          pure Artemis bristle in pity –   135
            yes, the flying hounds of the Father
   slaughter for armies . . . their own victim . . a woman
trembling young, all born to die – She loathes the eagles' feast!'
Cry, cry for death, but good win out in glory in the end.

'Artemis, lovely Artemis, so kind   140
to the ravening lion's tender, helpless cubs,
the suckling young of beasts that stalk the wilds –
   bring this sign for all its fortune,
      all its brutal torment home to birth!
I beg you, Healing Apollo, soothe her before   145
her crosswinds hold us down and moor the ships too long,
pressing us on to another victim . . .
      nothing sacred, no
        no feast to be eaten
          the architect of vengeance   150

                   Turning to the palace.
      growing strong in the house
      with no fear of the husband
here she waits
the terror raging back and back in the future
      the stealth, the law of the hearth, the mother –   155
        Memory womb of Fury child-avenging Fury!'
So as the eagles wheeled at the crossroads,
Calchas clashed out the great good blessings mixed with doom
   for the halls of kings, and singing with our fate
we cry, cry for death, but good win out in glory in the end.   160

Zeus, great nameless all in all,
if that name will gain his favour,
I will call him Zeus.
I have no words to do him justice,
weighing all in the balance,   165
all I have is Zeus, Zeus –
lift this weight, this torment from my spirit,
cast it once for all.

He who was so mighty once,
storming for the wars of heaven,   170
he has had his day.
And then his son who came to power
met his match in the third fall
and he is gone. Zeus, Zeus –
raise your cries and sing him Zeus the Victor!   175
You will reach the truth:

Zeus has led us on to know,
the Helmsman lays it down as law
that we must suffer, suffer into truth.
We cannot sleep, and drop by drop at the heart   180
the pain of pain remembered comes again,
and we resist, but ripeness comes as well.
From the gods enthroned on the awesome rowing-bench
there comes a violent love.

So it was that day the king,   185
the steersman at the helm of Greece,
would never blame a word the prophet said –
swept away by the wrenching winds of fortune
he conspired! Weatherbound we could not sail,
our stores exhausted, fighting strength hard-pressed, 190
and the squadrons rode in the shallows off Chalkis
where the riptide crashes, drags,

and winds from the north pinned down our hulls at Aulis,
port of anguish . . . head winds starving,
sheets and the cables snapped   195
    and the men's minds strayed,
        the pride, the bloom of Greece
was raked as time ground on,
ground down, and then the cure for the storm
and it was harsher – Calchas cried,
'My captains, Artemis must have blood!' –   200
    so harsh the sons of Atreus
        dashed their sceptres on the rocks,
        could not hold back the tears,

and I still can hear the older warlord saying,   205
'Obey, obey, or a heavy doom will crush me! –
Oh but doom *will* crush me
    once I rend my child,
        the glory of my house –
a father's hands are stained,   210
blood of a young girl streaks the altar.
Pain both ways and what is worse?
Desert the fleets, fail the alliance?
    No, but stop the winds with a virgin's blood,
        feed their lust, their fury? – feed their fury! – 215
    Law is law! –
            Let all go well.'

And once he slipped his neck in the strap of Fate,
his spirit veering black, impure, unholy,
once he turned he stopped at nothing,
    seized with the frenzy   220
        blinding driving to outrage –
wretched frenzy, cause of all our grief!
Yes, he had the heart
    to sacrifice his daughter,
to bless the war that avenged a woman's loss,   225
    a bridal rite that sped the men-of-war.

'My father, father!' – she might pray to the winds;
no innocence moves her judges mad for war.
Her father called his henchmen on,
　　　on with a prayer,
　　　　　　'Hoist her over the altar   230
like a yearling, give it all your strength!
She's fainting – lift her,
　　　sweep her robes around her,
　　　　but slip this strap in her gentle curving lips ...   235
　　　　　　here, gag her hard, a sound will curse the house' –

and the bridle chokes her voice ... her saffron robes
pouring over the sand
　　　　　　　　　her glance like arrows showering
wounding every murderer through with pity
　　　clear as a picture, live,   240
she strains to call their names ...
I remember often the days with father's guests
when over the feast her voice unbroken,
　　　pure as the hymn her loving father
bearing third libations, sang to Saving Zeus –   245
transfixed with joy, Atreus' offspring
　　　throbbing out their love.

What comes next? I cannot see it, cannot say.
The strong techniques of Calchas do their work.
But Justice turns the balance scales,   250
　　　sees that we suffer
and we suffer and we learn.
And we will know the future when it comes.
Greet it too early, weep too soon.
　　　It all comes clear in the light of day.   255
Let all go well today, well as she could want,

Turning to CLYTAEMNESTRA.

our midnight watch, our lone defender,
　　　single-minded queen.

LEADER:
　　　　　　　　We've come,
Clytaemnestra. We respect your power.
Right it is to honour the warlord's woman   260
once he leaves the throne.
　　　　　　　　　But why these fires?
Good news, or more good hopes? We're loyal,
we want to hear, but never blame your silence.

CLYTAEMNESTRA:
　Let the new day shine – as the proverb says –
　glorious from the womb of Mother Night.   265

Lost in prayer, then turning to the
CHORUS.

　You will hear a joy beyond your hopes.
　Priam's citadel – the Greeks have taken Troy!

LEADER:
　No, what do you mean? I can't believe it.

CLYTAEMNESTRA:
　Troy is ours. Is that clear enough?

LEADER:
　　　　　　　　　The joy of it,
　stealing over me, calling up my tears –   270

CLYTAEMNESTRA:
Yes, your eyes expose your loyal hearts.

LEADER:
And you have proof?

CLYTAEMNESTRA:
            I do,
I must. Unless the god is lying.

LEADER:
              That,
or a phantom spirit sends you into raptures.

CLYTAEMNESTRA:
No one takes me in with visions – senseless dreams.   275

LEADER:
Or giddy rumour, you haven't indulged yourself –

CLYTAEMNESTRA:
You treat me like a child, you mock me?

LEADER:
Then when did they storm the city?

CLYTAEMNESTRA:
Last night, I say, the mother of this morning.

LEADER:
And who on earth could run the news so fast?   280

CLYTAEMNESTRA:
The god of fire – rushing fire from Ida!
And beacon to beacon rushed it on to me,
my couriers riding home the torch.
                    From Troy
to the bare rock of Lemnos, Hermes' Spur,
and the Escort winged the great light west
to the Saving Father's face, Mount Athos hurled it   285
third in the chain and leaping Ocean's back
the blaze went dancing on to ecstasy – pitch-pine
streaming gold like a new-born sun – and brought
the word in flame to Mount Makistos' brow.
No time to waste, straining, fighting sleep,   290
that lookout heaved a torch glowing over
the murderous straits of Euripos to reach
Messapion's watchmen craning for the signal.
Fire for word of fire! tense with the heather
withered gray, they stack it, set it ablaze –   295
the hot force of the beacon never flags,
it springs the Plain of Asôpos, rears
like a harvest moon to hit Kithairon's crest
and drives new men to drive the fire on.
That relay pants for the far-flung torch,   300
they swell its strength outstripping my commands
and the light inflames the marsh, the Gorgon's Eye,
it strikes the peak where the wild goats range –
my laws, my fire whips that camp!
They spare nothing, eager to build its heat,   305
and a huge beard of flame overcomes the headland
beetling down the Saronic Gulf, and flaring south
it brings the dawn to the Black Widow's face –
the watch that looms above your heads – and now   310
the true son of the burning flanks of Ida
crashes on the roofs of Atreus' sons!

And I ordained it all.
Torch to torch, running for their lives,
one long succession racing home my fire.   315
                                        One,
first in the laps and last, wins out in triumph.
There you have my proof, *my* burning sign, I tell you –
the power my lord passed on from Troy to me!

LEADER:

We'll thank the gods, my lady – first this story,
let me lose myself in the wonder of it all!   320
Tell it start to finish, tell us all.

CLYTAEMNESTRA:

The city's ours – in our hands this very day!
I can hear the cries in crossfire rock the walls.
Pour oil and wine in the same bowl,
what have you, friendship? A struggle to the end.   325
So with the victors and the victims – outcries,
you can hear them clashing like their fates.

They are kneeling by the bodies of the dead,
embracing men and brothers, infants over
the aged loins that gave them life, and sobbing,   330
as the yoke constricts their last free breath,
for every dear one lost.
                          And the others,
there, plunging breakneck through the night –
the labour of battle sets them down, ravenous,
to breakfast on the last remains of Troy.   335
Not by rank but chance, by the lots they draw,
they lodge in the houses captured by the spear,
settling in so soon, released from the open sky,
the frost and dew. Lucky men, off guard at last,
they sleep away their first good night in years.   340

If only they are revering the city's gods,
the shrines of the gods who love the conquered land,
no plunderer will be plundered in return.
Just let no lust, no mad desire seize the armies
to ravish what they must not touch –
overwhelmed by all they've won!   345
                          The run for home
and safety waits, the swerve at the post,
the final lap of the gruelling two-lap race.
And even if the men come back with no offence
to the gods, the avenging dead may never rest –
Oh let no new disaster strike! And here   350
you have it, what a woman has to say.
Let the best win out, clear to see.
A small desire but all that I could want.

LEADER:

Spoken like a man, my lady, loyal,
full of self-command. I've heard your sign   355
and now your vision.

                    *Reaching towards her as she turns and
                    re-enters the palace.*

                          Now to praise the gods.
The joy is worth the labour.

CHORUS:
O Zeus my king and Night, dear Night,
queen of the house who covers us with glories,   360
you slung your net on the towers of Troy,
neither young nor strong could leap
the giant dredge net of slavery,
    all-embracing ruin.
I adore you, iron Zeus of the guests   365
and your revenge – you drew your longbow
year by year to a taut full draw
till one bolt, not falling short
or arching over the stars,
    could split the mark of Paris!   370

The sky stroke of god! – it is all Troy's to tell,
but even I can trace it to its cause:
god does as god decrees.
    And still some say
that heaven would never stoop to punish men   375
who trample the lovely grace of things
untouchable. How wrong they are!
    A curse burns bright on crime –
        full-blown, the father's crimes will blossom,
            burst into the son's.   380
Let there be less suffering . . .
give us the sense to live on what we need.

        Bastions of wealth
        are no defence for the man
        who treads the grand altar of Justice   385
            down and out of sight.

Persuasion, maddening child of Ruin
overpowers him – Ruin plans it all.
And the wound will smoulder on,
    there is no cure,
a terrible brilliance kindles on the night.   390
He is bad bronze scraped on a touchstone:
put to the test, the man goes black.
    Like the boy who chases
        a bird on the wing, brands his city,
            brings it down and prays,   395
but the gods are deaf
to the one who turns to crime, they tear him down.

        So Paris learned:
        he came to Atreus' house
        and shamed the tables spread for guests,   400
            he stole away the queen.

And she left her land chaos, clanging shields,
companions tramping, bronze prows, men in bronze,
    and she came to Troy with a dowry, death,
strode through the gates   405
        defiant in every stride,
as prophets of the house looked on and wept,
'Oh the halls and the lords of war,
    the bed and the fresh prints of love.
I see him, unavenging, unavenged,   410
the stun of his desolation is so clear –
    he longs for the one who lies across the sea
until her phantom seems to sway the house.

        Her curving images,
        her beauty hurts her lord,   415
        the eyes starve and the touch
            of love is gone,

'and radiant dreams are passing in the night,
the memories throb with sorrow, joy with pain ...   420
   it is pain to dream and see desires
slip through the arms,
       a vision lost for ever
winging down the moving drifts of sleep.'
So he grieves at the royal hearth   425
   yet others' grief is worse, far worse.
All through Greece for those who flocked to war
they are holding back the anguish now,
   you can feel it rising now in every house;
I tell you there is much to tear the heart.   430

      They knew the men they sent,
      but now in place of men
      ashes and urns come back
        to every hearth.

War, War, the great gold-broker of corpses   435
holds the balance of the battle on his spear!
Home from the pyres he sends them,
   home from Troy to the loved ones,
heavy with tears, the urns brimmed full,
   the heroes return in gold-dust,   440
dear, light ash for men; and they weep,
they praise them, 'He had skill in the swordplay,'
   'He went down so tall in the onslaught,'
'All for another's woman.' So they mutter
in secret and the rancour steals   445
towards our staunch defenders, Atreus' sons.

    And there they ring the walls, the young,
    the lithe, the handsome hold the graves
    they won in Troy; the enemy earth
      rides over those who conquered.   450

The people's voice is heavy with hatred,
now the curses of the people must be paid,
and now I wait, I listen ...
   there – there is something breathing
under the night's shroud. God takes aim   455
   at the ones who murder many;
the swarthy Furies stalk the man
gone rich beyond all rights – with a twist
   of fortune grind him down, dissolve him
into the blurring dead – there is no help.   460
The reach for power can recoil,
the bolt of god can strike you at a glance.

    Make me rich with no man's envy,
    neither a raider of cities, no,
    nor slave come face to face with life   465
     overpowered by another.

          Speaking singly.

– Fire comes and the news is good,
   it races through the streets
but is it true? Who knows?
Or just another lie from heaven?   470

– Show us the man so childish, wonderstruck,
   he's fired up with the first torch,
then when the message shifts
he's sick at heart.

        – Just like a woman
to fill with thanks before the truth is clear.   475

– So gullible. Their stories spread like wildfire,
   they fly fast and die faster;
rumours voiced by women come to nothing.

LEADER:
Soon we'll know her fires for what they are,
her relay race of torches hand-to-hand –   480
know if they're real or just a dream,
the hope of a morning here to take our senses.
I see a herald running from the beach
and a victor's spray of olive shades his eyes
and the dust he kicks, twin to the mud of Troy,   485
shows he has a voice – no kindling timber
on the cliffs, no signal-fires for him.
He can shout the news and give us joy,
or else . . . please, not that.
                            Bring it on,
good fuel to build the first good fires.   490
And if anyone calls down the worst on Argos
let him reap the rotten harvest of his mind.

                    The HERALD *rushes in and kneels on*
                    the ground.

HERALD:
Good Greek earth, the soil of my fathers!
Ten years out, and a morning brings me back.
All hopes snapped but one – I'm home at last.   495
Never dreamed I'd die in Greece, assigned
the narrow plot I love the best.
                            And now
I salute the land, the light of the sun,
our high lord Zeus and the king of Pytho –
no more arrows, master, raining on our heads!   500
At Scamander's banks we took our share,
your longbow brought us down like plague.
Now come, deliver us, heal us – lord Apollo!
Gods of the market, here, take my salute.
And you, my Hermes, Escort,   505
loving Herald, the herald's shield and prayer! –
And the shining dead of the land who launched the armies,
warm us home . . . we're all the spear has left.

You halls of the kings, you roofs I cherish,
sacred seats – you gods that catch the sun,
if your glances ever shone on him in the old days,   510
greet him well – so many years are lost.
He comes, he brings us light in the darkness,
free for every comrade, Agamemnon lord of men.

Give him the royal welcome he deserves!
He hoisted the pickaxe of Zeus who brings revenge,   515
he dug Troy down, he worked her soil down,
the shrines of her gods and the high altars, gone! –
and the seed of her wide earth he ground to bits.
That's the yoke he claps on Troy. The king,   520
the son of Atreus comes. The man is blest,
the one man alive to merit such rewards.

Neither Paris nor Troy, partners to the end,
can say their work outweighs their wages now.
Convicted of rapine, stripped of all his spoils,   525
and his father's house and the land that gave it life –
he's scythed them to the roots. The sons of Priam
pay the price twice over.

LEADER:
                    Welcome home
from the wars, herald, long live your joy.

HERALD:
                                        Our joy –
now I could die gladly. Say the word, dear gods.   530

LEADER:
Longing for your country left you raw?

HERALD:
The tears fill my eyes, for joy.

LEADER:

                         You too,
down with the sweet disease that kills a man
with kindness . . .

HERALD:

              Go on, I don't see what you—

LEADER:

                                   Love
for the ones who love you—that's what took you.

HERALD:

                              You mean   535
the land and the armies hungered for each other?

LEADER:

There were times I thought I'd faint with longing.

HERALD:

So anxious for the armies, why?

LEADER:

                    For years now,
only my silence kept me free from harm.

HERALD:

                           What,
with the kings gone did someone threaten you?

LEADER:

                       So much . . .   540
now as you say, it would be good to die.

HERALD:

True, we *have* done well.
Think back in the years and what have you?
A few runs of luck, a lot that's bad.
Who but a god can go through life unmarked?   545

A long, hard pull we had, if I would tell it all.
The iron rations, penned in the gangways
hock by jowl like sheep. Whatever miseries
break a man, our quota, every sun-starved day.

Then on the beaches it was worse. Dug in   550
under the enemy ramparts – deadly going.
Out of the sky, out of the marshy flats
the dews soaked us, turned the ruts we fought from
into gullies, made our gear, our scalps
crawl with lice.

              And talk of the cold,   555
the sleet to freeze the gulls, and the big snows
come avalanching down from Ida. Oh but the heat,
the sea and the windless noons, the swells asleep,
dropped to a dead calm . . .

But why weep now?   560
It's over for us, over for them.
The dead can rest and never rise again;
no need to call their muster. We're alive,
do we have to go on raking up old wounds?
Good-bye to all that. Glad I am to say it.   565

For us, the remains of the Greek contingents,
the good wins out, no pain can tip the scales,
not now. So shout this boast to the bright sun –
fitting it is – wing it over the seas and rolling earth:

'Once when an Argive expedition captured Troy   570
they hauled these spoils back to the gods of Greece,
they bolted them high across the temple doors,
the glory of the past!'

                    And hearing that,
men will applaud our city and our chiefs,
and Zeus will have the hero's share of fame –
he did the work.   575

              That's all I have to say.

LEADER:

  I'm convinced, glad that I was wrong.
  Never too old to learn; it keeps me young.

                    CLYTAEMNESTRA *enters with her women.*

  First the house and the queen, it's their affair,
  but I can taste the riches.

