

10th Grade
Lesson Plan
Packet

3/30/2020-4/3/2020

Remote Learning Packet

NB: Please keep all work produced this week. Details regarding how to turn in this work will be forthcoming.

March 30 - April 3, 2020

Course: 10 Art

Teacher(s): Ms. Frank clare.frank@greatheartsirving.org

Weekly Plan:

Monday, March 30

- Copy definition of planar analysis
- Sketch and written description of planar analysis in facial representations

Tuesday, March 31

- Responsive sketch and written response
- Varied sketching exercises of facial portraits

Wednesday, April 1

- Varied sketching exercises of own face as seen in a mirror
- Careful study of shapes, planes and contours of own face

Thursday, April 2

- Sketching exercises: The Eye
- Planar Analysis: The Eye

Friday, April 3

- Sketching exercises: The Nose
- Planar Analysis: The Nose

Statement of Academic Honesty

I affirm that the work completed from the packet is mine and that I completed it independently.

I affirm that, to the best of my knowledge, my child completed this work independently

Student Signature

Parent Signature

For all assignments in art this week use a pencil and your sketchbook. If you don't have your sketchbook use plain or lined paper instead. Remember to write your name, grade and section, and the date on all pages.

Monday, March 30

1. Copy the definition of planar analysis found in the attached supplemental materials.
2. Look carefully at the facial portraits by Kathe Kollwitz and Auguste Rodin. Select one, and draw a 2-minute compositional sketch of it. As you draw, notice contours, value contrast, mood and expression.
3. Next, write a description of the portrait in terms of planar analysis. Work your way through the facial features, describing the types of shapes the artist has used in breaking down each part of the face.

Tuesday, March 31

1. Make a quick 2-minute compositional sketch of Rodin's portrait of one of the Burghers of Calais, the one with his arm up before him.
2. Write one or two sentences describing the mood of the figure, and what about it seems most eloquent to you.
3. Make a series of 2-minute sketches. For each drawing use a full page or a half page:
 - A Continuous Contour Line drawing of today's Rodin portrait
 - Two Blind Continuous Contour Line drawings of today's Rodin portrait
 - A Blind Continuous Contour Line drawing of one of yesterday's portraits
 - A Continuous Contour Line drawing of yourself as seen in the mirror

Wednesday, April 1

1. While looking at your face in the mirror, make a series of 1.5-minute sketches. For each drawing use a full page:
 - A Blind Continuous Contour Line drawing
 - A drawing of your face upside down. Note: you are translating in your brain; you, your reflection and your sketchbook are all right-side up; only your drawing appears upside down.
 - A Continuous Contour Line drawing
2. Using a full sketchbook page, draw your facial portrait as seen in the mirror. Work from general to specific, starting with a light, loose sketch and then breaking the face down into planar analysis. Use hatching to help define the planes of the face with value. Spend 15 minutes on this drawing.

Thursday, April 2

Today's drawings should all be drawn from life, meaning from direct observation in real time, and at life size, meaning 1:1 scale. You may have more than one sketch per page. Arrange as seems appropriate and looks good.

1. Draw **two** 1.5 minute continuous contour line drawings of your eye (either or both), as seen in the mirror. In making each drawing choose a starting point for your pencil, and as you draw, drive yourself to see more detail and structure than you ever have before.

2. Observing one of your eyes carefully, make a drawing of it in which you position the brow above and bridge of your nose to the side of the eye. Start with a light layout sketch, and develop planar analysis through shading and hatching or cross-hatching. Spend 15 minutes on this drawing

- In this drawing really push your observation of the shifting direction of the planes, their convex versus concave surfaces, and the implied quality of contour lines.
- Attend to negative shapes and proportions between shapes.
- Attend to the direction of lines in your hatching and shading.
- Include a variation of contrast; use low contrast to help you break a larger plane down into smaller planes. High contrast, on the other hand, can emphasize more dramatic shifts.
- Be vigilant: we are used to seeing eyes in cartoons and other symbolic methods of drawing; in this work really hold yourself to careful observation of nature.

Friday, April 3

Today's drawings should all be drawn from life, meaning from direct observation in real time, and at life size, meaning 1:1 scale. Arrange them on your sketchbook pages as seems appropriate and looks good.

1. Convince one or two people in your household to let you draw their noses. Make **three** 2-minute drawings of other people's noses from various angles.

- In drawing the nose, attend to the brows and bridge of nose, the nose wedge, and the nostrils. Notice how the flanks of the nose wedge descend to meet the cheeks. Notice the relationship of the nostrils to the upper lip and the creases that extend from the sides of the nostrils to the corners of the mouth.
- As you draw, notice the interchanging convex and concave surfaces of the nose and nostrils.

2. Positioning yourself in front of a mirror, adjust the angle of your face to select a view of your nose. Working from general to specific, make a drawing of your nose employing planar analysis.

- Try not to move your head throughout the duration of this drawing, as even small changes will significantly alter the profile and shape relationships.
- Include at least part of the brow above and part of the upper lip or creases beside the nostrils.

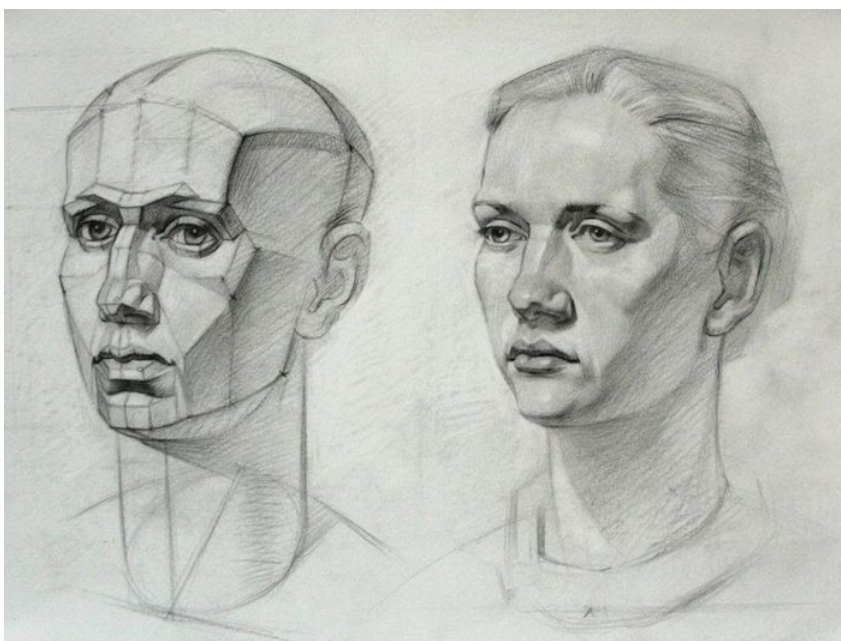
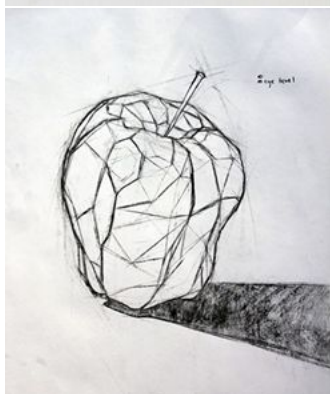
Supplemental Materials

Definition of Planar Analysis:

“**Planar Analysis** is a drawing technique in which the artist breaks a complex form down into flat planes.

“This technique is helpful when trying to achieve volume in drawings of irregular non-geometric forms, whether working from direct observation or inventing from imagination.

“When drawing from direct observation the artist is responding to the subject observed and re-interpreting the form. When working from memory or the imagination an understanding of planes can help in the construction of a believable volumetric image.”



Notice how in the portraits below the planes of the face capture light to different degrees, and the contours are implied through the juxtaposition of different values. The central (cubist) image exaggerates the planar analysis.



For the sketch and written description on Monday, select from one of the following artworks:



Kathe Kollwitz, self portrait, lithograph



Auguste Rodin, portrait from *The Burghers of Calais*, bronze

For the sketch and written response on Tuesday, another burgher from Rodin's *Burghers of Calais*:



Vocabulary, Definitions and Examples:

Contour - A contour is a line defining a form or edge. Contour lines include not only outlines, but other changes or shifts in planar surface.

Convex - having a surface curved outward like the exterior of a sphere

Concave - having a surface curved, or arched inward, like the interior of a bowl

Contour Line Drawing - A method of drawing in which a subject is drawn by representing its contours. Varied weight of line can be used to enhance the dimensionality and energy of a contour line drawing, emphasizing important areas and directing the viewer's eye.

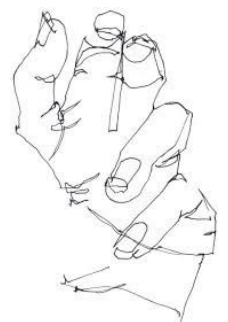
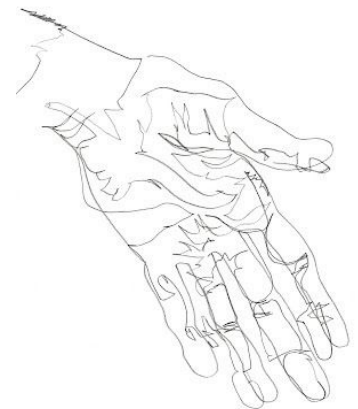
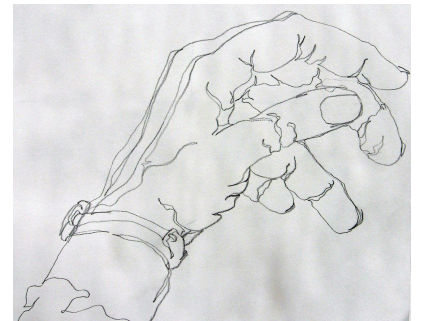
Weight of Line - By increasing or lessening the hand's weight on the pencil, a line can be made thicker and darker or thinner and lighter. Varied weight of line increases visual interest, creates emphasis, and implies space and dimension. A thick, dark line may seem to come toward the viewer while a thin, light line may seem to recede into the distance.

Continuous Contour Line Drawing - A method of drawing in which the artist draws the subject with a single, continuous, unbroken line, using that line to follow along contours along the edges and within the subject. In this method the pencil is not lifted from the page for the duration of the drawing; instead the pencil imitates the artist's eye, following successive visual paths along contours.