CLYTAEMNESTRA:

                    I cried out long ago! –   580
  for joy, when the first herald came burning
  through the night and told the city's fall.
  And there were some who smiled and said,
  'A few fires persuade you Troy's in ashes.
  Women, women, elated over nothing.'   585

  You made me seem deranged.
  For all that I sacrificed – a woman's way,
  you'll say – station to station on the walls
  we lifted cries of triumph that resounded
  in the temples of the gods. We lulled and blessed   590
  the fires with myrrh and they consumed our victims.

                    Turning to the HERALD.

  But enough. Why prolong the story?
  From the king himself I'll gather all I need.
  Now for the best way to welcome home
  my lord, my good lord . . .
                    No time to lose!   595
  What dawn can feast a woman's eyes like this?
  I can see the light, the husband plucked from war
  by the Saving God and open wide the gates.

  Tell him that, and have him come with speed,
  the people's darling – how they long for him.   600
  And for his wife,
  may he return and find her true at hall,
  just as the day he left her, faithful to the last.
  A watchdog gentle to him alone,

                    Glancing towards the palace.

                    savage
  to those who cross his path. I have not changed.
  The strains of time can never break our seal.   605
  In love with a new lord, in ill repute I am
  as practised as I am in dyeing bronze.

  That is my boast, teeming with the truth.
  I am proud, a woman of my nobility –
  I'd hurl it from the roofs!   610

                    She turns sharply, enters the palace.

LEADER:

  She speaks well, but it takes no seer to know
  she only says what's right.

                    The HERALD *attempts to leave; the*
                    leader takes him by the arm.

                    Wait, one thing.
  Menelaus, is he home too, safe with the men?
  The power of the land – dear king.   615

HERALD:

  I doubt that lies will help my friends,
  in the lean months to come.

LEADER:

  Help us somehow, tell the truth as well.
  But when the two conflict it's hard to hide –
  out with it.

HERALD:

                    He's lost, gone from the fleets!   620
  He and his ship, it's true.

LEADER:

After you watched him
pull away from Troy? Or did some storm
attack you all and tear him off the line?

HERALD:

There,
like a marksman, the whole disaster cut to a word.

LEADER:

How do the escorts give him out – dead or alive?   625

HERALD:

No clear report. No one knows . . .
only the wheeling sun that heats the earth to life.

LEADER:

But then the storm – how did it reach the ships?
How did it end? Were the angry gods on hand?

HERALD:

This blessed day, ruin it with *them*?   630
Better to keep their trophies far apart.

When a runner comes, his face in tears,
saddled with what his city dreaded most,
the armies routed, two wounds in one,
one to the city, one to hearth and home . . .   635
our best men, droves of them, victims
herded from every house by the two-barb whip
that Ares likes to crack,
that charioteer
who packs destruction shaft by shaft,   640
careering on with his brace of bloody mares –
When he comes in, I tell you, dragging that much pain,
wail your battle-hymn to the Furies, and high time!

But when he brings salvation home to a city
singing out her heart –
how can I mix the good with so much bad   645
and blurt out this? –
'Storms swept the Greeks,
and not without the anger of the gods!'

Those enemies for ages, fire and water,
sealed a pact and showed it to the world –
they crushed our wretched squadrons.
Night looming,   650
breakers lunging in for the kill
and the black gales come brawling out of the north –
ships ramming, prow into hooking prow, gored
by the rush-and-buck of hurricane pounding rain
by the cloudburst –
ships stampeding into the darkness,   655
lashed and spun by the savage shepherd's hand!

But when the sun comes up to light the skies
I see the Aegean heaving into a great bloom
of corpses . . . Greeks, the pick of a generation
scattered through the wrecks and broken spars.   660

But not us, not our ship, our hull untouched.
Someone stole us away or begged us off.
No mortal – a god, death grip on the tiller,
or lady luck herself, perched on the helm,
she pulled us through, she saved us. Aye,   665
we'll never battle the heavy surf at anchor,
never shipwreck up some rocky coast.

But once we cleared that sea-hell, not even
trusting luck in the cold light of day,
we battened on our troubles, they were fresh –   670
the armada punished, bludgeoned into nothing.

And now if one of them still has the breath
he's saying *we* are lost. Why not?
We say the same of him. Well,
here's to the best.

                    And Menelaus?   675
Look to it, he's come back, and yet . . .
if a shaft of the sun can track him down,
alive, and his eyes full of the old fire –
thanks to the strategies of Zeus, Zeus
would never tear the house out by the roots –   680
then there's hope our man will make it home.

You've heard it all. Now you have the truth.

                              Rushing out.

CHORUS:
Who – what power named the name that drove your fate? –
what hidden brain could divine your future,
steer that word to the mark,   685
to the bride of spears,
    the whirlpool churning armies,
            Oh for all the world a Helen!
Hell at the prows, hell at the gates
hell on the men-of-war,   690
from her lair's sheer veils she drifted
        launched by the giant western wind,
            and the long tall waves of men in armour,
huntsmen trailing the oar-blades' dying spoor
slipped into her moorings,   695
    Simois' mouth that chokes with foliage,
                    bayed for bloody strife,

for Troy's Blood Wedding Day – she drives her word,
her burning will to the birth, the Fury
late but true to the cause,   700
to the tables shamed
    and Zeus who guards the hearth –
            the Fury makes the Trojans pay!
Shouting their hymns, hymns for the bride
hymns for the kinsmen doomed   705
to the wedding march of Fate.
        Troy changed her tune in her late age,
            and I think I hear the dirges mourning
'Paris, born and groomed for the bed of Fate!'
They mourn with their life breath,   710
    they sing their last, the sons of Priam
            born for bloody slaughter.

So a man once reared
a lion cub at hall, snatched
from the breast, still craving milk   715
    in the first flush of life.
A captivating pet for the young,
and the old men adored it, pampered it
    in their arms, day in, day out,
like an infant just born.   720
Its eyes on fire, little beggar,
fawning for its belly, slave to food.

    But it came of age
and the parent strain broke out
and it paid its breeders back.   725
    Grateful it was, it went
through the flock to prepare a feast,
an illicit orgy – the house swam with blood,
    none could resist that agony –
                massacre vast and raw!   730
From god there came a priest of ruin,
adopted by the house to lend it warmth.

And the first sensation Helen brought to Troy . . .
call it a spirit
    shimmer of winds dying
        glory light as gold   735
    shaft of the eyes dissolving, open bloom
  that wounds the heart with love.
But veering wild in mid-flight
she whirled her wedding on to a stabbing end,   740
slashed at the sons of Priam – hearthmate, friend to the death,
    sped by Zeus who speeds the guest,
a bride of tears, a Fury.

There's an ancient saying, old as man himself:
men's prosperity   745
    never will die childless,
        once full-grown it breeds.
    Sprung from the great good fortune in the race
  comes bloom on bloom of pain –
insatiable wealth! But not I,   750
I alone say this. Only the reckless act
can breed impiety, multiplying crime on crime,
    while the house kept straight and just
is blessed with radiant children.

      But ancient Violence longs to breed,   755
        new Violence comes
    when its fatal hour comes, the demon comes
    to take her toll – no war, no force, no prayer
      can hinder the midnight Fury stamped
    with parent Fury moving through the house.   760

      But Justice shines in sooty hovels,
        loves the decent life.
From proud halls crusted with gilt by filthy hands
    she turns her eyes to find the pure in spirit –
spurning the wealth stamped counterfeit with praise,   765
    she steers all things towards their destined end.

          *AGAMEMNON enters in his chariot,
          his plunder borne before him by his
          entourage; behind him, half hidden,
          stands CASSANDRA. The old men
          press towards him.*

Come, my king, the scourge of Troy,
  the true son of Atreus –
How to salute you, how to praise you
neither too high nor low, but hit   770
the note of praise that suits the hour?
So many prize some brave display,
they prefer some flaunt of honour
  once they break the bounds.
When a man fails they share his grief,   775
but the pain can never cut them to the quick.
When a man succeeds they share his glory,
torturing their faces into smiles.
But the good shepherd knows his flock.
When the eyes seem to brim with love   780
  and it is only unction, fawning,
he will know, better than we can know.
That day you marshalled the armies
all for Helen – no hiding it now –
I drew you in my mind in black;   785
you seemed a menace at the helm,
  sending men to the grave
to bring her home, that hell on earth.
But now from the depths of trust and love
I say Well fought, well won –
  the end is worth the labour!   790
Search, my king, and learn at last
who stayed at home and kept their faith
  and who betrayed the city.

AGAMEMNON:

First,
with justice I salute my Argos and my gods,   795
my accomplices who brought me home and won
my rights from Priam's Troy – the just gods.
No need to hear our pleas. Once for all
they consigned their lots to the urn of blood,
they pitched on death for men, annihilation   800
for the city. Hope's hand, hovering
over the urn of mercy, left it empty.
Look for the smoke – it is the city's seamark,
building even now.
                    The storms of ruin live!
Her last dying breath, rising up from the ashes   805
sends us gales of incense rich in gold.

For that we must thank the gods with a sacrifice
our sons will long remember. For their mad outrage
of a queen we raped their city – we were right.
The beast of Argos, foals of the wild mare,   810
thousands massed in armour rose on the night
the Pleiades went down, and crashing through
their walls our bloody lion lapped its fill,
gorging on the blood of kings.
                    Our thanks to the gods,
long drawn out, but it is just the prelude.   815

> CLYTAEMNESTRA *approaches with*
> *her women; they are carrying dark red*
> *tapestries.* AGAMEMNON *turns to the*
> *leader.*

And your concern, old man, is on my mind.
I hear you and agree, I will support you.
How rare, men with the character to praise
a friend's success without a trace of envy,
poison to the heart – it deals a double blow.   820
Your own losses weigh you down but then,
look at your neighbour's fortune and you weep.
Well I know. I understand society,
the flattering mirror of the proud.
                    My comrades . . .
they're shadows, I tell you, ghosts of men   825
who swore they'd die for me. Only Odysseus:
I dragged that man to the wars but once in harness
he was a trace-horse, he gave his all for me.
Dead or alive, no matter, I can praise him.

And now this cause involving men and gods.   830
We must summon the city for a trial,
found a national tribunal. Whatever's healthy,
shore it up with law and help it flourish.
Wherever something calls for drastic cures
we make our noblest effort: amputate or wield   835
the healing iron, burn the cancer at the roots.

Now I go to my father's house –
I give the gods my right hand, my first salute.
The ones who sent me forth have brought me home.

> He starts down from the chariot, looks
> at CLYTAEMNESTRA, stops, and
> offers up a prayer.

Victory, you have sped my way before,   840
now speed me to the last.

> CLYTAEMNESTRA turns from the
> king to the CHORUS.

CLYTAEMNESTRA:

            Old nobility of Argos
gathered here, I am not ashamed to tell you
how I love the man. I am older,
and the fear dies away . . . I am human.
Nothing I say was learned from others.
This is my life, my ordeal, long as the siege   845
he laid at Troy and more demanding.
                   First,
when a woman sits at home and the man is gone,
the loneliness is terrible,
unconscionable . . .   850
and the rumours spread and fester,
a runner comes with something dreadful,
close on his heels the next and his news worse,
and they shout it out and the whole house can hear;
and wounds – if he took one wound for each report   855
to penetrate these walls, he's gashed like a dragnet,
more, if he had only died . . .
for each death that swelled his record, he could boast
like a triple-bodied Geryon risen from the grave,
'Three shrouds I dug from the earth, one for every body   860
that went down!'
             The rumours broke like fever,
broke and then rose higher. There were times
they cut me down and eased my throat from the noose.
I wavered between the living and the dead.

                   Turning to AGAMEMNON.

                 And so

our child is gone, not standing by our side,   865
the bond of our dearest pledges, mine and yours;
by all rights our child should be here . . .
Orestes. You seem startled.
You needn't be. Our loyal brother-in-arms
will take good care of him, Strophios the Phocian.   870
He warned from the start we court two griefs in one.
You risk all on the wars – and what if the people
rise up howling for the king, and anarchy
should dash our plans?
              Men, it is their nature,
trampling on the fighter once he's down.   875
Our child is gone. That is my self-defence
and it is true.
           For me, the tears that welled
like springs are dry. I have no tears to spare.
I'd watch till late at night, my eyes still burn,
I sobbed by the torch I lit for you alone.   880

                Glancing towards the palace.

I never let it die . . . but in my dreams
the high thin wail of a gnat would rouse me,
piercing like a trumpet – I could see you
suffer more than all
the hours that slept with me could ever bear.   885

I endured it all. And now, free of grief,
I would salute that man the watchdog of the fold,
the mainroyal, saving stay of the vessel,
rooted oak that thrusts the roof sky-high,
the father's one true heir.   890
Land at dawn to the shipwrecked past all hope,
light of the morning burning off the night of storm,
the cold clear spring to the parched horseman –
O the ecstasy, to flee the yoke of Fate!

It is right to use the titles he deserves.   895
Let envy keep her distance. We have suffered
long enough.

Reaching towards AGAMEMNON.

Come to me now, my dearest,
down from the car of war, but never set the foot
that stamped out Troy on earth again, my great one.

Women, why delay? You have your orders.   900
Pave his way with tapestries.

*They begin to spread the crimson
tapestries between the king and the
palace doors.*

Quickly.
Let the red stream flow and bear him home
to the home he never hoped to see – Justice,
lead him in!
              Leave all the rest to me.
The spirit within me never yields to sleep.   905
We will set things right, with the god's help.
We will do whatever Fate requires.

AGAMEMNON:
                                            There
is Leda's daughter, the keeper of my house.
And the speech to suit my absence, much too long.
But the praise that does us justice,   910
let it come from others, then we prize it.
                                            This –
you treat me like a woman. Grovelling, gaping up at me –
what am I, some barbarian peacocking out of Asia?
Never cross my path with robes and draw the lightning.
Never – only the gods deserve the pomps of honour   915
and the stiff brocades of fame. To walk on them . . .
I am human, and it makes my pulses stir
with dread.

                    Give me the tributes of a man
and not a god, a little earth to walk on,
not this gorgeous work.   920
There is no need to sound my reputation.
I have a sense of right and wrong, what's more –
heaven's proudest gift. Call no man blest
until he ends his life in peace, fulfilled.
If I can live by what I say, I have no fear.   925

CLYTAEMNESTRA:
One thing more. Be true to your ideals and tell me –

AGAMEMNON:
True to my ideals? Once I violate them I am lost.

CLYTAEMNESTRA:
Would you have sworn this act to god in a time of terror?

AGAMEMNON:
Yes, if a prophet called for a last, drastic rite.

CLYTAEMNESTRA:
But Priam – can you see him if he had your success?   930

AGAMEMNON:
Striding on the tapestries of god, I see him now.

CLYTAEMNESTRA:
And *you* fear the reproach of common men?

AGAMEMNON:
The voice of the people – aye, they have enormous power.

CLYTAEMNESTRA:
Perhaps, but where's the glory without a little gall?

AGAMEMNON:
And where's the woman in all this lust for glory?   935

CLYTAEMNESTRA:
But the great victor – it becomes him to give way.

AGAMEMNON:
Victory in this . . . war of ours, it means so much to you?

CLYTAEMNESTRA:
O give way! The power is yours if you surrender,
all of your own free will, to me!

AGAMEMNON:
     Enough.

If you are so determined –   940

Turning to the women, pointing to his
boots.

Let someone help me off with these at least.
Old slaves, they've stood me well.
     Hurry,
and while I tread his splendours dyed red in the sea,
may no god watch and strike me down with envy
from on high. I feel such shame –   945
to tread the life of the house, a kingdom's worth
of silver in the weaving.

He steps down from the chariot to the
tapestries and reveals CASSANDRA,
dressed in the sacred regalia, the fillets,
robes, and sceptre of Apollo.

    Done is done.
Escort this stranger in, be gentle.
Conquer with compassion. Then the gods
shine down upon you, gently. No one chooses 950
the yoke of slavery, not of one's free will –
and she least of all. The gift of the armies,
flower and pride of all the wealth we won,
she follows me from Troy.

     And now,
since you have brought me down with your insistence, 955
just this once I enter my father's house,
trampling royal crimson as I go.

He takes his first steps and pauses.

CLYTAEMNESTRA:
     There is the sea
and who will drain it dry? Precious as silver,
inexhaustible, ever-new, it breeds the more we reap it –
tides on tides of crimson dye our robes blood-red. 960
Our lives are based on wealth, my king,
the gods have seen to that.
Destitution, our house has never heard the word.
I would have sworn to tread on legacies of robes,
at one command from an oracle, deplete the house – 965
suffer the worst to bring that dear life back!

Encouraged, AGAMEMNON *strides to the entrance.*

When the root lives on, the new leaves come back,
spreading a dense shroud of shade across the house
to thwart the Dog Star's fury. So you return
to the father's hearth, you bring us warmth in winter 970
like the sun –
    And you are Zeus when Zeus
tramples the bitter virgin grape for new wine
and the welcome chill steals through the halls, at last
the master moves among the shadows of his house, fulfilled.

AGAMEMNON goes over the threshold;
the women gather up the tapestries
while CLYTAEMNESTRA *prays.*

Zeus, Zeus, master of all fulfilment, now fulfil our prayers –   975
speed our rites to their fulfilment once for all!

>   *She enters the palace, the doors close,*
>   *the old men huddle in terror.*

CHORUS:
Why, why does it rock me, never stops,
this terror beating down my heart,
          this seer that sees it all –
it beats its wings, uncalled unpaid   980
thrust on the lungs
the mercenary song beats on and on
singing a prophet's strain –
          and I can't throw it off
like dreams that make no sense,   985
and the strength drains
that filled the mind with trust,
and the years drift by and the driven sand
          has buried the mooring lines
that churned when the armoured squadrons cut for Troy . . .   990
and now I believe it, I can prove he's home,
          my own clear eyes for witness –
                              Agamemnon!

Still it's chanting, beating deep so deep in the heart
this dirge of the Furies, oh dear god,
not fit for the lyre, its own master   995
   it kills our spirit
kills our hopes
and it's real, true, no fantasy –
          stark terror whirls the brain
                    and the end is coming   1000
                        Justice comes to birth –
I pray my fears prove false and fall
and die and never come to birth!