It may be helpful to imagine both your pencil and your eye as an ant traveling the ridges and valleys of your subject. Attempt to be looking at your subject 90% of the time, only glancing at the page to make sure your pencil is in the correct vicinity. If moving the pencil to a different area, remember you will be leaving a pencil trail.

Blind Continuous Contour Line Drawing - This method is similar to continuous contour line drawing except that you look at your subject 100% of the time, with not a single glance at your drawing for the duration of the exercise! Hence "blind". Again, your drawing uses a single, continuous unbroken line.

Yes, your drawing will look a little strange but this is a thoughtful exercise. When engaged in in good faith and practiced regularly, this exercise enhances your keenness of observation, your practices of seeing an object both as a whole and as composed of parts, and improves your coordination.



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March 30 - April 3, 2020

Course: 10 Chemistry

Teacher(s): Ms. Oostindie megan.oostindie@greatheartsirving.org

Weekly Plan:

Monday, March 30

- Read and record notes for sections 9.9-9.10 (pp. 275-277).
- Answer questions: p. 290 #74-75.

Tuesday, March 31

- Read and record notes for section 9.11 (pp. 278-282).

Wednesday, April 1

- Read and record notes for section 9.12 (pp. 282-284).

Thursday, April 2

- Complete and grade practice problems: p. 290 #76, 78, 80.

Friday, April 3

- Complete and grade practice problems: p. 290 #86, 88, 90.

Statement of Academic Honesty

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Monday, March 30

Read sections 9.9-9.10 (pp. 275-277). Take notes of the key vocabulary terms and their definitions as well as any diagrams, equations, and worked examples. Do not answer the questions in yellow boxes. Notes can be taken in a notebook or on separate paper.

Answer questions: p. 290 #74-75. Answers should be provided in complete sentences on a separate piece of paper from notes.

Tuesday, March 31

Read section 9.11 (pp. 278-282). Take notes of the key vocabulary terms and their definitions as well as any diagrams, equations, and worked examples. Do not answer the questions in yellow boxes. Continue notes on paper used yesterday.

Wednesday, April 1

Read section 9.12 (pp. 282-284). Take notes of the key vocabulary terms and their definitions as well as any diagrams, equations, and worked examples. Do not answer the questions in yellow boxes. Continue notes on paper used Monday and Tuesday.

Thursday, April 2

Complete practice problems: p. 290 #76, 78, 80. Show all work, box your final answer, use the correct units, and the correct number of significant figures. Work should be on a separate piece of paper from notes.

After you have attempted each question, refer to the attached answer key and correct your work in a different color pen.

Friday, April 3

Complete practice problems: p. 290 #86, 88, 90. Show all work, box your final answer, use the correct units, and the correct number of significant figures. Work should be on a separate piece of paper from notes.

After you have attempted each question, refer to the attached answer key and correct your work in a different color pen.

Pages to be turned in from this week are underlined.

76. What does it mean when we say that the concentration of Ca^{2+} in the blood is 3.0 mEq/L?

concentration of Ca^{2+}

$$\frac{3.0 \text{ mEq}}{L} \left(\frac{20.04 \text{ mg}}{\text{mEq}} \right) \left(\frac{g}{1000 \text{ mg}} \right) \left(\frac{\text{mol}}{40.078 \text{ g}} \right) = \boxed{0.0015 \frac{\text{mol}}{L}}$$

78. Kaochlor, a 10% (w/v) KCl solution, is an oral electrolyte supplement administered for potassium deficiency. How many milliequivalents of K^+ are in a 30 mL dose?

① $10\% = \frac{x}{30 \text{ mL}} \times 100\%$ (grams of KCl) $\Rightarrow x = 30 \text{ g KCl}$

② $157 \text{ g} \left(\frac{1000 \text{ mg}}{g} \right) \left(\frac{\text{mEq}}{39.098 \text{ mg}} \right) = \boxed{40 \text{ mEq}}$

③ $3 \text{ g KCl} \left(\frac{\text{mol}}{74.491 \text{ g}} \right) \left(\frac{1 \text{ mol } K^+}{1 \text{ mol KCl}} \right) \left(\frac{39.098 \text{ g}}{\text{mol}} \right) = 1.57 \text{ g } K^+$

80. Look up the concentration of Cl^- ion in the blood in Table 9.6. How many milliliters of blood would be needed to obtain 1.0 g of Cl^- ions?

98-106 mEq/L of Cl^- in blood

$$1.0 \text{ g } Cl^- \left(\frac{1000 \text{ mg}}{g} \right) \left(\frac{\text{mEq}}{35.453 \text{ mg}} \right) \left(\frac{L}{98 \text{ mEq}} \right) \left(\frac{1000 \text{ mL}}{L} \right) = \boxed{287.82 \text{ mL}}$$

86. Why do red blood cells swell up and burst when placed in pure water?

The concentration of water inside the cells is lower than the concentration of water outside the cells. Water diffuses into the cells until the volume cannot be contained by the cell membrane and the cell bursts.

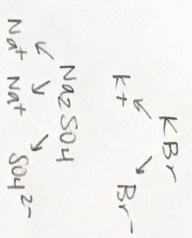
88. Which of the following solutions has the highest osmolality?

a) 0.25 M KBr or 0.20 M Na_2SO_4

osmolality (osmol) = # of moles of dissolved particles / L solution

$0.25 \frac{\text{mol}}{L} \left(\frac{2 \text{ mol particles}}{\text{mol KBr}} \right) = \boxed{0.5 \text{ osmol}}$

$0.20 \frac{\text{mol}}{L} \left(\frac{3 \text{ mol particles}}{\text{mol } Na_2SO_4} \right) = \boxed{0.6 \text{ osmol}}$



b) 0.30 M NaOH or 3.0% (w/v) NaOH

$0.30 \text{ M NaOH} \left(\frac{2 \text{ mol particles}}{\text{mol NaOH}} \right) = \boxed{0.60 \text{ osmol}}$

$3.0\% = \frac{x}{100 \text{ mL}} \times 100\%$

$x = 30 \text{ g NaOH (in 1L)}$

$30 \text{ g NaOH} \left(\frac{\text{mol}}{39.99 \text{ g}} \right) \left(\frac{2 \text{ mol particles}}{\text{mol NaOH}} \right) = \boxed{1.5 \text{ osmol}}$

90. A pickling solution is prepared by dissolving 270g of NaCl in 3.8 L of water. Calculate the osmolality of the solution.

$\frac{270 \text{ g NaCl}}{3.8 \text{ L}} \left(\frac{\text{mol NaCl}}{58.443 \text{ g}} \right) = 1.21976 \frac{\text{mol}}{L} \left(\frac{2 \text{ mol particles}}{\text{mol NaCl}} \right) = \boxed{2.43952 \text{ osmol}}$

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March 30 - April 3, 2020

Course: 10 Economics

Teacher(s): Mr. Loomis joseph.loomis@greatheartsirving.org

Weekly Plan: (140 mn)

Monday, March 30 (20mn)

- Review demand and supply curves

Tuesday, March 31(20mn)

- Read and annotate new material on the supply and demand process

Wednesday, April 1(20mn)

- Review yesterday's readings
- Supply and demand assignment

Thursday, April 2 (20mn)

- Finish supply and demand assignment
- Read and annotate *Changing Market Conditions*

Friday, April 3 (20mn)

- Review *Changing Market Conditions*
- Review Changes in Demand and Supply respectively
- Changing Market Conditions writing assignment

Statement of Academic Honesty

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Notes:

1. For all of the following assignments the pages that are referenced from the textbook are provided as attachments. If you have your textbook, you can use that instead. When I ask you to read and annotate, what I mean is to take careful notes in your notebook when you come across relevant ideas. This can also mean working out problems as you go along. Avoid passive reading.
2. All supplements and answer keys start on p. 4 of this packet.

Monday, March 30 (20 mn)

Review demand and supply, respectively.

- (10 mn) Review of demand
 - Review the following headings in your notes:
 - The Law of Demand
 - Demand and Quantity Demanded
 - Demand can Change
- (10 mn) Review of Supply:
 - We did not finish Supply, so it is understandable if you are still uncertain about how it works. Keeping that in mind I would like you to review the attached supplement on p. 4.

Tuesday, March 31 (20 mn)

- (20 mn) Read and annotate pp. 99b-103b. Focus on the following questions while reading. Do not attempt to answer them yet, but let them focus your reading.
 - Do you see how the two concepts of Supply and of Demand come together in the graph on p. 100?
 - What does it mean for the market to be “fully coordinated?”
 - What is a surplus and what are its effects on price?
 - What is a shortage and what its effects on price?

Wednesday, April 1 (20 mn)

- (5 mn) Briefly review yesterday’s notes.
- (15 mn) Do the following exercise, which you can finish tomorrow if needed. Do not take too much time as you will also have to start another exercise tomorrow.
 - Turn to p.100 and look at graph 5-1.
 - Reproduce the *Price* and *Quantity of Acoustic Guitars* axes on a blank sheet of paper.
 - Reproduce the graph. Do this while asking yourself what you are representing and how the relationship between *Price* and *Quantity Demanded/Supplied* are interacting. Make sure that you are not just copying, but reverse engineering the diagram as best you can. Do it in the following order:

- Demand curve
 - Supply curve
 - Equilibrium price
 - Surplus price
 - Shortage price
- On the same piece of paper, using between 1 - 5 sentences per explanation, give an explanation for each of the following terms and the mechanism that underlies them. Think about what they represent as *phenomena*. Remember, all of these economic terms and graphs are representations of the interaction between real, not just theoretical, variables:
- A market *Surplus* (p.100-101)
 - A market *Shortage* (p. 101-102)
 - A fully-coordinated market (p. 100)
 - An *Equilibrium Price*, also referred to as a *Market-Clearing Price*, (pp. 102-103)

Thursday, April 2 (20 mn)

- (5 - 15 mn) Finish yesterday's assignment. Check your answers against the answer key on p. 5. Use this answer key as a guide.
- (5 - 10 mn) Read *Changing Market Conditions*, on p. 104.
- If you are done with both of the above, you can begin tomorrow's assignment until the 20 mn are over.