Even exultant health, well we know,
     exceeds its limits, comes so near disease   1005
it can breach the wall between them.

Even a man's fate, held true on course,
     in a blinding flash rams some hidden reef;
but if caution only casts the pick of the cargo –
one well-balanced cast –   1010
the house will not go down, not outright;
labouring under its wealth of grief
the ship of state rides on.

Yes, and the great green bounty of god,
sown in the furrows year by year and reaped each fall   1015
can end the plague of famine.

But a man's life-blood
     is dark and mortal.
Once it wets the earth
what song can sing it back?   1020
Not even the master-healer
     who brought the dead to life –
Zeus stopped the man before he did more harm.

Oh, if only the gods had never forged
the chain that curbs our excess,   1025
     one man's fate curbing the next man's fate,
my heart would outrace my song, I'd pour out all I feel –
                    but no, I choke with anguish,
               mutter through the nights.
Never to ravel out a hope in time   1030
and the brain is swarming, burning –

>   CLYTAEMNESTRA *emerges from the*
>   *palace and goes to* CASSANDRA,
>   *impassive in the chariot.*

CLYTAEMNESTRA:
Won't you come inside? I mean you, Cassandra.
Zeus in all his mercy wants you to share
some victory libations with the house.
The slaves are flocking. Come, lead them   1035
up to the altar of the god who guards
our dearest treasures.
                              Down from the chariot,
this is no time for pride. Why even Heracles,
they say, was sold into bondage long ago,
he had to endure the bitter bread of slaves.   1040
But if the yoke descends on you, be grateful
for a master born and reared in ancient wealth.
Those who reap a harvest past their hopes
are merciless to their slaves.
                              From us   1045
you will receive what custom says is right.

                              CASSANDRA *remains impassive.*

LEADER:
It's *you* she is speaking to, it's all too clear.
You're caught in the nets of doom – obey
if you can obey, unless you cannot bear to.

CLYTAEMNESTRA:
Unless she's like a swallow, possessed
of her own barbaric song, strange, dark.   1050
I speak directly as I can – she must obey.

LEADER:
Go with her. Make the best of it, she's right.
Step down from the seat, obey her.

CLYTAEMNESTRA:
                              Do it *now* –
I have no time to spend outside. Already
the victims crowd the hearth, the Navelstone,   1055
to bless this day of joy I never hoped to see! –
our victims waiting for the fire and the knife,
and you,
if you want to taste our mystic rites, come now.
If my words can't reach you –

                    Turning to the LEADER.
                              Give her a sign,   1060
one of her exotic handsigns.

LEADER:
                    I think
the stranger needs an interpreter, someone clear.
She's like a wild creature, fresh caught.

CLYTAEMNESTRA:
                              She's mad,
her evil genius murmuring in her ears.
She comes from a *city* fresh caught.   1065
She must learn to take the cutting bridle
before she foams her spirit off in blood –
and that's the last I waste on her contempt!

                    Wheeling, re-entering the palace. The
                    LEADER *turns to* CASSANDRA, *who*
                    remains transfixed.

LEADER:
Not I, I pity her. I will be gentle.
Come, poor thing. Leave the empty chariot –   1070
Of your own free will try on the yoke of Fate.

CASSANDRA:
Aieeeeee! Earth – Mother –
                    Curse of the Earth – Apollo Apollo!

LEADER:
  Why cry to Apollo?
  He's not the god to call with sounds of mourning.

CASSANDRA:
  Aieeeeee! Earth – Mother –   1075
          Rape of the Earth – Apollo Apollo!

LEADER:
  Again, it's a bad omen.
  She cries for the god who wants no part of grief.

                    CASSANDRA steps from the chariot,
                    looks slowly towards the rooftops of
                    the palace.

CASSANDRA:
  God of the long road,
      Apollo *Apollo* my destroyer –
  you destroy me once, destroy me twice –   1080

LEADER:
  She's about to sense her own ordeal, I think.
  Slave that she is, the god lives on inside her.

CASSANDRA:
  God of the iron marches,
      Apollo *Apollo* my destroyer –
  where, where have you led me now? what house –   1085

LEADER:
  The house of Atreus and his sons. Really –
  don't you know? It's true, see for yourself.

CASSANDRA:
  No . . . the house that hates god,
      an echoing womb of guilt, kinsmen
          torturing kinsmen, severed heads,   1090
  slaughterhouse of heroes, soil streaming blood –

LEADER:
  A keen hound, this stranger.
  Trailing murder, and murder she will find.

CASSANDRA:
  See, my witnesses –
      I trust to them, to the babies   1095
          wailing, skewered on the sword,
  their flesh charred, the father gorging on their parts –

LEADER:
  We'd heard your fame as a seer,
  but no one looks for seers in Argos.

CASSANDRA:
      Oh no, what horror, what new plot,   1100
  new agony this? –
  it's growing, massing, deep in the house,
          a plot, a monstrous – *thing*
              to crush the loved ones, no,
      there is no cure, and rescue's far away and –   1105

LEADER:
  I can't read these signs; I knew the first,
  the city rings with them.

CASSANDRA:
      You, you godforsaken – you'd do *this*?
  The lord of your bed,
  you bathe him . . . his body glistens, then –   1110
          how to tell the climax? –
              comes so quickly, see,
      hand over hand shoots out, hauling ropes –
                              then lunge!

LEADER:
Still lost. Her riddles, her dark words of god –
I'm groping, helpless.

CASSANDRA:
                    No no, look *there*! –   1115
what's that? some net flung out of hell –
    No, *she* is the snare,
the bedmate, deathmate, murder's strong right arm!
        Let the insatiate discord in the race
rear up and shriek 'Avenge the victim – stone them dead!'   1120

LEADER:
What Fury is this? Why rouse it, lift its wailing
through the house? I hear you and lose hope.

CHORUS:
Drop by drop at the heart, the gold of life ebbs out.
    We are the old soldiers . . . wounds will come
with the crushing sunset of our lives.   1125
Death is close, and quick.

CASSANDRA:
                    Look out! *look out*! –
Ai, drag the great bull from the mate! –
    a thrash of robes, she traps him –
writhing –
        black horn glints, twists –
                        she gores him through!
        And now he buckles, look, the bath swirls red –   1130
There's stealth and murder in the cauldron, do you hear?

LEADER:
I'm no judge, I've little skill with the oracles,
but even I know danger when I hear it.

CHORUS:
What good are the oracles to men? Words, more words,
    and the hurt comes on us, endless words   1135
and a seer's techniques have brought us
terror and the truth.

CASSANDRA:
The agony – O I am breaking! – Fate's so hard,
    and the pain that floods my voice is mine alone.
Why have you brought me here, tormented as I am?   1140
Why, unless to die with him, why else?

LEADER AND CHORUS:
Mad with the rapture – god speeds you on
    to the song, the deathsong,
like the nightingale that broods on sorrow,
    mourns her son, her son,   1145
her life inspired with grief for him,
she lilts and shrills, dark bird that lives for night.

CASSANDRA:
The nightingale – O for a song, a fate like hers!
    The gods gave her a life of ease, swathed her in wings,
no tears, no wailing. The knife waits for me.   1150
They'll splay me on the iron's double edge.

LEADER AND CHORUS:
Why? – what god hurls you on, stroke on stroke
    to the long dying fall?
Why the horror clashing through your music,
    terror struck to song? –   1155
why the anguish, the wild dance?
Where do your words of god and grief begin?

CASSANDRA:
Ai, the wedding, wedding of Paris,
death to the loved ones. Oh Scamander,
you nursed my father ... once at your banks   1160
    I nursed and grew, and now at the banks
of Acheron, the stream that carries sorrow,
it seems I'll chant my prophecies too soon.

LEADER AND CHORUS:
    What are you saying? Wait, it's clear,
a child could see the truth, it wounds within,   1165
            like a bloody fang it tears –
I hear your destiny – breaking sobs,
        cries that stab the ears.

CASSANDRA:
    Oh the grief, the grief of the city
ripped to oblivion. Oh the victims,   1170
    the flocks my father burned at the wall,
    rich herds in flames ... no cure for the doom
that took the city after all, and I,
her last ember, I go down with her.

LEADER AND CHORUS:
    You cannot stop, your song goes on –   1175
    some spirit drops from the heights and treads you down
                and the brutal strain grows –
        your death-throes come and come and
            I cannot see the end!

CASSANDRA:
    Then off with the veils that hid the fresh young bride –   1180
    we will see the truth.
    Flare up once more, my oracle! Clear and sharp
    as the wind that blows towards the rising sun,
    I can feel a deeper swell now, gathering head
    to break at last and bring the dawn of grief.   1185

No more riddles. I will teach you.
Come, bear witness, run and hunt with me.
We trail the old barbaric works of slaughter.

These roofs – look up – there is a dancing troupe
that never leaves. And they have their harmony   1190
but it is harsh, their words are harsh, they drink
beyond the limit. Flushed on the blood of men
their spirit grows and none can turn away
their revel breeding in the veins – the Furies!
They cling to the house for life. They sing,   1195
sing of the frenzy that began it all,
strain rising on strain, showering curses
on the man who tramples on his brother's bed.

There. Have I hit the mark or not? Am I a fraud,
a fortune-teller babbling lies from door to door?   1200
Swear how well I know the ancient crimes
that live within this house.

LEADER:
                    And if I did?
Would an oath bind the wounds and heal us?
But you amaze me. Bred across the sea,
your language strange, and still you sense the truth   1205
as if you had been here.

CASSANDRA:
                    Apollo the Prophet
    introduced me to his gift.

LEADER:
    A *god* – and moved with love?

CASSANDRA:
    I was ashamed to tell this once,
    but now ...

LEADER:
        We spoil ourselves with scruples,   1210
    long as things go well.

CASSANDRA:
            He came like a wrestler,
    magnificent, took me down and breathed his fire
    through me and –

LEADER:
            You bore him a child?

CASSANDRA:
                I yielded,
    then at the climax I recoiled – I deceived Apollo!

LEADER:
    But the god's skills – they seized you even then?   1215

CASSANDRA:
    Even then I told my people all the grief to come.

LEADER:
    And Apollo's anger never touched you? – is it possible?

CASSANDRA:
    Once I betrayed him I could never be believed.

LEADER:
    We believe you. Your visions seem so true.

CASSANDRA:
                Aieeeee! –
    the pain, the terror! the birth-pang of the seer   1220
    who tells the truth –
            it whirls me, oh,
    the storm comes again, the crashing chords!

Look, you see them nestling at the threshold?
Young, young in the darkness like a dream,
like children really, yes, and their loved ones   1225
brought them down . . .
                their hands, they fill their hands
with their own flesh, they are serving it like food,
holding out their entrails . . . now it's clear,
I can see the armfuls of compassion, see the father
reach to taste and –
                For so much suffering,   1230
I tell you, someone plots revenge.
A lion who lacks a lion's heart,
he sprawled at home in the royal lair
and set a trap for the lord on his return.
My lord . . . I must wear his yoke, I am his slave.   1235
The lord of the men-of-war, he obliterated Troy –
he is so blind, so lost to that detestable hellhound
who pricks her ears and fawns and her tongue draws out
her glittering words of welcome –
                No, he cannot see
the stroke that Fury's hiding, stealth, and murder.   1240
What outrage – the woman kills the man!
                What to call
that . . . monster of Greece, and bring my quarry down?
Viper coiling back and forth?
                Some sea-witch? –
Scylla crouched in her rocky nest – nightmare of sailors?
Raging mother of death, storming deathless war against   1245
the ones she loves!
                And how she howled in triumph,
boundless outrage. Just as the tide of battle
broke her way, she seems to rejoice that he
is safe at home from war, saved for her.

Believe me if you will. What will it matter   1250
if you won't? It comes when it comes,
and soon you'll see it face to face
and say the seer was all too true.
You will be moved with pity.

LEADER:

                              Thyestes' feast,
the children's flesh – that I know,   1255
and the fear shudders through me. It's true,
real, no dark signs about it. I hear the rest
but it throws me off the scent.

CASSANDRA:

                              Agamemnon.
You will see him dead.

LEADER:

                         Peace, poor girl!
Put those words to sleep.

CASSANDRA:

                         No use,   1260
the Healer has no hand in this affair.

LEADER:
Not if it's true – but god forbid it is!

CASSANDRA:
You pray, and they close in to kill!

LEADER:
What man prepares this, this dreadful –

CASSANDRA:

                                       Man?
You *are* lost, to every word I've said.

LEADER:
                              Yes –   1265
I don't see who can bring the evil off.

CASSANDRA:
And yet I know my Greek, too well.

LEADER:
So does the Delphic oracle,
but he's hard to understand.

CASSANDRA:
                              His *fire*! –
sears me, sweeps me again – the torture!   1270
Apollo Lord of the Light, you burn,
you blind me –
                    Agony!
                              She is the lioness,
she rears on her hind legs, she beds with the wolf
when her lion king goes ranging –
                              she will kill me –
Ai, the torture!
                         She is mixing her drugs,   1275
adding a measure more of hate for me.
She gloats as she whets the sword for him.
He brought me home and we will pay in carnage.

Why mock yourself with these – trappings, the rod,
the god's wreath, his yoke around my throat?   1280
Before I die I'll tread you –

                         Ripping off her regalia, stamping it
                         into the ground.
                         Down, out,
die die die!
Now you're down. I've paid you back.
Look for another victim – I am free at last –
make her rich in all your curse and doom.

Staggering backwards as if wrestling
with a spirit tearing at her robes.

                                    See,   1285
Apollo himself, his fiery hands – I feel him again,
he's stripping off my robes, the Seer's robes!
And after he looked down and saw me mocked,
even in these, his glories, mortified by friends
I loved, and they hated me, they were so blind   1290
to their own demise –
                            I went from door to door,
I was wild with the god, I heard them call me
'Beggar! Wretch! Starve for bread in hell!'

And I endured it all, and now he will
extort me as his due. A seer for the Seer.   1295
He brings me here to die like this,
not to serve at my father's altar. No,
the block is waiting. The cleaver steams
with my life blood, the first blood drawn
for the king's last rites.

Regaining her composure and moving
to the altar.

                            We will die,   1300
but not without some honour from the gods.
There will come another to avenge us,
born to kill his mother, born
his father's champion. A wanderer, a fugitive
driven off his native land, he will come home   1305
to cope the stones of hate that menace all he loves.
The gods have sworn a monumental oath: as his father lies
upon the ground he draws him home with power like a prayer.

Then why so pitiful, why so many tears?
I have seen my city faring as she fared,   1310
and those who took her, judged by the gods,
faring as they fare. I must be brave.
It is my turn to die.

Approaching the doors.

I address you as the Gates of Death.   1315
I pray it comes with one clear stroke,
no convulsions, the pulses ebbing out
in gentle death. I'll close my eyes and sleep.

LEADER:
    So much pain, poor girl, and so much truth,
    you've told so much. But if you *see* it coming,
    clearly – how can you go to your own death,   1320
    like a beast to the altar driven on by god,
    and hold your head so high?

CASSANDRA:
                        No escape, my friends,
    not now.

LEADER:
            But the last hour should be savoured.

CASSANDRA:
    My time has come. Little to gain from flight.

LEADER:
    You're brave, believe me, full of gallant heart.   1325

CASSANDRA:
    Only the wretched go with praise like that.

LEADER:
    But to go nobly lends a man some grace.

CASSANDRA:
    My noble father – you and your noble children.

She nears the threshold and recoils,
groaning in revulsion.

LEADER:
What now? what terror flings you back?
Why? Unless some horror in the brain –

CASSANDRA:
                                        Murder.   1330
The house breathes with murder – bloody shambles!

LEADER:
No, no, only the victims at the hearth.

CASSANDRA:
I know that odour. I smell the open grave.

LEADER:
But the Syrian myrrh, it fills the halls with splendour,
can't you sense it?

CASSANDRA:
                    Well, I must go in now,   1335
mourning Agamemnon's death and mine.
Enough of life!

                            *Approaching the doors again and
                            crying out.*

            Friends – I cried out,
not from fear like a bird fresh caught,
but that you will testify to *how* I died.
When the queen, woman for woman, dies for me,   1340
and a man falls for the man who married grief.
That's all I ask, my friends. A stranger's gift
for one about to die.

LEADER:
                    Poor creature, you
and the end you see so clearly. I pity you.

CASSANDRA:
I'd like a few words more, a kind of dirge,   1345
it is my own. I pray to the sun,
the last light I'll see,
that when the avengers cut the assassins down
they will avenge me too, a slave who died,
an easy conquest.
                    Oh men, your destiny.   1350
When all is well a shadow can overturn it.
When trouble comes a stroke of the wet sponge,
and the picture's blotted out. And that,
I think that breaks the heart.

                            She goes through the doors.

CHORUS:
But the lust for power never dies –   1355
    men cannot have enough.
No one will lift a hand to send it
from his door, to give it warning,
'Power, never come again!'
Take this man: the gods in glory   1360
gave him Priam's city to plunder,
brought him home in splendour like a god.
But now if he must pay for the blood
    his fathers shed, and die for the deaths
he brought to pass, and bring more death   1365
to avenge his dying, show us one
    who boasts himself born free
of the raging angel, once he hears –

                            Cries break out within the palace.

AGAMEMNON:

                  Aagh!

Struck deep – the death-blow, deep –

LEADER:

                  Quiet. Cries,

but who? Someone's stabbed –

AGAMEMNON:

              Aaagh, again . . .   1370

second blow – struck home.

LEADER:

            The work is done,

you can feel it. The king, and the great cries –
Close ranks now, find the right way out.

              But the old men scatter, each speaks
              singly.

CHORUS:

– I say send out heralds, muster the guard,
  they'll save the house.

          – And I say rush in now,   1375
catch them red-handed – butchery running on their blades.

– Right with you, do something – now or never!

–Look at them, beating the drum for insurrection.

                – Yes,
we're wasting time. They rape the name of caution,
their hands will never sleep.

           – Not a plan in sight.   1380
Let men of action do the planning, too.

– I'm helpless. Who can raise the dead with words?

– What, drag out our lives? bow down to the tyrants,
  the ruin of the house?

           – Never, better to die
on your feet than live on your knees.

                – Wait,   1385
do we take the cries for signs, prophesy like seers
and give him up for dead?

             – No more suspicions,
not another word till we have proof.

             – Confusion
on all sides – one thing to do. See how it stands
with Agamemnon, once and for all we'll see –   1390

            He rushes at the doors. They open and
            reveal a silver cauldron that holds the
            body of AGAMEMNON *shrouded in*
            bloody robes, with the body of
            CASSANDRA *to his left and*
            CLYTAEMNESTRA *standing to his*
            right, sword in hand. She strides
            towards the chorus.

CLYTAEMNESTRA:

Words, endless words I've said to serve the moment –
now it makes me proud to tell the truth.
How else to prepare a death for deadly men
who seem to love you? How to rig the nets
of pain so high no man can overleap them?   1395

I brooded on this trial, this ancient blood feud
year by year. At last my hour came.
Here I stand and here I struck
and here my work is done.
I did it all. I don't deny it, no.   1400
He had no way to flee or fight his destiny –

Unwinding the robes from AGAMEM-
*NON's body, spreading them before
the altar where the old men cluster
around them, unified as a chorus once
again.*

our never-ending, all embracing net, I cast it
wide for the royal haul, I coil him round and round
in the wealth, the robes of doom, and then I strike him
once, twice, and at each stroke he cries in agony –   1405
he buckles at the knees and crashes here!
And when he's down I add the third, last blow,
to the Zeus who saves the dead beneath the ground
I send that third blow home in homage like a prayer.

So he goes down, and the life is bursting out of him –   1410
great sprays of blood, and the murderous shower
wounds me, dyes me black and I, I revel
like the Earth when the spring rains come down,
the blessed gifts of god, and the new green spear
splits the sheath and rips to birth in glory!   1415

So it stands, elders of Argos gathered here.
Rejoice if you can rejoice – I glory.
And if I'd pour upon his body the libation
it deserves, what wine could match my words?
It is right and more than right. He flooded   1420
the vessel of our proud house with misery,
with the vintage of the curse and now
he drains the dregs. My lord is home at last.

LEADER:
You appal me, you, your brazen words –
exulting over your fallen king.

CLYTAEMNESTRA:
                          And you,   1425
you try me like some desperate woman.
My heart is steel, well you know. Praise me,
blame me as you choose. It's all one.
Here is Agamemnon, my husband made a corpse
by this right hand – a masterpiece of Justice.   1430
Done is done.

CHORUS:
                          Woman! – what poison cropped from the soil
or strained from the heaving sea, what nursed you,
drove you insane? You brave the curse of Greece.
    You have cut away and flung away and now
the people cast you off to exile,   1435
broken with our hate.

CLYTAEMNESTRA:
                          And now you sentence me? –
you banish *me* from the city, curses breathing
down my neck? But *he* –
name one charge you brought against him then.
He thought no more of it than killing a beast,   1440
and his flocks were rich, teeming in their fleece,
but he sacrificed his own child, our daughter,
the agony I laboured into love
. to charm away the savage winds of Thrace.

Didn't the law demand you banish him? –   1445
hunt him from the land for all his guilt?
But now you witness what I've done
and you are ruthless judges.
                            Threaten away!
I'll meet you blow for blow. And if I fall
the throne is yours. If god decrees the reverse,   1450
late as it is, old men, you'll learn your place.

CHORUS:
    Mad with ambition,
            shrilling pride! – some Fury
crazed with the carnage rages through your brain –
    I can see the flecks of blood inflame your eyes!   1455
But vengeance comes – you'll lose your loved ones,
stroke for painful stroke.

CLYTAEMNESTRA:
    Then learn this, too, the power of my oaths.
By the child's Rights I brought to birth,
by Ruin, by Fury – the three gods to whom   1460
I sacrificed this man – I swear my hopes
will never walk the halls of fear so long
as Aegisthus lights the fire on my hearth.
Loyal to me as always, no small shield
to buttress my defiance.
                        Here he lies.   1465
He brutalized me. The darling of all
the golden girls who spread the gates of Troy.
And here his spear-prize . . . what wonders she beheld! –
the seer of Apollo shared my husband's bed,
his faithful mate who knelt at the rowing-benches,   1470
worked by every hand.
                        They have their rewards.
He as you know. And she, the swan of the gods
who lived to sing her latest, dying song –
his lover lies beside him.
She brings a fresh, voluptuous relish to my bed!   1475

CHORUS:
    Oh quickly, let me die –
no bed of labour, no, no wasting illness . . .
bear me off in the sleep that never ends,
            now that he has fallen,
now that our dearest shield lies battered –   1480
    Woman made him suffer,
            woman struck him down.

Helen the wild, maddening Helen,
one for the many, the thousand lives
you murdered under Troy, Now you are crowned   1485
with this consummate wreath, the blood
that lives in memory, glistens age to age.
Once in the halls she walked and she was war,
angel of war, angel of agony, lighting men to death.

CLYTAEMNESTRA:
    Pray no more for death, broken   1490
as you are. And never turn
    your wrath on her, call her
the scourge of men, the one alone
who destroyed a myriad Greek lives –
Helen the grief that never heals.   1495

CHORUS:
    The *spirit*! – you who tread
the house and the twinborn sons of Tantalus –
you empower the sisters, Fury's twins
            whose power tears the heart!
Perched on the corpse your carrion raven   1500
    glories in her hymn,
            her screaming hymn of pride.

CLYTAEMNESTRA:

Now you set your judgement straight,
you summon *him*! Three generations
   feed the spirit in the race.   1505
Deep in the veins he feeds our bloodlust –
aye, before the old wound dies
it ripens in another flow of blood.

CHORUS:

The great curse of the house, the spirit,
   dead weight wrath – and you can praise it!   1510
Praise the insatiate doom that feeds
relentless on our future and our sons.
Oh all through the will of Zeus,
the cause of all, the one who works it all.
   What comes to birth that is not Zeus?   1515
Our lives are pain, what part not come from god?

Oh my king, my captain,
how to salute you, how to mourn you?
What can I say with all my warmth and love?
Here in the black widow's web you lie,   1520
gasping out your life
in a sacrilegious death, dear god,
reduced to a slave's bed,
my king of men, yoked by stealth and Fate,
by the wife's hand that thrust the two-edged sword.   1525

CLYTAEMNESTRA:

You claim the work is mine, call me
Agamemnon's wife – you are so wrong.
Fleshed in the wife of this dead man,
   the spirit lives within me,
our savage ancient spirit of revenge.   1530
In return for Atreus' brutal feast
he kills his perfect son – for every
murdered child, a crowning sacrifice.

CHORUS:

And *you*, innocent of his murder?
   And who could swear to that? and how? . . .   1535
and still an avenger could arise,
bred by the fathers' crimes, and lend a hand.
He wades in the blood of brothers,
stream on mounting stream – black war erupts
   and where he strides revenge will stride,   1540
clots will mass for the young who were devoured.

Oh my king, my captain,
how to salute you, how to mourn you?
What can I say with all my warmth and love?
Here in the black widow's web you lie,   1545
gasping out your life
in a sacrilegious death, dear god,
reduced to a slave's bed,
my king of men, yoked by stealth and Fate,
by the wife's hand that thrust the two-edged sword.   1550

CLYTAEMNESTRA:

No slave's death, I think –
no stealthier than the death he dealt
our house and the offspring of our loins,
   Iphigeneia, girl of tears.
Act for act, wound for wound!   1555
Never exult in Hades, swordsman,
here you are repaid. By the sword
you did your work and by the sword you die.

CHORUS:

The mind reels – where to turn?
   All plans dashed, all hope! I cannot think . . .   1560
the roofs are toppling, I dread the drumbeat thunder
the heavy rains of blood will crush the house
the first light rains are over –
Justice brings new acts of agony, yes,
on new grindstones Fate is grinding sharp the sword of Justice. 1565

Earth, dear Earth,
if only you'd drawn me under
long before I saw him huddled
in the beaten silver bath.
Who will bury him, lift his dirge?   1570

                    Turning to CLYTAEMNESTRA.

You, can you dare *this*?
To kill your lord with your own hand
then mourn his soul with tributes, terrible tributes –
do his enormous works a great dishonour.
This god-like man, this hero. Who at the grave   1575
will sing his praises, pour the wine of tears?
Who will labour there with truth of heart?

CLYTAEMNESTRA:
    This is no concern of yours.
    The hand that bore and cut him down
    will hand him down to Mother Earth.   1580
    This house will never mourn for him.
        Only our daughter Iphigeneia,
    by all rights, will rush to meet him
    first at the churning straits,
    the ferry over tears –   1585
    she'll fling her arms around her father,
    pierce him with her love.

CHORUS:
        Each charge meets counter-charge.
        None can judge between them. Justice.
    The plunderer plundered, the killer pays the price. 1590
    The truth still holds while Zeus still holds the throne:
            the one who acts must suffer –
        that is law. Who can tear from the veins
    the bad seed, the curse? The race is welded to its ruin.

CLYTAEMNESTRA:
    At last you see the future and the truth!   1595
    But I will swear a pact with the spirit
    born within us. I embrace his works,
    cruel as they are but done at last,
        if he will leave our house
    in the future, bleed another line   1600
    with kinsmen murdering kinsmen.
    Whatever he may ask. A few things
    are all I need, once I have purged
    our fury to destroy each other –
        purged it from our halls.

        AEGISTHUS *has emerged from the*
        palace with his bodyguard and stands
        triumphant over the body of
        AGAMEMNON.

AEGISTHUS:
                    O what a brilliant day   1605
    it is for vengeance! Now I can say once more
    there are gods in heaven avenging men,
    blazing down on all the crimes of earth.
    Now at last I see this man brought down
    in the Furies' tangling robes. It feasts my eyes –   1610
    he pays for the plot his father's hand contrived.

    Atreus, this man's father, was king of Argos.
    My father, Thyestes – let me make this clear –
    Atreus' brother challenged him for the crown,
    and Atreus drove him out of house and home   1615
    then lured him back, and home Thyestes came,
    poor man, a suppliant to his own hearth,
    to pray that Fate might save him.
                    So it did.
    There was no dying, no staining our native ground
    with *his* blood. Thyestes was the guest,   1620
    and this man's godless father –

Pointing to AGAMEMNON.

the zeal of the host outstripping a brother's love,
made my father a feast that seemed a feast for gods,
a love feast of his children's flesh.
　　　　　　　　He cuts
the extremities, feet and delicate hands　　　　　1625
into small pieces, scatters them over the dish
and serves it to Thyestes throned on high.
He picks at the flesh he cannot recognize,
the soul of innocence eating the food of ruin –
look,

Pointing to the bodies at his feet.

　　　that feeds upon the house! And then,　　　　1630
when he sees the monstrous thing he's done, he shrieks,
he reels back head first and vomits up that butchery,
tramples the feast – brings down the curse of Justice:
'Crash to ruin, all the race of Pleisthenes, crash down!'

So you see him, down. And I, the weaver of Justice,　1635
plotted out the kill. Atreus drove us into exile,
my struggling father and I, a babe-in arms,
his last son, but I became a man
and Justice brought me home. I was abroad
but I reached out and seized my man,　　　　　1640
link by link I clamped the fatal scheme
together. Now I could die gladly, even I –
now I see this monster in the nets of Justice.

LEADER:
Aegisthus, you revel in pain – you sicken me.
You say you killed the king in cold blood,　　　1645
single-handed planned his pitiful death?
I say there's no escape. In the hour of judgement,
trust to this, your head will meet the people's
rocks and curses.

AEGISTHUS:
　　　　　　　　You say! you slaves at the oars –
while the master on the benches cracks the whip?　　1650
You'll learn, in your late age, how much it hurts
to teach old bones their place. We have techniques –
chains and the pangs of hunger,
two effective teachers, excellent healers.
They can even cure old men of pride and gall.　　1655
Look – can't you see? The more you kick
against the pricks, the more you suffer.

LEADER:
You, pathetic –
the king had just returned from battle.
You waited out the war and fouled his lair,　　　1660
you planned my great commander's fall.

AEGISTHUS:
　　　　　　　　　　Talk on –
you'll scream for every word, my little Orpheus.
We'll see if the world comes dancing to your song,
your absurd barking – snarl your breath away!
I'll make you dance, I'll bring you all to heel.　　1665

LEADER:
You rule Argos? You who schemed his death
but cringed to cut him down with your own hand?

AEGISTHUS:
The treachery was the woman's work, clearly.
I was a marked man, his enemy for ages.
But I will use his riches, stop at nothing　　　1670
to civilize his people. All but the rebel:
him I'll yoke and break –
no cornfed colt, running free in the traces.
Hunger, ruthless mate of the dark torture-chamber,
trains her eyes upon him till he drops!　　　1675

LEADER:

    Coward, why not kill the man yourself?
Why did the woman, the corruption of Greece
and the gods of Greece, have to bring him down?
Orestes –
         If he still sees the light of day,
bring him home, good Fates, home to kill
this pair at last. Our champion in slaughter!   1680

AEGISTHUS:

    Bent on insolence? Well, you'll learn, quickly.
At them, men – you have your work at hand!

His men draw swords; the old men
take up their sticks.

LEADER:

    At them, fist at the hilt, to the last man –

AEGISTHUS:

    Fist at the hilt, I'm not afraid to die.   1685

LEADER:

    It's death you want and death you'll have –
we'll make that word your last.

CLYTAEMNESTRA moves between
them, restraining AEGISTHUS.

CLYTAEMNESTRA:

         No more, my dearest,
no more grief. We have too much to reap
right here, our mighty harvest of despair.
Our lives are based on pain. No bloodshed now.   1690

Fathers of Argos, turn for home before you act
and suffer for it. What we did was destiny.
If we could end the suffering, how we would rejoice.
The spirit's brutal hoof has struck our heart.
And that is what a woman has to say.   1695
Can you accept the truth?

CLYTAEMNESTRA turns to leave.

AEGISTHUS:

         But these . . . mouths
that bloom in filth – spitting insults in my teeth.
You tempt your fates, you insubordinate dogs –
to hurl abuse at me, your master!

LEADER:

         No Greek
worth his salt would grovel at your feet.   1700

AEGISTHUS:

    I – I'll stalk you all your days!

LEADER:

    Not if the spirit brings Orestes home.

AEGISTHUS:

    Exiles feed on hope – well I know.

LEADER:

         More,
gorge yourself to bursting – soil justice, while you can.

AEGISTHUS:

    I promise you, you'll pay, old fools – in good time, too!   1705

LEADER:

    Strut on your own dunghill, you cock beside your mate.

CLYTAEMNESTRA:

    Let them howl – they're impotent. You and I have power now.
We will set the house in order once for all.

They enter the palace; the great doors
close behind them; the old men disband
and wander off.

Miss Weisse's Own Physics Textbook

An Introduction to Momentum

Momentum
is
MASS in *Motion*

The equation for momentum follows the definition.

momentum is mass in motion

$$P \quad = \quad m \quad \times \quad \vec{v}$$

↑

The variable for momentum is "P".
Sometimes you'll see Capital P,
I am going to use little p. You choose!

Now that we've identified the variable,
let's talk about the unit of momentum.

$$P = mass \times velocity$$
$$\frac{kg \cdot m}{s} = kg \quad \times \quad m/s$$

Yes, the unit of momentum is $\frac{kg \cdot m}{s}$, OR...

Another unit of momentum is N·s. WHY?

Let's think about a Newton (N).

→ A Newton is the unit of Force

→ Force = mass × acceleration ← I hope you notice how similar this is to the momentum equation...

$$N \quad = \quad kg \quad \times \quad m/s^2$$

$$N \quad = \quad \frac{kg \cdot m}{s^2}$$

$$N \quad = \quad \frac{kg \cdot m}{s} \cdot \frac{1}{s}$$

PAUSE! Don't look at the next sheet yet!

Can you turn this last statement into the units of momentum and show that another unit for momentum is N·s?

HINT! If you think this is simple, IT IS!
If you think this is difficult, use Algebra!

What does momentum mean?

This is a difficult question to answer succinctly. So, I'll use math!

$$P \propto m$$

momentum is directly proportional to mass

- If $\uparrow P$, $\uparrow m$
- If $\downarrow P$, $\downarrow m$

(assuming $\vec{v}$ is constant)

notice! the larger slope lines have larger velocities. So, the more velocity, the more the momentum.
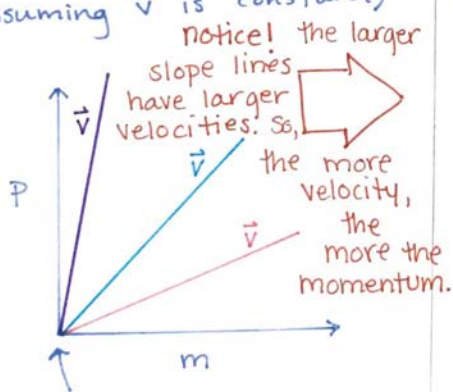
if there is no mass, there is no momentum!

(aka, there is no mass to be in motion)

$$P \propto \vec{v}$$

momentum is directly proportional to velocity

- If $\uparrow P$, $\uparrow \vec{v}$
- If $\downarrow P$, $\downarrow \vec{v}$

(assuming mass is constant)

notice! the larger the slope, the larger the mass. So, more mass means more momentum
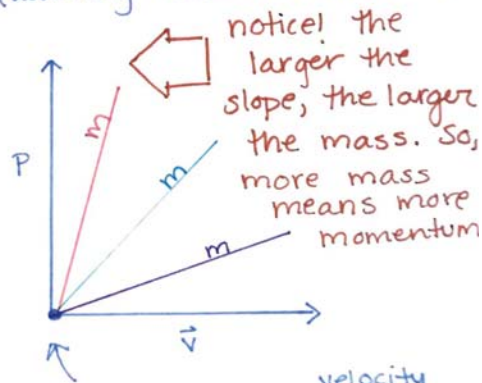
if there is no velocity, there is no momentum!

(i.e., the mass is not moving)

finally, when it comes to describing momentum

$$m \propto \frac{1}{\vec{v}}$$

mass is INVERSERY proportional to velocity.