Friday, April 3

- (3 - 5 mn) Review *Changing Market Conditions*.
- (15 - 17 mn) Briefly look over the following:
 - Review *Demand Itself can Change* (pp. 51-52).
 - *Supply Itself can Change* (pp. 82b-84b). We did not review this in class but it is essentially the same as changing demand. The main difference is that it is higher and lower marginal costs that cause the curve to shift, respectively, to the left and to the right (p. 83)
- Explain the two scenarios described on p.104. As the author tells us on p.103: "The economic way of thinking emerged in part to explain the phenomenon of market-clearing." In other words, it is the *phenomenon* that we are trying to understand through the use of these *principles*. Explain the following two scenarios on p. 104. Use the attached worksheet format on p.6 to guide you but reproduce the graph on a separate sheet of paper. Make sure to list out the steps in writing and to map them onto the Supply and Demand graphs as you are doing so.
 - Change in the supply of guitars (2nd full paragraph)
 - Change in the demand for guitars (3rd fp)
- Check your answers against the answer key on p. 7-8. Use this answer key as a guide to assessing your own responses.

Supplements/Answer Keys

I. Supplement to the Supply Curve on pp. 81-82

The following is a paraphrase of what the authors conclude about the supply schedule and the supply curve on pp. 81-82. The *Law of Supply* (below) as such does not appear in the textbook and is my own reformulation, using the same words as the authors use for the *Law of Demand* (p. 50) After reviewing your supply schedule exercise (worksheet: *Costs and Supply, pp. 79-81*) read and annotate the following, making sure that you understand the underlined terms:

The three important conclusions that we can draw from the supply schedule exercise are:

1. Producers consider marginal costs of production when deciding upon what to supply and how much to supply.
2. Relative prices inform producers of their marginal costs and benefits.
3. The supply curve illustrates the alternative amounts of a good supplied at alternative prices [...] [they] are the marginal opportunity cost curves of making various quantities of a good available.

The Law of Supply: If the price of a good increases, all things constant, the quantity supplied will also increase, and vice-versa.

Make sure that you understand how the author arrives at the graph on p. 83 and what it is saying.

I. Supply and Demand Answer Key

A market surplus:

A high market price of a good or service (one might ask here: compared to what?) can encourage suppliers to produce more, as we know from the law of supply. A higher price, however, also tends to discourage buyers from purchasing large quantities of that good. If suppliers are supplying more and buyers are not buying more, there emerges a surplus: “when the quantity supplied is greater than the quantity demanded.” (p. 101t) As a result of this situation, suppliers tend to reduce their prices, which incentivizes buyers to buy more. Ultimately, the price of the good or service tends to level out at an equilibrium price.

A market shortage:

A low market price (same as above: compared to what?) can encourage buyers to buy more of a good or service, as we know from the law of demand. If buyers want to purchase more than the supplier has in stock, then the supplier will ultimately run out, and a shortage results: “when the quantity demanded is greater than the quantity supplied.” (p. 101b) As a result, the buyers might be willing to purchase the same amount for a higher price, bidding up the price. From the law of supply we know that higher prices lead to more supply. The supplier might then raise his price until people are no longer willing to buy anymore. Ultimately, this process would lead to an equilibrium price.

A fully coordinated market:

The market is fully coordinated when the suppliers are supplying as many goods and services as are being demanded by the buyers. This means that there is neither a shortage nor a surplus of these goods and services in the market. The two sides “agree” on a price that is a good reflection of what buyers are willing to spend and sellers are willing to provide.

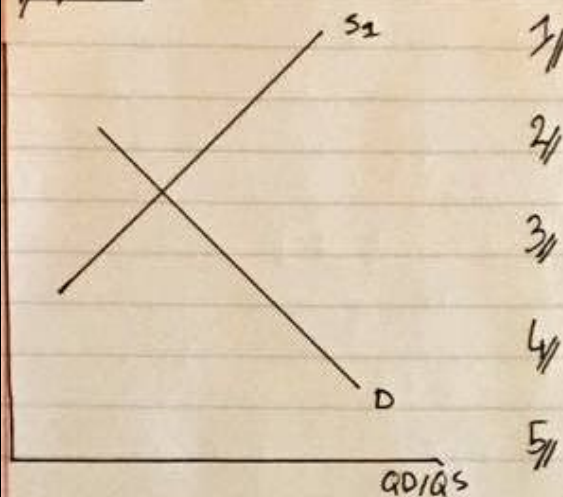
Equilibrium/Market-clearing price:

The price that results from the market being “fully coordinated” is called the *Equilibrium Price* or *Market-Clearing Price*. It is named this way because it is neither falling because of a surplus, or rising because of a shortage. The market is thus referred to as being “clear.”

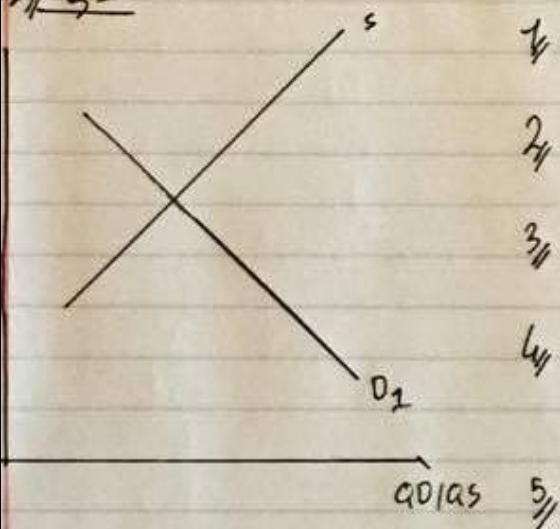
II. Change in Supply and Demand Worksheet

Change in Market Conditions of Acoustic Guitars.