- If $\uparrow m$, $\downarrow \vec{v}$
- If $\downarrow m$, $\uparrow \vec{v}$

(assuming momentum is constant)

Let's Try Some Problems (try to answer & justify each yourself)

1. A truck and a bee are moving at the same velocity, 20 m/s.

a) Which has more momentum? Why?

b) How much momentum does each have if their masses are 10,000 kg and 0.5 kg?

c) How slow would the truck have to move to have the same momentum as the bee? The bee is still travelling at 20 m/s.

Solutions

a)

Truck	Bee
P =	P =
	m =
m =	$\vec{v} = 20$m/s
$\boxed{\vec{v} = 20\text{m/s}}$	

2nd way to think about it

Again, the velocities are constant so we're looking at the P vs. m graph

TRUCK'S P

$(\frac{kg \cdot m}{s})$

Bee's P

BEE   m TRUCK
(kg)
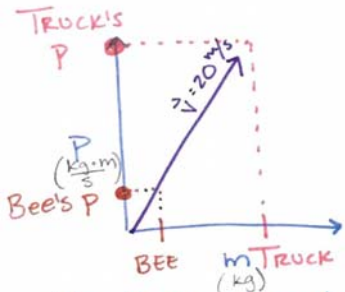
We **know** the truck has more mass (look @ the mass-axis) and the graph shows that the truck then has more momentum (look at the p-axis)

1 way to think about it

Because the velocity is the same (constant velocity) we should compare their masses. We're not **told** their masses, but we **KNOW** a truck has more mass than a bee.

$$P \propto m$$

$$\uparrow m, \uparrow P$$

∴ The TRUCK has more momentum bc

$$m_{truck} > m_{bee}$$

---

b)

Truck	Bee
P =	P =
m = 10,000kg	m = 0.5 kg
$\vec{v} = 20$m/s	$\vec{v} = 20$m/s

$$P_{truck} = m \cdot \vec{v}$$
$$= (10,000\text{kg})(20\text{m/s})$$
$$= 200,000 \; \frac{kg \cdot m}{s}$$
$$= 200,000 \; N \cdot s$$

$$P_{bee} = m \cdot \vec{v}$$
$$= (0.5\text{kg})(20\text{m/s})$$
$$= 10 \; \frac{kg \cdot m}{s}$$
$$= \boxed{10 \; N \cdot s}$$

c)

Truck		Bee
P = 10 N·s	←SAME!→	P = 10 N·s
m = 10,000 kg		m = 0.5 kg
$\vec{v} =$		$\vec{v} = 20$m/s

$$\frac{P}{m} = \frac{m \cdot \vec{v}}{m}$$

$$\vec{v} = \frac{P}{m}$$

$$\vec{v} = \frac{10 \; kg\cdot m/s}{10,000 \; kg} = 0.001 \; m/s$$

Impulse (J)

Momentum (mass in motion) is $P = mv$.

I made a side comment in yesterday's notes suggesting the equation $F = ma$ is similar to $p = mv$. Do you see why?

An Introduction to Impulse

→ momentum and force are both descriptions of the motion of massive objects.

$$P = m \times \vec{v}$$

$$F_{net} = m \times \vec{a}$$

→ $\vec{a}$ is the $\Delta \vec{v}$ over time

→ both $\vec{a}$ and $\vec{v}$ describe the motion of objects (masses!)

→ Both momentum and force are directly proportional to mass.

→ Force describes changes in motion.

→ Both increase/decrease with increased/decreased mass

→ Momentum describes motion at an instant.

→ Both are directly proportional to mass and something about that mass's motion.

→ For both p and F the mass of the object affects the motion of the object

Furthermore, their units are <u>SO</u> similar!

$$P = m \times \vec{v}$$

$$F_{net} = m \times \vec{a}$$

$$\frac{kg \cdot m}{s} = kg \times \frac{m}{s}$$

$$N = kg \times \frac{m}{s^2}$$

$$N \cdot s = \frac{kg \cdot m}{s^2} \cdot s = \frac{kg \cdot m}{s}$$

$$N = \frac{kg \cdot m}{s^2}$$

Now, you may be wondering why the title of these notes is "Impulse." Let's get to it —

As just shown with the units, the difference between momentum and force is a factor of time.

$$P = F \cdot (s) \text{ *}$$

This is NOT an official equation! Do not use it on assignments!

$$(N \cdot s) = (N) \cdot (s) \quad \checkmark$$

$$\frac{kg \cdot m}{s} = \left(\frac{kg \cdot m}{s^2}\right) \cdot (s)$$

$$= \frac{kg \cdot m}{s} \quad \checkmark$$

Also mentioned was the fact that $\vec{a}$ is $\frac{\Delta \vec{v}}{\Delta t}$.
Do you see what I see???

Let's rewrite the Force equation, A FACTOR OF TIME! with this factor of time!

$$F_{net} = m \cdot \vec{a}$$
$$F_{net} = m \cdot \frac{\Delta \vec{v}}{\Delta t}$$

$$\vec{a} = \frac{\Delta \vec{v}}{\Delta t}$$

Now, if we multiply both sides by Δt...

$$\Delta t \times F_{net} = m \cdot \frac{\Delta \vec{v}}{\cancel{\Delta t}} \times \cancel{\Delta t}$$

We get something that looks like momentum and something that looks like force × time!

$$F_{net} \Delta t = m \Delta \vec{v}$$
$$= \Delta (m\vec{v})$$
$$F_{net} \Delta t = \Delta p = \text{IMPULSE}$$

We finally made it! Impulse is a change in momentum OR force × time.
And the variable for impulse is J. ("I" is already taken by the measurement of current.)

$$\boxed{J = F_{net} \Delta t = \Delta p}$$

And the units of Impulse? The same as momentum. Try to prove it!

Now, let me remind you (for the millionth time) that a Δ in ANYTHING = final - initial.

$$J = F_{net}(t_f - t_i) = P_f - P_i = mv_f - mv_i = m(v_f - v_i$$

we almost always assume $t_i = 0$ unless told otherwise

EXAMPLE PROBLEMS

1. A 50kg mass is sitting on a frictionless surface. An unknown constant force pushes the mass for 2 seconds until the mass reaches a velocity of 3 m/s.

a) Draw a before & after picture. List what you know

$\vec{v_i} = 0$ m/s

$\boxed{50kg}$

$\vec{v_f} = 3$ m/s

F = ? $\rightarrow \boxed{50kg}$

$\vec{v_i} = 0$ m/s
$\vec{v_f} = 3$ m/s
$\Delta t = 2s$
$m = 50kg$
$F = ?$
$\Delta p = ?$

b) What is the initial momentum of the mass?

$p_i = mv_i$
$= (50kg)(0 m/s)$
$\boxed{p_i = 0 \frac{kg \cdot m}{s}}$

c) What is the final momentum of the mass?

$p_f = mv_f$
$= (50kg)(3 m/s)$
$\boxed{p_f = 150 \frac{kg \cdot m}{s}}$

d) & e) on next page $\downarrow$

d) What was the force acting on the mass?

$$\frac{F_{net} \cdot \Delta t}{\Delta t} = \frac{\Delta p}{\Delta t}$$

$$F_{net} = \frac{\Delta p}{\Delta t}$$

$$= \frac{p_f - p_i}{\Delta t} \quad \leftarrow \text{we know all these pieces of information!}$$

$$= \frac{150 \frac{kg \cdot m}{s} - 0 \frac{kg \cdot m}{s}}{2s}$$

$$F_{net} = 75 \frac{kg \cdot m}{s^2}$$

$$\boxed{F_{net} = 75 \text{ N}}$$

e) What was the impulse on the mass?

$J = F_{net} \Delta t$ OR $J = \Delta p$

$= 75N \cdot 2s$ $= 150 \frac{kg \cdot m}{s} - 0 \frac{kg \cdot m}{s}$

$\boxed{J = 150 \text{ N} \cdot s} \checkmark$ $J = 150 \frac{kg \cdot m}{s} \checkmark$

either method works!

Momentum, Impulse, And Everything
  We Know About the Motion of Objects

Momentum, Impulse, And Everything We Know About The Motion of Objects

I'm hoping in studying Monday & Tuesday's notes on momentum and impulse you realized these new measurements of motion are related to all the measurements (and laws) we already know.

So, today we will use THE KINEMATIC EQUATIONS and NEWTON'S LAWS along with momentum and impulse to solve more involved ~~eq~~ problems.

First, let's review:

KINEMATIC EQUATIONS

$$V_f = V_i + a \Delta t$$

$$V_f^2 = V_i^2 + 2a \Delta x$$

$$\Delta x = \frac{1}{2}(V_i + V_f)\Delta t$$

$$\Delta x = V_i \Delta t + \frac{1}{2} a (\Delta t)^2$$

NEWTON'S LAWS

LAW 1: An object in motion stays in motion, an object at rest stays at rest, unless acted on by an outside force.

LAW 2: Acceleration is directly proportional to Force and inversely proportional to mass

LAW 3: For every action (force) there is an equal and opposite reaction.

Problem 1

A 0.5 kg ball is in free fall from a height of 7.2m. Determine the Impulse.

1st let's list what is given, AND hidden information.

Impulse/Momentum Info

$m = 0.5 kg$
$V_i = 0 ^m/s$
$V_f = ?$
$\Delta p = ?$
$F_{net} = m\vec{g} = (0.5 kg)(10 m/s^2)$
$\quad = 5 N$

$\Delta t = ?$
$\boxed{J = ?}$

Kinematic Eqn Info

$V_i = 0 ^m/s$
$V_f = ?$
$a = -10 m/s^2$
$\Delta y = -7.2 m$
$\Delta t = ?$

2nd write important equations and determine what information we need to find first

$$J = F_{net} \cdot \Delta t = m\Delta v = m(V_f - V_i)$$
$$\qquad\quad \uparrow \qquad\qquad\qquad \uparrow$$
$$\qquad\quad ? \qquad\qquad\qquad ?$$

I either need to find time of final velocity
Let's do both!

Finding time

$\Delta y = V_i \Delta t + \frac{1}{2}a(\Delta t^2)$
$-7.2 = 0 \cancel{t} + \frac{1}{2}(-10)\Delta t^2$
$\sqrt{\dfrac{-7.5}{-5}} = \sqrt{\cancel{}\Delta t^2}$
$t = 1.224 \cancel{}$

$V_f^2 = V_i^2 + 2a\Delta y$
$V_f^2 = 0 + 2(-10)(-7.2)$
$\quad = 20(7.2)$
$V_f = \sqrt{144}$
$V_f = 12 ^m/s$

3rd Solve for Impulse

$J = F_{net} \cdot \Delta t$
$\quad = (5N)(1.224 s)$
$\boxed{J = 6 N \cdot s} \checkmark$

$J = m(\Delta v)$
$\quad = (0.5 kg)(12-0)$
$\quad = 6 N \cdot s \checkmark$

Problem 2

A 5g ball in free fall hits the floor and bounces back up. The velocity of the ball before hitting the floor is $6 ^m/s$. The velocity after hitting the floor and bouncing is $4 ^m/s$. Determine the impulse and the force the ball exerted on the ground.

1st make your lists

P/J info

$m = 5g = 0.005 kg$
$V_i = -6 ^m/s \leftarrow$ negative direction
$V_f = 4 ^m/s$
$F_{net} = ?$
$\Delta p = ?$
$J = ?$
$\Delta t = ?$

kinematic info

$V_i = -6 ^m/s$
$V_f = 4 ^m/s$
$\Delta y = ?$
$a = -10 m/s^2$
$\Delta t = ?$

2nd determine necessary equations and find necessary information (thinking only about finding J right now)

$$J = F_{net} \cdot \Delta t = m\Delta v$$
$$\qquad\qquad \downarrow$$
$$\qquad\qquad ?$$

We have this information!

3rd solve!

$J = (.005 kg)(4 ^m/s (-6 ^m/s)) = (.005)(10) = 0.05 \frac{kg \cdot m}{s}$

We still need to find the force the ball exerted on the ground.

$$J = F_{net} \cdot \boxed{\Delta t}$$
$$\uparrow$$

this F_{net} is the force acting on the ball
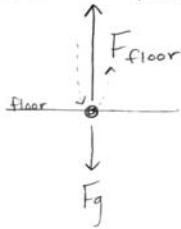
floor

$F_{net} = F_{floor} - F_g$

$F_g = m\vec{g}$
$\quad = (0.005g)(10^m/s^2)$
$\quad = 0.05 N$

<u>BUT</u>, according to NEWTON'S 3RD LAW, the force of the floor on the ball is equal and opposite to the ball on the floor!

$$F_{floor \rightarrow ball} = - F_{ball \rightarrow floor}$$

①   ②   ③

<u>So</u> we need to find Δt to find F_{net} to find $F_{floor \rightarrow ball}$.

① Let's just say this information was given...

$t = 0.0003s$

② Finding F_{net}

$J = F_{net} \cdot \Delta t$

$F_{net} = \dfrac{J}{\Delta t}$

$\quad = \dfrac{0.05 \frac{kg \cdot m}{s}}{0.0003s}$

$F_{net} = 166.66667 N$

③ Find $F_{floor \rightarrow ball}$

$F_{net} = F_{floor \rightarrow ball} - F_g$

$166.7 N = F_{floor \rightarrow ball} - 0.05N$

$F_{floor \rightarrow ball} = 166.6667N + 0.05N$

$\quad = 166.7 N$

$$\boxed{F_{ball \rightarrow floor} = -166.7 N}$$

<u>Example 5</u>   **Using Newton's Law of Cooling**

A cheesecake is taken out of the oven with an ideal internal temperature of 165°F, and is placed into a 35°F refrigerator. After 10 minutes, the cheesecake has cooled to 150°F. If we must wait until the cheesecake has cooled to 70°F before we eat it, how long will we have to wait?

Solution   Because the surrounding air temperature in the refrigerator is 35 degrees, the cheesecake's temperature will decay exponentially toward 35, following the equation

$$T(t) = Ae^{kt} + 35$$

We know the initial temperature was 165, so $T(0) = 165$.

$165 = Ae^{k0} + 35$	Substitute (0, 165).
$A = 130$	Solve for A.

We were given another data point, $T(10) = 150$, which we can use to solve for k.

$150 = 130e^{k10} + 35$	Substitute (10, 150).
$115 = 130e^{k10}$	Subtract 35.
$\dfrac{115}{130} = e^{10k}$	Divide by 130.
$\ln\left(\dfrac{115}{130}\right) = 10k$	Take the natural log of both sides.
$k = \dfrac{\ln\left(\dfrac{115}{130}\right)}{10} \approx -0.0123$	Divide by the coefficient of k.

This gives us the equation for the cooling of the cheesecake: $T(t) = 130e^{-0.0123t} + 35$.

Now we can solve for the time it will take for the temperature to cool to 70 degrees.

$70 = 130e^{-0.0123t} + 35$	Substitute in 70 for $T(t)$.
$35 = 130e^{-0.0123t}$	Subtract 35.
$\dfrac{35}{130} = e^{-0.0123t}$	Divide by 130.
$\ln\left(\dfrac{35}{130}\right) = -0.0123t$	Take the natural log of both sides
$t = \dfrac{\ln\left(\dfrac{35}{130}\right)}{-0.0123} \approx 106.68$	Divide by the coefficient of t.

It will take about 107 minutes, or one hour and 47 minutes, for the cheesecake to cool to 70°F.

....

Try It #17

A pitcher of water at 40 degrees Fahrenheit is placed into a 70 degree room. One hour later, the temperature has risen to 45 degrees. How long will it take for the temperature to rise to 60 degrees?

....

Using Logistic Growth Models

Exponential growth cannot continue forever. Exponential models, while they may be useful in the short term, tend to fall apart the longer they continue. Consider an aspiring writer who writes a single line on day one and plans to double the number of lines she writes each day for a month. By the end of the month, she must write over 17 billion lines, or one-half-billion pages. It is impractical, if not impossible, for anyone to write that much in such a short period of time. Eventually, an exponential model must begin to approach some limiting value, and then the growth is forced to slow. For this reason, it is often better to use a model with an upper bound instead of an exponential growth model, though the exponential growth model is still useful over a short term, before approaching the limiting value.

The **logistic growth model** is approximately exponential at first, but it has a reduced rate of growth as the output approaches the model's upper bound, called the **carrying capacity**. For constants a, b, and c, the logistic growth of a population over time x is represented by the model

$$f(x) = \frac{c}{1 + ae^{-bx}}$$

The graph in **Figure 6** shows how the growth rate changes over time. The graph increases from left to right, but the growth rate only increases until it reaches its point of maximum growth rate, at which point the rate of increase decreases.
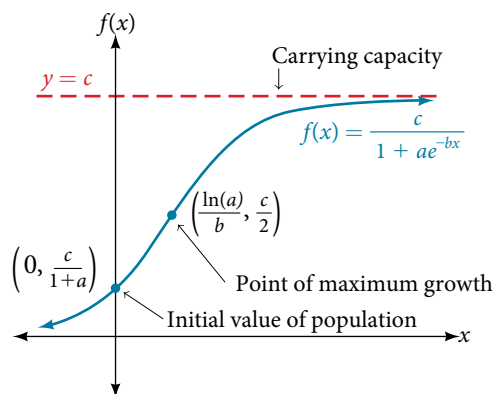
Figure 6

---

logistic growth

The logistic growth model is

$$f(x) = \frac{c}{1 + ae^{-bx}}$$

where

- $\dfrac{c}{1 + a}$ is the initial value
- c is the *carrying capacity, or limiting value*
- b is a constant determined by the rate of growth.

Example 6   Using the Logistic-Growth Model

An influenza epidemic spreads through a population rapidly, at a rate that depends on two factors: The more people who have the flu, the more rapidly it spreads, and also the more uninfected people there are, the more rapidly it spreads. These two factors make the logistic model a good one to study the spread of communicable diseases. And, clearly, there is a maximum value for the number of people infected: the entire population.

For example, at time $t = 0$ there is one person in a community of 1,000 people who has the flu. So, in that community, at most 1,000 people can have the flu. Researchers find that for this particular strain of the flu, the logistic growth constant is $b = 0.6030$. Estimate the number of people in this community who will have had this flu after ten days. Predict how many people in this community will have had this flu after a long period of time has passed.

Solution   We substitute the given data into the logistic growth model

$$f(x) = \frac{c}{1 + ae^{-bx}}$$

Because at most 1,000 people, the entire population of the community, can get the flu, we know the limiting value is $c = 1000$. To find a, we use the formula that the number of cases at time $t = 0$ is $\dfrac{c}{1 + a} = 1$, from which it follows that $a = 999$. This model predicts that, after ten days, the number of people who have had the flu is $f(x) = \dfrac{1000}{1 + 999e^{-0.6030x}} \approx 293.8$. Because the actual number must be a whole number (a person has either had the flu or not) we round to 294. In the long term, the number of people who will contract the flu is the limiting value, $c = 1000$.

Analysis   Remember that, because we are dealing with a virus, we cannot predict with certainty the number of people infected. The model only approximates the number of people infected and will not give us exact or actual values. The graph in **Figure 7** gives a good picture of how this model fits the data.
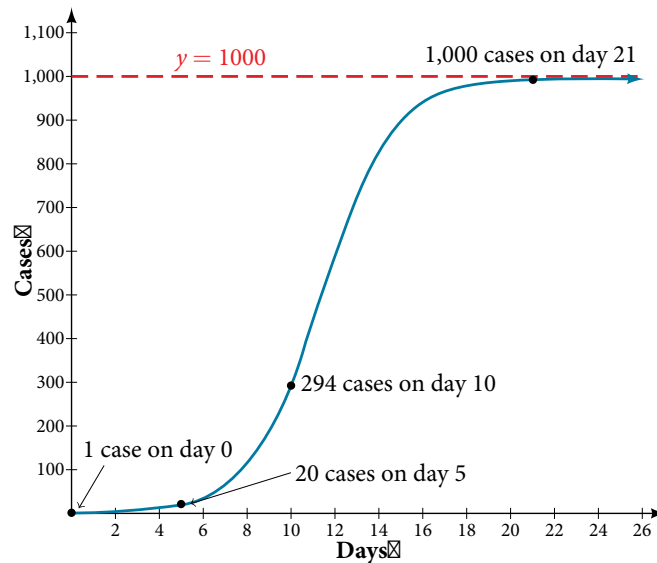
Figure 7 The graph of $f(x) = \dfrac{1000}{1 + 999e^{-0.6030x}}$

Try It #18

Using the model in **Example 6**, estimate the number of cases of flu on day 15.

Choosing an Appropriate Model for Data

Now that we have discussed various mathematical models, we need to learn how to choose the appropriate model for the raw data we have. Many factors influence the choice of a mathematical model, among which are experience, scientific laws, and patterns in the data itself. Not all data can be described by elementary functions. Sometimes, a function is chosen that approximates the data over a given interval. For instance, suppose data were gathered on the number of homes bought in the United States from the years 1960 to 2013. After plotting these data in a scatter plot, we notice that the shape of the data from the years 2000 to 2013 follow a logarithmic curve. We could restrict the interval from 2000 to 2010, apply regression analysis using a logarithmic model, and use it to predict the number of home buyers for the year 2015.

Three kinds of functions that are often useful in mathematical models are linear functions, exponential functions, and logarithmic functions. If the data lies on a straight line, or seems to lie approximately along a straight line, a linear model may be best. If the data is non-linear, we often consider an exponential or logarithmic model, though other models, such as quadratic models, may also be considered.

In choosing between an exponential model and a logarithmic model, we look at the way the data curves. This is called the concavity. If we draw a line between two data points, and all (or most) of the data between those two points lies above that line, we say the curve is concave down. We can think of it as a bowl that bends downward and therefore cannot hold water. If all (or most) of the data between those two points lies below the line, we say the curve is concave up. In this case, we can think of a bowl that bends upward and can therefore hold water. An exponential curve, whether rising or falling, whether representing growth or decay, is always concave up away from its horizontal asymptote. A logarithmic curve is always concave away from its vertical asymptote. In the case of positive data, which is the most common case, an exponential curve is always concave up, and a logarithmic curve always concave down.

A logistic curve changes concavity. It starts out concave up and then changes to concave down beyond a certain point, called a point of inflection.

After using the graph to help us choose a type of function to use as a model, we substitute points, and solve to find the parameters. We reduce round-off error by choosing points as far apart as possible.

Example 7   **Choosing a Mathematical Model**

Does a linear, exponential, logarithmic, or logistic model best fit the values listed in **Table 1**? Find the model, and use a graph to check your choice.

x	1	2	3	4	5	6	7	8	9
y	0	1.386	2.197	2.773	3.219	3.584	3.892	4.159	4.394

Table 1

Solution   First, plot the data on a graph as in **Figure 8**. For the purpose of graphing, round the data to two significant digits.
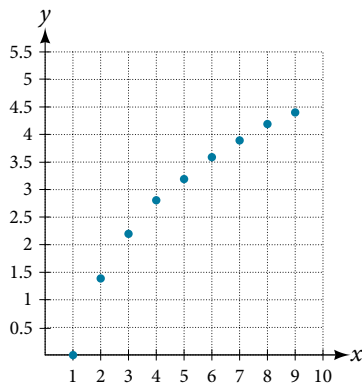
Figure 8

Clearly, the points do not lie on a straight line, so we reject a linear model. If we draw a line between any two of the points, most or all of the points between those two points lie above the line, so the graph is concave down, suggesting a logarithmic model. We can try $y = a\ln(bx)$. Plugging in the first point, (1,0), gives $0 = a\ln b$.

We reject the case that $a = 0$ (if it were, all outputs would be 0), so we know $\ln(b) = 0$. Thus $b = 1$ and $y = a\ln(x)$. Next we can use the point (9,4.394) to solve for a:

$$y = a\ln(x)$$

$$4.394 = a\ln(9)$$

$$a = \frac{4.394}{\ln(9)}$$

Because $a = \dfrac{4.394}{\ln(9)} \approx 2$, an appropriate model for the data is $y = 2\ln(x)$.

To check the accuracy of the model, we graph the function together with the given points as in **Figure 9**.
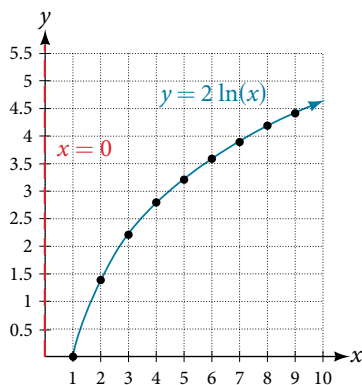
Figure 9   The graph of $y = 2\ln x$.

We can conclude that the model is a good fit to the data.

Compare **Figure 9** to the graph of $y = \ln(x^2)$ shown in **Figure 10**.
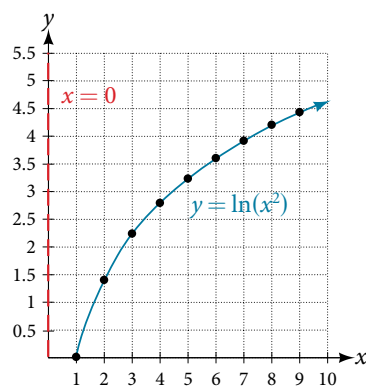
Figure 10 The graph of $y = \ln(x^2)$

The graphs appear to be identical when $x > 0$. A quick check confirms this conclusion: $y = \ln(x^2) = 2\ln(x)$ for $x > 0$.

However, if $x < 0$, the graph of $y = \ln(x^2)$ includes a "extra" branch, as shown in **Figure 11**. This occurs because, while $y = 2\ln(x)$ cannot have negative values in the domain (as such values would force the argument to be negative), the function $y = \ln(x^2)$ can have negative domain values.
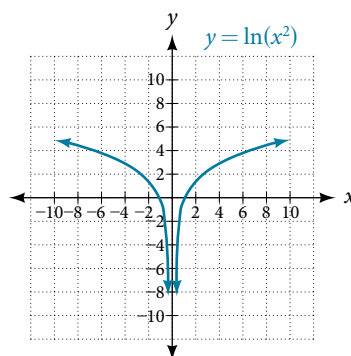
Figure 11

Try It #19

Does a linear, exponential, or logarithmic model best fit the data in **Table 2**? Find the model.

x	1	2	3	4	5	6	7	8	9
y	3.297	5.437	8.963	14.778	24.365	40.172	66.231	109.196	180.034

Table 2

Expressing an Exponential Model in Base *e*

While powers and logarithms of any base can be used in modeling, the two most common bases are 10 and *e*. In science and mathematics, the base *e* is often preferred. We can use laws of exponents and laws of logarithms to change any base to base *e*.

How To...
Given a model with the form $y = ab^x$, change it to the form $y = A_0 e^{kx}$.

1. Rewrite $y = ab^x$ as $y = ae^{\ln(b^x)}$.

2. Use the power rule of logarithms to rewrite y as $y = ae^{x\ln(b)} = ae^{\ln(b)x}$.

3. Note that $a = A_0$ and $k = \ln(b)$ in the equation $y = A_0 e^{kx}$.

Example 8   **Changing to base e**

Change the function $y = 2.5(3.1)^x$ so that this same function is written in the form $y = A_0 e^{kx}$.

Solution

The formula is derived as follows

$$y = 2.5(3.1)^x$$
$$= 2.5e^{\ln(3.1^x)} \qquad \text{Insert exponential and its inverse.}$$
$$= 2.5e^{x\ln 3.1} \qquad \text{Laws of logs.}$$
$$= 2.5e^{(\ln 3.1)x} \qquad \text{Commutative law of multiplication}$$

Try It #20

Change the function $y = 3(0.5)^x$ to one having e as the base.

Access these online resources for additional instruction and practice with exponential and logarithmic models.

- Logarithm Application – pH (http://openstaxcollege.org/l/logph)
- Exponential Model – Age Using Half-Life (http://openstaxcollege.org/l/expmodelhalf)
- Newton's Law of Cooling (http://openstaxcollege.org/l/newtoncooling)
- Exponential Growth Given Doubling Time (http://openstaxcollege.org/l/expgrowthdbl)
- Exponential Growth – Find Initial Amount Given Doubling Time (http://openstaxcollege.org/l/initialdouble)

4.7   SECTION EXERCISES

VERBAL

1. With what kind of exponential model would *half-life* be associated? What role does half-life play in these models?

2. What is carbon dating? Why does it work? Give an example in which carbon dating would be useful.

3. With what kind of exponential model would *doubling time* be associated? What role does doubling time play in these models?

4. Define Newton's Law of Cooling. Then name at least three real-world situations where Newton's Law of Cooling would be applied.

5. What is an order of magnitude? Why are orders of magnitude useful? Give an example to explain.

NUMERIC

6. The temperature of an object in degrees Fahrenheit after t minutes is represented by the equation $T(t) = 68e^{-0.0174t} + 72$. To the nearest degree, what is the temperature of the object after one and a half hours?

For the following exercises, use the logistic growth model $f(x) = \dfrac{150}{1 + 8e^{-2x}}$.

7. Find and interpret $f(0)$. Round to the nearest tenth.

8. Find and interpret $f(4)$. Round to the nearest tenth.

9. Find the carrying capacity.

10. Graph the model.

11. Determine whether the data from the table could best be represented as a function that is linear, exponential, or logarithmic. Then write a formula for a model that represents the data.

x	−2	−1	0	1	2	3	4	5
$f(x)$	0.694	0.833	1	1.2	1.44	1.728	2.074	2.488

12. Rewrite $f(x) = 1.68(0.65)^x$ as an exponential equation with base e to five significant digits.

TECHNOLOGY

For the following exercises, enter the data from each table into a graphing calculator and graph the resulting scatter plots. Determine whether the data from the table could represent a function that is linear, exponential, or logarithmic.

13.

x	1	2	3	4	5	6	7	8	9	10
$f(x)$	2	4.079	5.296	6.159	6.828	7.375	7.838	8.238	8.592	8.908

14.

x	1	2	3	4	5	6	7	8	9	10
$f(x)$	2.4	2.88	3.456	4.147	4.977	5.972	7.166	8.6	10.32	12.383

15.

x	4	5	6	7	8	9	10	11	12	13
$f(x)$	9.429	9.972	10.415	10.79	11.115	11.401	11.657	11.889	12.101	12.295

16.

x	1.25	2.25	3.56	4.2	5.65	6.75	7.25	8.6	9.25	10.5
$f(x)$	5.75	8.75	12.68	14.6	18.95	22.25	23.75	27.8	29.75	33.5

For the following exercises, use a graphing calculator and this scenario: the population of a fish farm in t years is modeled by the equation $P(t) = \dfrac{1000}{1 + 9e^{-0.6t}}$.

17. Graph the function.

18. What is the initial population of fish?

19. To the nearest tenth, what is the doubling time for the fish population?

20. To the nearest whole number, what will the fish population be after 2 years?

21. To the nearest tenth, how long will it take for the population to reach 900?

22. What is the carrying capacity for the fish population? Justify your answer using the graph of P.

EXTENSIONS

23. A substance has a half-life of 2.045 minutes. If the initial amount of the substance was 132.8 grams, how many half-lives will have passed before the substance decays to 8.3 grams? What is the total time of decay?

24. The formula for an increasing population is given by $P(t) = P_0 e^{rt}$ where P_0 is the initial population and $r > 0$. Derive a general formula for the time t it takes for the population to increase by a factor of M.

25. Recall the formula for calculating the magnitude of an earthquake, $M = \frac{2}{3} \log \left(\frac{S}{S_0} \right)$. Show each step for solving this equation algebraically for the seismic moment S.

26. What is the y-intercept of the logistic growth model $y = \frac{c}{1 + ae^{-rx}}$? Show the steps for calculation. What does this point tell us about the population?

27. Prove that $b^x = e^{x \ln(b)}$ for positive $b \neq 1$.

REAL-WORLD APPLICATIONS

For the following exercises, use this scenario: A doctor prescribes 125 milligrams of a therapeutic drug that decays by about 30% each hour.

28. To the nearest hour, what is the half-life of the drug?

29. Write an exponential model representing the amount of the drug remaining in the patient's system after t hours. Then use the formula to find the amount of the drug that would remain in the patient's system after 3 hours. Round to the nearest milligram.

30. Using the model found in the previous exercise, find $f(10)$ and interpret the result. Round to the nearest hundredth.

For the following exercises, use this scenario: A tumor is injected with 0.5 grams of Iodine-125, which has a decay rate of 1.15% per day.

31. To the nearest day, how long will it take for half of the Iodine-125 to decay?

32. Write an exponential model representing the amount of Iodine-125 remaining in the tumor after t days. Then use the formula to find the amount of Iodine-125 that would remain in the tumor after 60 days. Round to the nearest tenth of a gram.

33. A scientist begins with 250 grams of a radioactive substance. After 250 minutes, the sample has decayed to 32 grams. Rounding to five significant digits, write an exponential equation representing this situation. To the nearest minute, what is the half-life of this substance?

34. The half-life of Radium-226 is 1590 years. What is the annual decay rate? Express the decimal result to four significant digits and the percentage to two significant digits.

35. The half-life of Erbium-165 is 10.4 hours. What is the hourly decay rate? Express the decimal result to four significant digits and the percentage to two significant digits.

36. A wooden artifact from an archeological dig contains 60 percent of the carbon-14 that is present in living trees. To the nearest year, about how many years old is the artifact? (The half-life of carbon-14 is 5730 years.)

37. A research student is working with a culture of bacteria that doubles in size every twenty minutes. The initial population count was 1350 bacteria. Rounding to five significant digits, write an exponential equation representing this situation. To the nearest whole number, what is the population size after 3 hours?

For the following exercises, use this scenario: A biologist recorded a count of 360 bacteria present in a culture after 5 minutes and 1,000 bacteria present after 20 minutes.

38. To the nearest whole number, what was the initial population in the culture?

39. Rounding to six significant digits, write an exponential equation representing this situation. To the nearest minute, how long did it take the population to double?

For the following exercises, use this scenario: A pot of boiling soup with an internal temperature of 100° Fahrenheit was taken off the stove to cool in a 69° F room. After fifteen minutes, the internal temperature of the soup was 95° F.

40. Use Newton's Law of Cooling to write a formula that models this situation.

41. To the nearest minute, how long will it take the soup to cool to 80° F?

42. To the nearest degree, what will the temperature be after 2 and a half hours?

For the following exercises, use this scenario: A turkey is taken out of the oven with an internal temperature of 165° Fahrenheit and is allowed to cool in a 75° F room. After half an hour, the internal temperature of the turkey is 145° F.

43. Write a formula that models this situation.

44. To the nearest degree, what will the temperature be after 50 minutes?

45. To the nearest minute, how long will it take the turkey to cool to 110° F?

For the following exercises, find the value of the number shown on each logarithmic scale. Round all answers to the nearest thousandth.

46.

$\log (x)$

47.

$\log (x)$
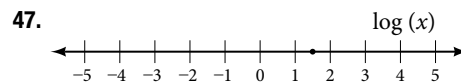
48. Plot each set of approximate values of intensity of sounds on a logarithmic scale: Whisper: $10^{-10}\dfrac{W}{m^2}$, Vacuum: $10^{-4}\dfrac{W}{m^2}$, Jet: $10^2\dfrac{W}{m^2}$

49. Recall the formula for calculating the magnitude of an earthquake, $M = \dfrac{2}{3}\log\left(\dfrac{S}{S_0}\right)$. One earthquake has magnitude 3.9 on the MMS scale. If a second earthquake has 750 times as much energy as the first, find the magnitude of the second quake. Round to the nearest hundredth.

For the following exercises, use this scenario: The equation $N(t) = \dfrac{500}{1 + 49e^{-0.7t}}$ models the number of people in a town who have heard a rumor after t days.

50. How many people started the rumor?

51. To the nearest whole number, how many people will have heard the rumor after 3 days?

52. As t increases without bound, what value does $N(t)$ approach? Interpret your answer.

For the following exercise, choose the correct answer choice.

53. A doctor and injects a patient with 13 milligrams of radioactive dye that decays exponentially. After 12 minutes, there are 4.75 milligrams of dye remaining in the patient's system. Which is an appropriate model for this situation?

    a. $f(t) = 13(0.0805)^t$ **b.** $f(t) = 13e^{0.9195t}$ **c.** $f(t) = 13e^{(-0.0839t)}$ **d.** $f(t) = \dfrac{4.75}{1 + 13e^{-0.83925t}}$
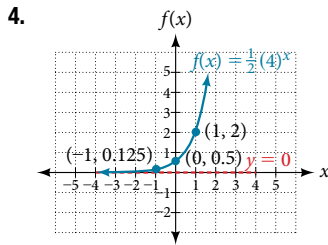
4.

The domain is $(-\infty, \infty)$; the range is $(0, \infty)$; the horizontal asymptote is $y = 0$.

5.
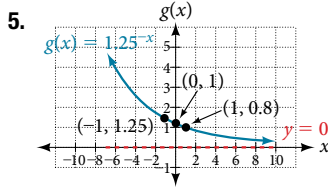
The domain is $(-\infty, \infty)$; the range is $(0, \infty)$; the horizontal asymptote is $y = 0$.

6. $f(x) = -\dfrac{1}{3}e^x - 2$; the domain is $(-\infty, \infty)$; the range is $(-\infty, 2)$; the horizontal asymptote is $y = 2$.

Section 4.3

1. a. $\log_{10}(1{,}000{,}000) = 6$ is equivalent to $10^6 = 1{,}000{,}000$
b. $\log_5(25) = 2$ is equivalent to $5^2 = 25$ **2. a.** $3^2 = 9$ is equivalent to $\log_3(9) = 2$ **b.** $5^3 = 125$ is equivalent to $\log_5(125) = 3$
c. $2^{-1} = \dfrac{1}{2}$ is equivalent to $\log_2\!\left(\dfrac{1}{2}\right) = -1$
3. $\log_{121}(11) = \dfrac{1}{2}$ (recalling that $\sqrt{121} = 121^{\frac{1}{2}} = 11$)
4. $\log_2\!\left(\dfrac{1}{32}\right) = -5$ **5.** $\log(1{,}000{,}000) = 6$ **6.** $\log(123) \approx 2.0899$
7. The difference in magnitudes was about 3.929.   **8.** It is not possible to take the logarithm of a negative number in the set of real numbers.

Section 4.4

1. $(2, \infty)$ **2.** $(5, \infty)$
3.

The domain is $(0, \infty)$, the range is $(-\infty, \infty)$, and the vertical asymptote is $x = 0$.

4.
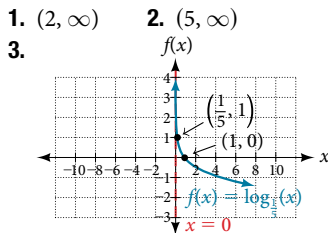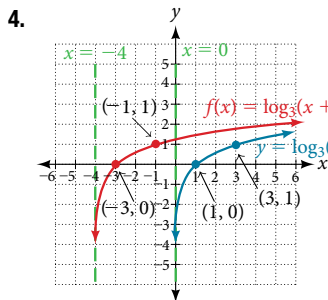
The domain is $(-4, \infty)$, the range $(-\infty, \infty)$, and the asymptote $x = -4$.
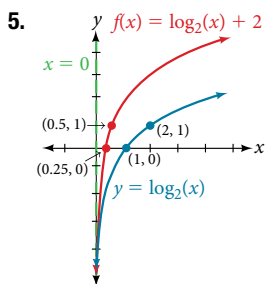
5.

The domain is $(0, \infty)$, the range is $(-\infty, \infty)$, and the vertical asymptote is $x = 0$.

6.

The domain is $(0, \infty)$, the range is $(-\infty, \infty)$, and the vertical asymptote is $x = 0$.

7.
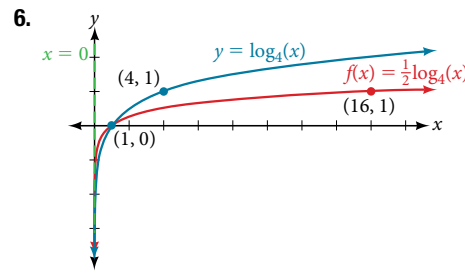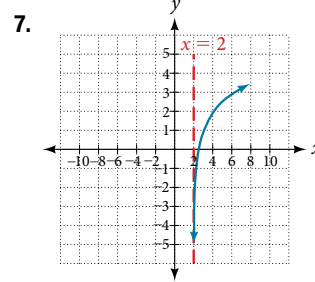
The domain is $(2, \infty)$, the range is $(-\infty, \infty)$, and the vertical asymptote is $x = 2$.

8.
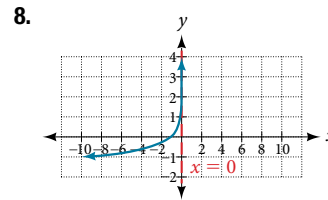
The domain is $(-\infty, 0)$, the range is $(-\infty, \infty)$, and the vertical asymptote is $x = 0$.
9. $x \approx 3.049$ **10.** $x = 1$
11. $f(x) = 2\ln(x + 3) - 1$

Section 4.5

1. $\log_b(2) + \log_b(2) + \log_b(2) + \log_b(k) = 3\log_b(2) + \log_b(k)$
2. $\log_3(x + 3) - \log_3(x - 1) - \log_3(x - 2)$ **3.** $2\ln(x)$
4. $-2\ln(x)$ **5.** $\log_3(16)$ **6.** $2\log(x) + 3\log(y) - 4\log(z)$
7. $\dfrac{2}{3}\ln(x)$ **8.** $\dfrac{1}{2}\ln(x - 1) + \ln(2x + 1) - \ln(x + 3) - \ln(x - 3)$
9. $\log\!\left(\dfrac{3 \cdot 5}{4 \cdot 6}\right)$; can also be written $\log\!\left(\dfrac{5}{8}\right)$ by reducing the fraction to lowest terms.   **10.** $\log\!\left(\dfrac{5(x-1)^3\sqrt{x}}{(7x-1)}\right)$
11. $\log\dfrac{x^{12}(x+5)^4}{(2x+3)^4}$; this answer could also be written $\log\!\left(\dfrac{x^3(x+5)}{(2x+3)}\right)^4$.
12. The pH increases by about 0.301.   **13.** $\dfrac{\ln(8)}{\ln(0.5)}$
**14.** $\dfrac{\ln(100)}{\ln(5)} \approx \dfrac{4.6051}{1.6094} = 2.861$

Section 4.6

1. $x = -2$ **2.** $x = -1$ **3.** $x = \dfrac{1}{2}$
4. The equation has no solution.   **5.** $x = \dfrac{\ln(3)}{\ln\!\left(\dfrac{2}{3}\right)}$
6. $t = 2\ln\!\left(\dfrac{11}{3}\right)$ or $\ln\!\left(\dfrac{11}{3}\right)^2$
7. $t = \ln\!\left(\dfrac{1}{\sqrt{2}}\right) = -\dfrac{1}{2}\ln(2)$ **8.** $x = \ln(2)$ **9.** $x = e^4$
10. $x = e^5 - 1$ **11.** $x \approx 9.97$ **12.** $x = 1$ or $x = -1$
13. $t = 703{,}800{,}000 \times \dfrac{\ln(0.8)}{\ln(0.5)}$ years $\approx 226{,}572{,}993$ years.
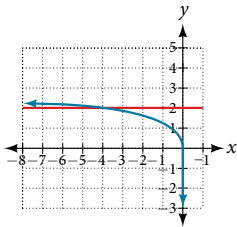
Section 4.7

1. $f(t) = A_0 e^{-0.0000000087t}$ **2.** Less than 230 years; 229.3157 to be exact
3. $f(t) = A_0 e^{\left(\frac{\ln(2)}{3}\right)t}$ **4.** 6.026 hours   **5.** 895 cases on day 15
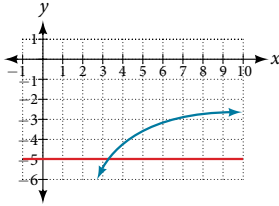**6.** Exponential. $y = 2e^{0.5x}$ **7.** $y = 3e^{(\ln 0.5)x}$

23. $x = \dfrac{\ln\left(\frac{3}{5}\right) - 3}{8}$ **25.** No solution   **27.** $x = \ln(3)$

29. $10^{-2} = \dfrac{1}{100}$ **31.** $n = 49$ **33.** $k = \dfrac{1}{36}$ **35.** $x = \dfrac{9 - e}{8}$

37. $n = 1$ **39.** No solution   **41.** No solution

43. $x = \pm\dfrac{10}{3}$ **45.** $x = 10$ **47.** $x = 0$ **49.** $x = \dfrac{3}{4}$

51. $x = 9$ **53.** $x = \dfrac{e^2}{3} \approx 2.5$
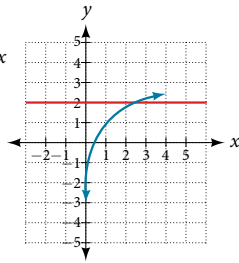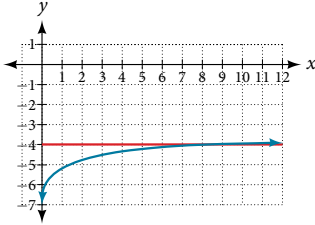
55. $x = -5$ **57.** $x = \dfrac{e + 10}{4} \approx 3.2$
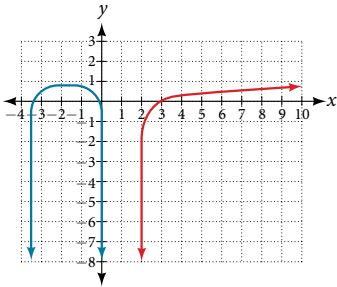
59. No solution   **61.** $x = \dfrac{11}{5} \approx 2.2$
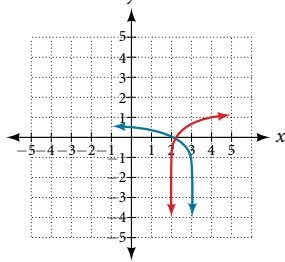
63. $x = \dfrac{101}{11} \approx 9.2$
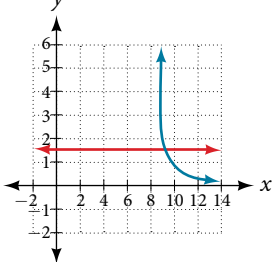
65. About $27,710.24
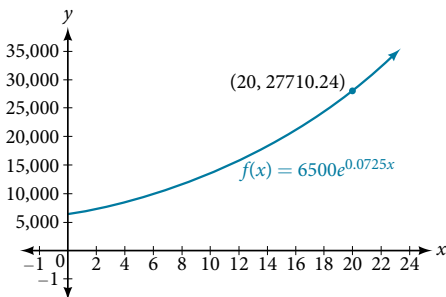
67. About 5 years
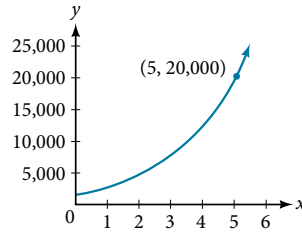
69. ≈ 0.567 **71.** ≈ 2.078

73. ≈ 2.2401

75. ≈ -44655.7143

77. About 5.83

79. $t = \ln\left(\left(\dfrac{y}{A}\right)^{\frac{1}{k}}\right)$

81. $t = \ln\left(\left(\dfrac{T - T_s}{T_0 - T_s}\right)^{-\frac{1}{k}}\right)$

Section 4.7

1. Half-life is a measure of decay and is thus associated with exponential decay models. The half-life of a substance or quantity is the amount of time it takes for half of the initial amount of that substance or quantity to decay.   **3.** Doubling time is a measure of growth and is thus associated with exponential growth models. The doubling time of a substance or quantity is the amount of time it takes for the initial amount of that substance or quantity to double in size.   **5.** An order of magnitude is the nearest power of ten by which a quantity exponentially grows. It is also an approximate position on a logarithmic scale; Sample response: Orders of magnitude are useful when making comparisons between numbers that differ by a great amount. For example, the mass of Saturn is 95 times greater than the mass of Earth. This is the same as saying that the mass of Saturn is about 10^2 times, or 2 *orders of magnitude* greater, than the mass of Earth.

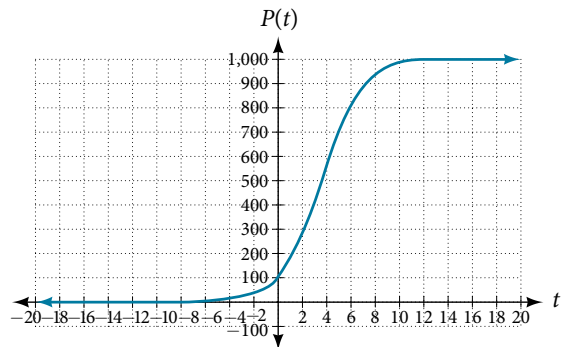**7.** $f(0) \approx 16.7$; the amount initially present is about 16.7 units.

9. 150   **11.** Exponential; $f(x) = 1.2^x$
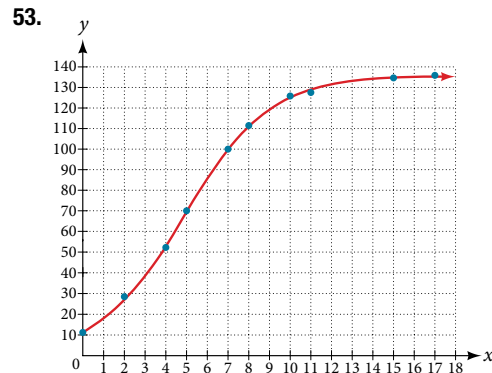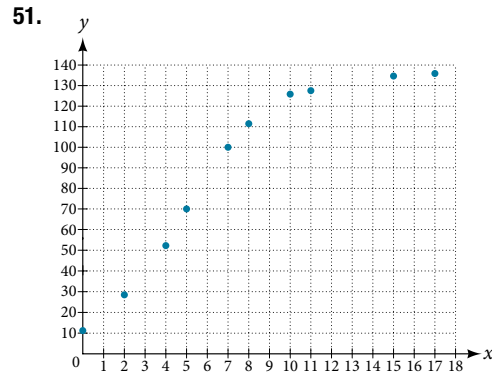
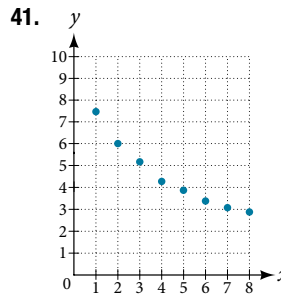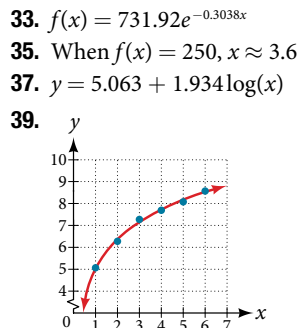**13.** Logarithmic   **15.** Logarithmic
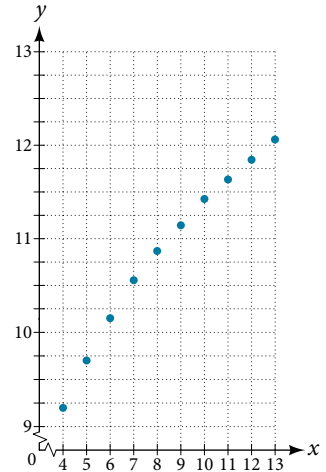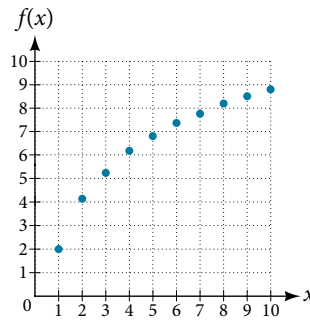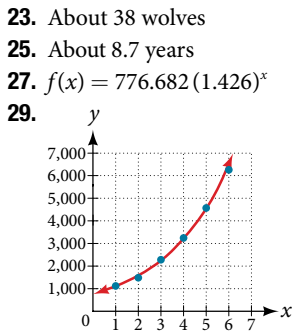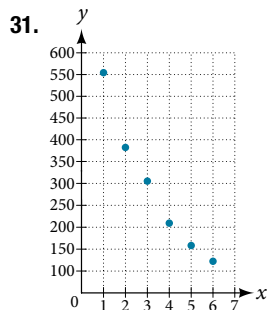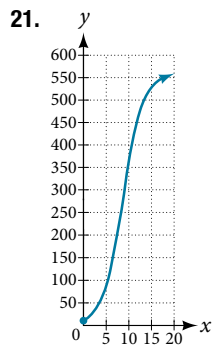

17.

19. About 1.4 years   **21.** About 7.3 years

23. Four half-lives; 8.18 minutes

25. $M = \dfrac{2}{3}\log\left(\dfrac{S}{S_0}\right)$ **27.** Let $y = b^x$ for some non-negative
real number b such that $b \neq 1$. Then,

$\dfrac{3}{2}M = \log\left(\dfrac{S}{S_0}\right)$ $\ln(y) = \ln(b^x)$

$10^{\frac{3M}{2}} = \left(\dfrac{S}{S_0}\right)$ $\ln(y) = x\ln(b)$

                              $e^{\ln(y)} = e^{x\ln(b)}$

                              $y = e^{x\ln(b)}$

$S_0 10^{\frac{3M}{2}} = S$

29. $A = 125e^{(-0.3567t)}$; $A \approx 43$mg   **31.** About 60 days

33. $f(t) = 250e^{-0.00914t}$; half-life: about 76 minutes

35. $r \approx -0.0667$; hourly decay rate: about 6.67%

37. $f(t) = 1350\,e^{0.034657359t}$; after 3 hours; $P(180) \approx 691{,}200$

39. $f(t) = 256\,e^{(0.068110t)}$; doubling time: about 10 minutes

41. About 88minutes   **43.** $T(t) = 90\,e^{(-0.008377t)} + 75$, where t is
in minutes   **45.** About 113 minutes   **47.** $\log_{10}x = 1.5$; $x \approx 31.623$

49. MMS Magnitude: ≈ 5.82 **51.** $N(3) \approx 71$ **53.** C

Section 4.8

1. Logistic models are best used for situations that have limited
values. For example, populations cannot grow indefinitely since
resources such as food, water, and space are limited, so a logistic
model best describes populations.   **3.** Regression analysis is
the process of finding an equation that best fits a given set of data
points. To perform a regression analysis on a graphing utility, first
list the given points using the STAT then EDIT menu. Next graph
the scatter plot using the STAT PLOT feature. The shape of the data
points on the scatter graph can help determine which regression
feature to use. Once this is determined, select the appropriate
regression analysis command from the STAT then CALC menu.
5. The y-intercept on the graph of a logistic equation corresponds
to the initial population for the population model.
7. C   **9.** B   **11.** $P(0) = 22$; 175
13. $p \approx 2.67$ **15.** y-intercept: (0, 15)   **17.** 4 koi
19. About 6.8 months.

21.

23. About 38 wolves
25. About 8.7 years
27. $f(x) = 776.682\,(1.426)^x$

29.

31.

33. $f(x) = 731.92e^{-0.3038x}$
35. When $f(x) = 250$, $x \approx 3.6$
37. $y = 5.063 + 1.934\log(x)$

39.

41.

43. $f(10) \approx 2.3$

45. When $f(x) = 8$, $x \approx 0.82$

47. $f(x) = \dfrac{25.081}{1 + 3.182e^{-0.545x}}$

**49.** About 25

51.

53.

55. When $f(x) = 68$, $x \approx 4.9$ **57.** $f(x) = 1.034341(1.281204)^x$;
$g(x) = 4.035510$; the regression curves are symmetrical about
$y = x$, so it appears that they are inverse functions.

59. $f^{-1}(x) = \dfrac{\ln(a) - \ln\left(\dfrac{c}{x} - 1\right)}{b}$

Chapter 4 Review Exercises

1. Exponential decay; the growth factor, 0.825, is between 0 and 1.
3. $y = 0.25(3)^x$ **5.** $42{,}888.18$ **7.** Continuous decay; the
growth rate is negative
9. Domain: all real numbers;
range: all real numbers
strictly greater than zero;
y-intercept: (0, 3.5)
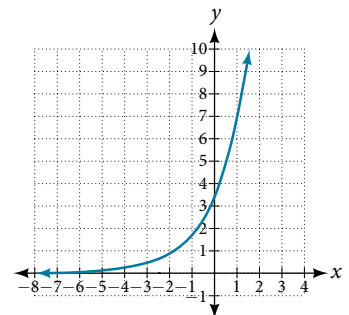
La quinceañera

Una fiesta de quinceañera es la presentación formal de una niña que pasa a la edad adulta. Emilia tiene su quinceañera en unos días. Su amiga Victoria no vino para la prueba de su vestido. Emilia está triste y llama a su hermana mayor, Lola.

> Personality traits

Emilia 📞 llamada — 20 de febrero 08:00 AM

Emilia: Lola, ESTA FIESTA es el día MÁS IMPORTANTE de mi vida. ¡Es MI QUINCEAÑERA y creo que todos mis amigos **desconfían** de mí! **Temo** que no me **acepten tal como soy.**

Lola: NO ES ASÍ. Todos te quieren, Emilia.

Emilia: Victoria es mi **íntima** amiga. Hacemos muchas cosas **juntas** y **tenemos mucho en común**, pero ahora está **egoísta** y **celosa**. NO HA VENIDO HOY A AYUDARME.

Lola: **Me sorprende.** Victoria es muy **considerada** y **te apoya** en todo. Debes **confiar** en ella.

Emilia: Yo creía que mi amiga Mimí sabía **guardar un secreto**. Sin embargo, Victoria me dijo que es **entrometida** y **chismosa**.

Lola: Yo le tengo **confianza**. Mimí es **honesta** y **comprensiva**.

Emilia: Y mi amigo Joaquín siempre fue **cariñoso** conmigo. Desde que está con Cristina es **vanidoso** Y EGOÍSTA.

Lola: Pero es muy joven. Ojalá que cambie cuando sea un poco mayor.

¡Emilia y Victoria tienen mucho qué comentar sobre la fiesta del día anterior! Apenas se despierta, Victoria le manda un mensaje a Emilia.

Emilia

Victoria: ¡Qué fiesta la de anoche! 😊

Emilia: Sí. Después de tanto preocuparme, salió perfecta. ¡Todo el mundo fue tan **amable** conmigo!

Victoria: ¡Tu vestido me encantó! Te veías muy linda.

Emilia: ¡Gracias! Una de las **cualidades** que más me gustan de ti es que te alegras de todo lo bueno que les pasa a tus amigos.

Victoria: No creas, a veces puedo **tener celos**. Sobre todo, si un chico que me gusta baila con mi mejor amiga.

Emilia: Ja, ja. ¿Lo dices por Mario? ¡Si solo bailé una vez con él!

Victoria: Sí, no te preocupes, no hablaba en serio. 😊

Emilia: ¿Quieres venir a mi casa en un rato? Así te puedo mostrar las fotos que tomó mi papá. ¡Están buenísimas!

Victoria: Gracias, pero estoy cansada. ¡Me duelen los pies de tanto bailar!

Emilia: Me imagino, porque no te quedaste quieta ni un minuto. Pero si **cambias de opinión**, me avisas. Voy a estar en casa todo el día.

3 Comentarios sobre la fiesta

ESCRIBIR Lee las frases. Escribe C (cierto) si la frase es correcta o F (falso) si la frase es incorrecta.

1. Emilia quedó muy contenta con su fiesta de quinceañera.
2. Los invitados a la fiesta no fueron amables con Emilia.
3. A Victoria le gustó el vestido de Emilia.
4. Victoria aceptó ir a la casa de Emilia a ver las fotos.

4

HABLAR La fiesta de quinceañera en muchos países latinos marca la transición de niña a mujer. Comenta con un compañero qué ritos, fiestas o celebraciones conocen que marquen la transición de niño a hombre o de niña a mujer en distintas culturas.

Vocabulario en uso 1

5 Una carta para alguien que fue mi amigo

LEER, ESCRIBIR Federico y Roberto eran amigos íntimos hasta que se pelearon. Roberto no confía en los consejos de Federico. Cree que está celoso por su relación con Teresa, que es amiga de los dos. Lee estas frases de una carta que le escribió Federico a Roberto. Escoge las palabras que completan mejor cada frase.

1. (Me preocupa / Me alegro de) que no me aceptes tal como soy.

2. (Es una lástima / Me alegro de) que desconfíes de mí.

3. (Es una lástima / Es bueno) que no me comprendas.

4. (Me alegro de / Me enoja) que siempre cambies de opinión.

5. (Me sorprende / Espero) que sepas que no tengo celos.

6. (Es triste / Es bueno) que no nos llevemos bien.

7. (Me alegro de / Ojalá) que no rompamos nuestra amistad.

8. (Espero / Temo) que todos salgamos juntos otra vez.

6 ¿Cómo te relacionas con los demás?

HABLAR EN PAREJA Trabaja con otro(a) estudiante para hablar de su relación con los amigos. Usen las fotos.

Videomodelo
A —Eres cariñoso(a), ¿verdad?
B —¡Claro que sí!, soy muy cariñoso(a).
o:—No, no lo soy.
o:—Pues, sí, a veces.

Estudiante A

Estudiante B

¡Respuesta personal!

---

7 Amistad y cualidades

ESCRIBIR, HABLAR EN PAREJA

1 Escribe un verbo o una expresión que relacionas con cada una de estas cualidades.

Modelo
amable
ayudar a los demás

1. vanidoso(a)
2. perezoso(a)
3. entrometido(a)
4. celoso(a)
5. sincero(a)
6. considerado(a)

2 Trabaja con otro(a) estudiante para hablar de las cualidades y los verbos o las expresiones que relacionas con la amistad.

Videomodelo
A —¿Te gusta estar con personas amables?
B —Sí, porque siempre se preocupan por los demás.

3 Ahora tú y tu compañero(a) deben escoger una cualidad y escribir un párrafo sobre una persona que tenga esa cualidad.

Modelo
Luisa es muy amable porque ...

Ampliación del lenguaje ◂ Familias de palabras

Las familias de palabras son grupos de palabras relacionadas *(related)* por tener una misma raíz. Conocer familias de palabras nos ayuda a comprender mejor el significado individual de cada palabra. Para ampliar tu vocabulario debes aprender a reconocer *(recognize)* palabras que tienen la misma raíz, por ejemplo, *celos y celoso*.

Lee las familias de palabras de la tabla. Piensa en palabras que conoces, que pertenecen a esas familias. Escribe en una hoja de papel las palabras que faltan para llenar los recuadros.

Sustantivos	Adjetivos	Verbos
1. comprensión		comprender
2. alegría	alegre	
3. chisme	chismoso(a)	chismosear
4. consideración		considerar
5. sorpresa	sorprendido(a)	sorprenderse
6. reconciliación	reconciliado(a)	reconciliarse

Luego, completa las frases utilizando la palabra correcta:

1. Carlos cuenta muchos _____, por eso todos dicen que es un _____.

2. Me encanta ir a las fiestas con María, pues es muy _____. Siempre me da _____ estar con ella.

3. Mi amigo se _____ mucho cuando le hicimos una fiesta _____.

CULTURA ◀ El mundo hispano

El Día de la Rosa y del Libro Muchas tradiciones de los países hispanohablantes celebran el amor y la amistad. Por ejemplo, en Cataluña, España, se celebra el Día de la Rosa y del Libro el 23 de abril. Ese día los chicos le regalan a su novia una rosa roja, y las chicas le regalan a su novio un libro.

En algunos países latinoamericanos el Día de San Valentín, en lugar de ser el "Día de los Enamorados", es el "Día de la Amistad", y los amigos y familiares se hacen regalos y se escriben postales.

Pre-AP® Integration: Las tradiciones y los valores sociales ¿Crees que celebrar el día de la amistad o el amor tiene un impacto socio-económico en Estados Unidos? Da un ejemplo.

9

Retrato de una amistad

✎ ESCRIBIR   Describe una relación muy importante para ti. Puede ser tu relación con un(a) amigo(a), un(a) primo(a), un familiar u otro adulto a quien quieras mucho. Describe cómo es esa amistad. Usa estos verbos como guía para escribir tu párrafo.

- conocerse
- escribirse
- contar con
- llamarse por teléfono
- enviarse mensajes electrónicos
- confiar
- apoyarse
- ayudarse
- llevarse bien
- tener en común

Modelo

Carlos y yo nos conocimos en . . . Vivíamos en el mismo barrio, pero cuando yo tenía 11 años, mi familia y yo tuvimos que irnos a . . . Ahora . . .

10

Un personaje

✎ ESCRIBIR   Cuenta un hecho o describe a un personaje de un libro o de una película que sea un buen ejemplo de alguna de estas cualidades.

   a. cariñoso(a)   **b.** chismoso(a)   **c.** comprensivo(a)   **d.** honesto(a)

Incluye:
- sus cualidades
- cómo trata a las otras personas
- ejemplos de sus acciones

Modelo

Uno de los personajes se llama Luis. Es muy amable, generoso y divertido. Sus amigos tienen mucha confianza en él.

Gramática

OBJECTIVES
▶ Listen to a description of friendship
▶ Discuss emotions and problems in relationships
▶ Talk about the practice of shaking hands

El subjuntivo con verbos de emoción

As you already know, we use the subjunctive after verbs indicating suggestions, desire, or demands. The subjunctive is also used after verbs and impersonal phrases indicating emotion, such as *ojalá que, temo que, tengo miedo de que, me alegro de que, me molesta que, me sorprende que, siento que, es triste que,* and *es bueno que,* among others. A sentence in the subjunctive mode has two parts, the main clause and the subordinate clause. Both clauses are connected by the word *que.*

   Tememos que nuestros amigos **desconfíen** de nuestras palabras.

When the sentence has only one subject, we usually use the infinitive instead of the subjunctive.

   Siento no **pasar** (yo) más tiempo con mis amigas. Siento que ellas no **pasen** más tiempo conmigo.

Más recursos   ONLINE

▶ **Tutorial:** Subjunctive in Noun Clauses with Verbs of Feeling and Emotions

🔊 **Canción de hip hop:** ¿Cómo te llevas?

11

Una amiga muy cariñosa

🔊 ESCUCHAR, ESCRIBIR   Alina es una amiga muy cariñosa, aunque a veces se preocupa demasiado por todos. Escribe los números del 1 al 5 en una hoja de papel. Presta atención a lo que dice Alina y escribe las frases que escuchas.

❶ Subraya con una línea los verbos en indicativo en cada frase. Subraya con dos líneas los verbos en infinitivo y encierra en un círculo los verbos en subjuntivo.

❷ Explica por qué se usó el infinitivo, el indicativo o el subjuntivo.

12

Una relación complicada

✎ LEER, ESCRIBIR   Soledad, una joven chilena, le escribió una carta a la consejera sentimental de una revista para jóvenes. Soledad se está llevando muy mal con su hermana y no sabe qué hacer. Completa la carta con el subjuntivo de los verbos del recuadro.

ser	tener
contarse	sentirse
desconfiar	llevar

Querida Consejera:

Te escribo porque mi hermana Tatiana y yo nos estamos llevando muy mal. Me preocupa que nuestra relación ya no __1.__ como antes. Creo que es importante que dos hermanas __2.__ sus problemas y sus secretos. Pero ahora temo que ella __3.__ de mí. Tatiana tiene doce años. Yo tengo quince años. A ella le molesta que yo __4.__ otros amigos de mi edad y no le gusta que yo no la __5.__ con nosotros cada vez que salimos. Es una lástima que ella __6.__ celosa de mis amigos. ¿Qué me aconsejas?

Vocabulario en uso 2

OBJECTIVES
▶ Read and write about conflicts and solutions
▶ Discuss relationships, problems, and reactions
▶ Describe the family relationships portrayed in a painting

25 Los opuestos

✏ **LEER, ESCRIBIR**

Completa las frases con la mejor selección de palabras opuestas (*opposite*).

1. Es mejor vivir en _____ con nuestra familia y evitar los _____ .
   a. *pelea / comportamiento*   b. *armonía / conflictos*   c. *diferencia de opinión / paces*

2. El día que _____ estaban muy enojados, pero después _____ .
   a. *hicieron caso / ignoraron*   b. *perdonaron / acusaron*   c. *se pelearon / se reconciliaron*

3. Tú _____ , no sabes lo que dices. Alicia no quería _____ , solo ayudarte.
   a. *haces las paces / se pelea*   b. *estás equivocado / criticarte*   c. *prestas atención / ignorarte*

4. Yo siempre _____ a lo que dice mi hermano y hago lo que nos pide, pero Pedro muchas veces lo _____ .
   a. *hago caso / ignora*   b. *me reconcilio / se pelea*   c. *pido perdón / acusa*

5. Amalia siempre _____ y ayuda a todo el mundo, pero su hermano es un egoísta que solo _____ .
   a. *acusa / se reconcilia*   b. *critica / colabora*   c. *piensa en los demás / piensa en sí mismo*

CULTURA ◀ **El mundo hispano**

Las telenovelas son la versión latinoamericana de las *soap operas* y generalmente se transmiten entre las 6 y las 10 de la noche. El argumento es siempre una historia de amor, con personajes muy buenos o muy malos que se pelean en cada programa sin resolver sus problemas. La telenovela dura menos de un año y tiene un final emocionante, donde se resuelven los conflictos, los buenos triunfan y la muchacha y el muchacho se casan.

Pre-AP® Integration: El entretenimiento y la diversión ¿Cómo influyen los productos culturales, como las telenovelas, en la vida de la gente en los países latinoamericanos y los Estados Unidos?

Jauma Mateu y Michelle Renaud, ▶
Pasión y poder

Más consejos, ¡por favor!

✏ **LEER, ESCRIBIR**

❶ Un chico que participó en un salón de chat escribió este mensaje. Completa el mensaje con las palabras del recuadro.

Estoy colaborando con un grupo de estudiantes para hacer un informe, pero uno de mis compañeros es muy egoísta. Cuando nos debemos reunir, dice que no puede porque tiene un partido de fútbol o clases de tenis. ¡No __1.__ en nada! ¡Este chico solo __2.__ ! Ya tuvimos varias __3.__ porque temo que recibamos una mala nota, pero no __4.__ y siempre que le pedimos algo él responde: " __5.__ ".

hace caso
piensa en sí mismo
¡Qué va!
colabora
peleas

❷ Con otro(a) estudiante, da un buen consejo a la persona que escribió el mensaje. Incluyan las razones en su mensaje.

27 Lomas Garza: La gran familia chicana

✏ **LEER, ESCRIBIR**   La obra de Carmen Lomas Garza es como un retrato de familia de la comunidad chicana, es decir, mexicano-americana, de los Estados Unidos.

Conexiones ◀ **El arte**

Carmen Lomas Garza (1948 –) es una artista chicana de Texas. Lomas Garza se inspiró en el Movimiento Chicano de los años sesenta, y desde entonces trata de representar en su obra la cultura de los chicanos. En sus cuadros, Lomas Garza ilustra las costumbres, las fiestas y la vida interesante y complicada de las personas que viven entre dos culturas, la mexicana y la estadounidense. Observa su cuadro "Cascarones" (*Eggshells*), de 1989, y contesta las preguntas.

• ¿Te parece que hay armonía o conflicto en esta familia?

• ¿Por qué crees que hay una figura más grande que las otras en el cuadro? ¿Qué quiso expresar la pintora con ese detalle?

• Imagínate algo que pasa entre los miembros de esta familia. Usa las palabras del recuadro para contar lo que sucede.

"Cascarones", (1989), Carmen Lomas Garza
Gouache painting. 15 x 20 inches. © 1989 Carmen Lomas Garza.
Photo by: Wolfgang Dietze. Collection of Gilbert Cardenas, Notra Dame, IN.