1/52

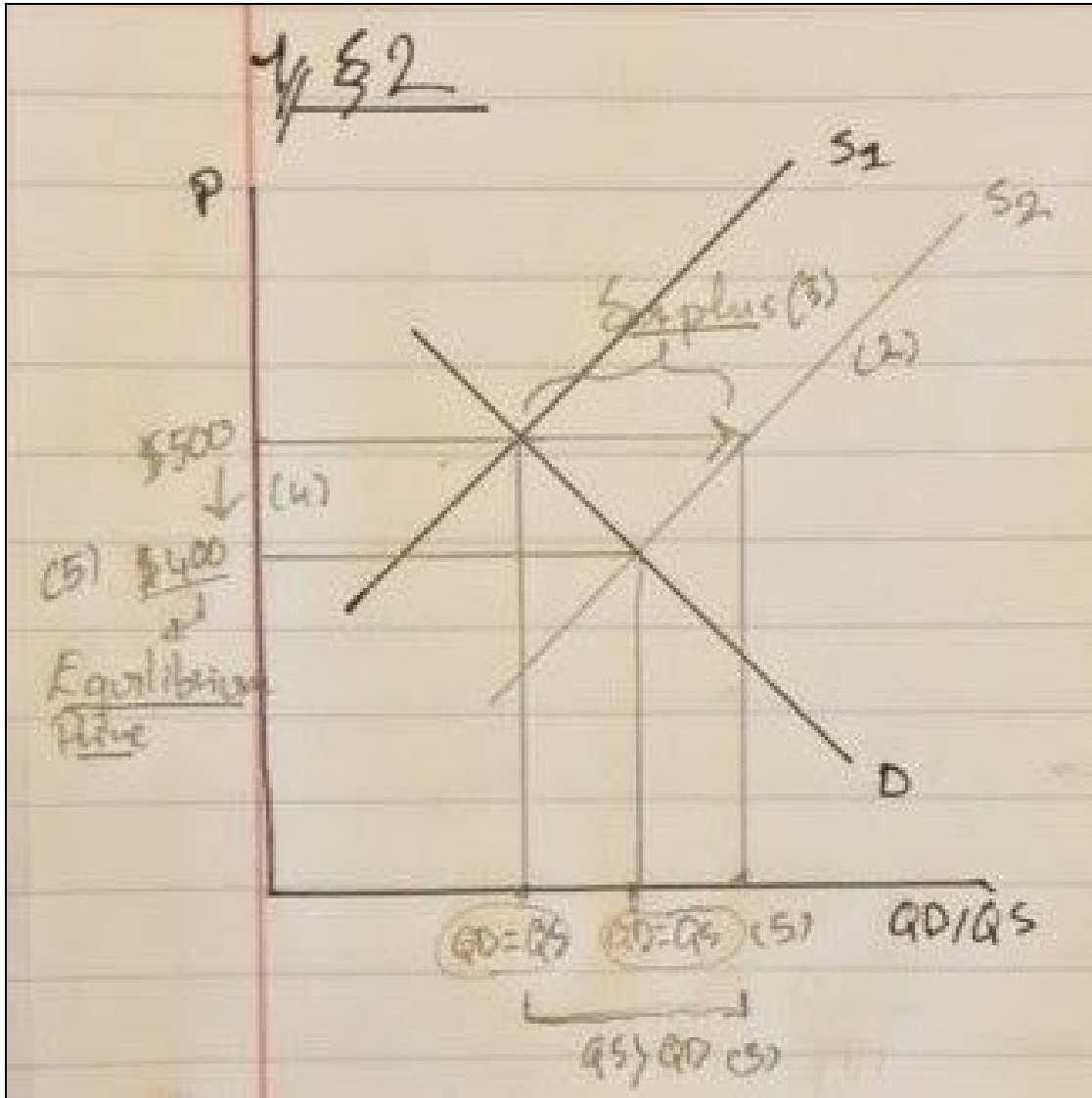


2/53



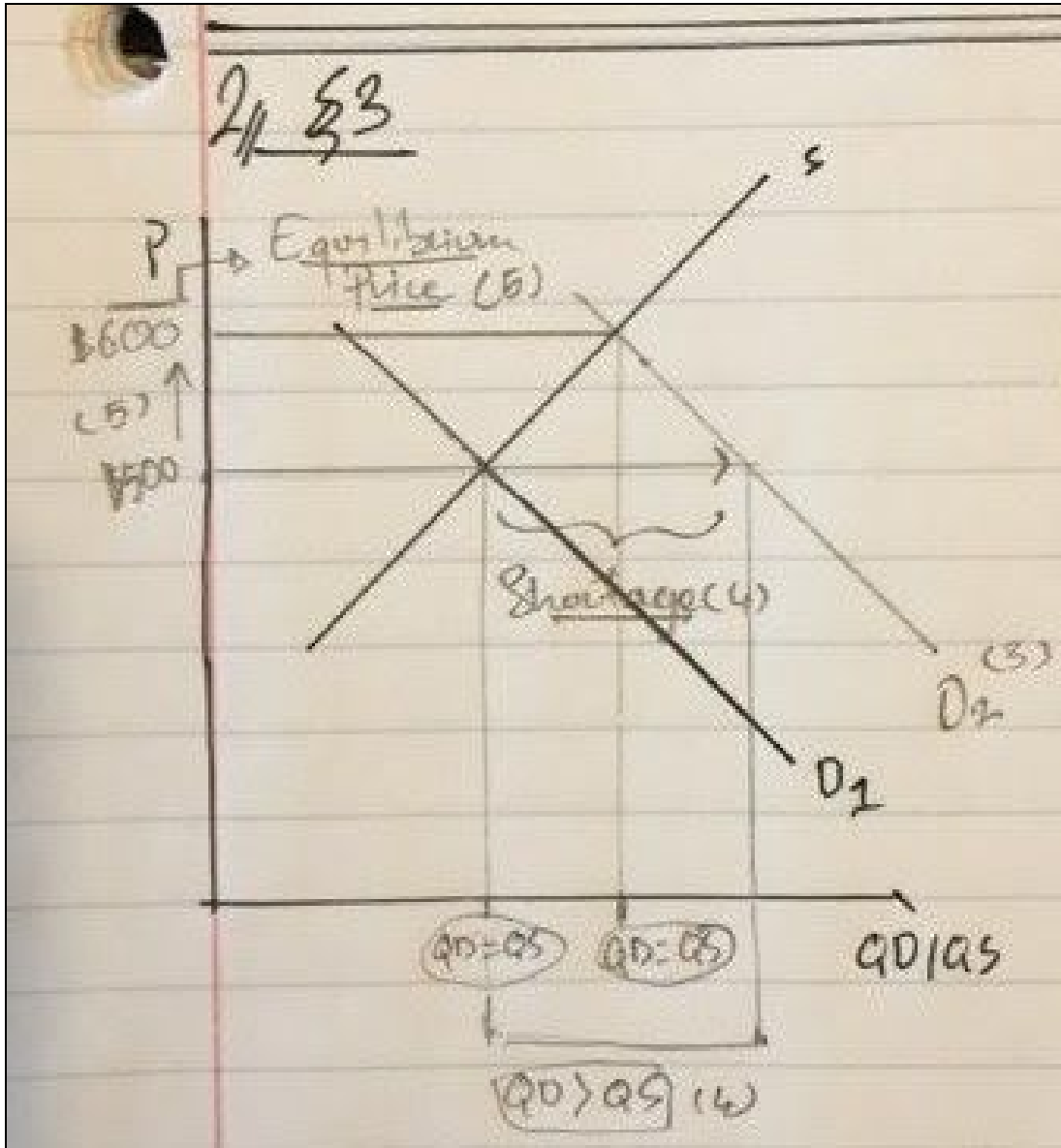
III. Change in Supply and Demand Answer Key

1/ Shift in Supply



1. The price of spruce falls, lowering the marginal opportunity cost of making guitars: more are produced at the same price.
2. The supply curve shifts to the right: $S_1 \rightarrow S_2$
3. If the price stays the same, a surplus emerges because buyers are not willing to purchase that many guitars. $Q_S > Q_D$
4. Suppliers cut their prices to get rid of the surplus.
5. A new, lower, price emerges, where the plans of buyers and of sellers are coordinated: the equilibrium price. $Q_S = Q_D$

2/ Shift in Demand



1. The price of electric guitars goes up.
2. Electric and acoustic guitars are good substitutes. Therefore, people start buying more acoustic guitars.
3. This raises the demand for acoustic guitars, shifting the demand curve to the right.
4. If the price stays the same, a shortage emerges because sellers are not incentivized to produce more if the price stays the same. $QD > QS$
5. An increase of demand raises the price that people are willing to pay. This increases the supply, and the plans of buyers and sellers eventually become fully coordinated, resulting in a new equilibrium price. $QD = QS$

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March 30 - April 3, 2020

Course: 10 Humane Letters

Teacher(s): Mr. Garner ben.garner@greatheartsirving.org

Weekly Plan:

Monday, March 30

- Read *Crime and Punishment*, Part Two, chapter 4
- Answer chapter 4 reading questions

Tuesday, March 31

- Read pages 577-581 (history text)
- Answer history reading questions

Wednesday, April 1

- Read *Crime and Punishment*, Part Two, chapter 5
- Answer chapter 5 reading questions

Thursday, April 2

- Read *Era of the French Revolution*, pages 67-72, as well as source readings on pages 163-165
- Answer history reading questions

Friday, April 3

- Read *Crime and Punishment*, Part Two, chapter 6
- Answer chapter 6 reading questions

Statement of Academic Honesty

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March 30 - April 3, 2020

Course: 10 Latin IV

Teacher(s): Ms. Mueller marie.mueller@greatheartsirving.org

Supplemental Links: [Aeneid I.34-49 Online Grammar Reference](#)
[Aeneid I.50-63 Online Grammar Reference](#)
[Aeneid Online Vocabulary Reference](#)

Weekly Plan:

Monday, March 30

- For *Aeneid* Book 1.34-45, identify subjects, verbs, and adjectives; check work; and make corrections
- Translate *Aeneid* Book 1.34-45 into English

Tuesday, March 31

- For *Aeneid* Book 1.46-54, identify subjects, verbs, and adjectives; check work; and make corrections
- Translate *Aeneid* Book 1.46-54 into English

Wednesday, April 1

- Read the “Finding syllables” section of the scanned document “Part Three: Metrics”
- Complete the worksheet titled “Scansion: Finding Syllables”

Thursday, April 2

- Read the “Length and quantity of syllables” and “Elision” sections of “Part Three: Metrics”
- Complete the worksheets titled “Scansion: Length of Syllables” and “Scansion: Elision”

Friday, April 3

- Read the “Rhythmic patterns” and “Scansion of dactylic hexameter” sections of “Part Three: Metrics”
- Complete the worksheet titled “Scansion: Dactylic Hexameter”

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Monday, March 30

1. Re-read *Aeneid*, Book 1. 34-45 in Latin (pp. 10-11).
2. On pages 2 and 3 of the provided worksheets for lines 34-45 (*Vix . . . acūtō*); circle all indicative, subjunctive, or imperative verbs (and infinitives in an exclamatory question); underline their subjects; and draw an arrow from any adjectives (including participles) to the word they modify. If using a sheet of notebook paper instead of the worksheets provided, identify these words by line (e.g. Line 34 - *Siculae* modifies *telluris*, Line 35 - *laeti* is the subject of the verbs *dabant* and *ruebant*, etc.) and title the page “Aeneid, Book 1.34-45 Translation.” Please be sure to use a full header whether using notebook paper or the provided worksheets.
3. Check your work against the provided answer keys and make any necessary corrections in a different color pen.
4. Translate lines 34-45 into English either using the lines provided on the worksheets or on your notebook paper. If using the provided worksheets, try to line up your English translation with the Latin text as much as possible (refer to lines 34-37 on the answer key).

Tuesday, March 31

1. Re-read *Aeneid*, Book 1. 46-54 in Latin (pp. 11-13).
2. On page 3 of the provided worksheets for lines 46-54 (*ast . . . frēnat.*), circle all indicative, subjunctive, or imperative verbs; underline their subjects; and draw an arrow from any adjectives (including participles) to the word they modify. If using a sheet of notebook paper instead of the worksheet provided, identify these words by line (e.g. Line 46 - *ego* is the subject of the verb *gero* (line 48) and *quae* is the subject of the verb *incedo*, etc.) and title the page “Aeneid, Book 1.46-54 Translation.” Please be sure to use a full header whether using notebook paper or the provided worksheet.
3. Check your work against the provided answer keys and make any necessary corrections in a different color pen.
4. Translate lines 46-54 into English either using the lines provided on the worksheets or on your notebook paper. If using the provided worksheets, try to line up your English translation with the Latin text as much as possible (refer to lines 46-48 on the answer key).

Wednesday, April 1

1. Read the “Finding syllables” section of the scanned document “Part Three: Metrics” (p. 303).
2. Complete the worksheet titled “Scansion: Finding Syllables.” You may either complete the information on the worksheet itself or write out your answers on notebook paper. Either way, please be sure to put a full heading and if using notebook paper, include the title “Scansion: Finding Syllables.”
3. For the last section of the worksheet, samples are provided on the answer key for reference.

Thursday, April 2

1. Read the “Length or quantity of syllables” and “Elision” sections of the scanned document “Part Three: Metrics” (pp. 304 and 305).
2. Complete the worksheets titled “Scansion: Length of Syllables” and “Scansion: Elision.” You may either complete the information on the worksheets themselves or write out your answers on separate pieces of notebook paper. Either way, please be sure to use a full heading and if using notebook paper, include the titles “Scansion: Length of Syllables” and “Scansion: Elision.”
3. Samples of the last section of each worksheet are provided on the answer key for reference.

Friday, April 3

1. Read the “Rhythmic patterns,” “Scansion of dactylic hexameter,” and “Final suggestions” sections of the scanned document “Part Three: Metrics” (pp. 304 and 306).
2. Complete the worksheet titled “Scansion: Dactylic Hexameter.” You may either complete the information on the worksheet itself or write out your answers on notebook paper. Either way, please be sure to use a full heading and if using notebook paper, include the title “Scansion: Dactylic Hexameter.”
3. Check your scansion of *Aeneid* lines 35-38 from the worksheet against the answer key provided. Make any necessary corrections with a different color pen.
4. Scan *Aeneid* Book 1. 39-45 either on page 2 of the worksheet provided (“Scansion: Dactylic Hexameter”) or using the same sheet of notebook paper.

Answer Keys

Monday, March 30th

Aeneid Book 1. 34-45 subject, verb, and adjective identifications

Line 34 - *Siculae* modifies *telluris*

Line 35 - *laeti* is the subject of the verbs *dabant* and *ruebant*

Line 36 - *Iuno* is the subject of the understood verb *dixit*, *servans* is a participle modifying *Iuno*, *aeternum* is an adjective modifying *vulnus*

Line 37 - *Me* is the accusative subject of the infinitive verbs *desistere* and *posse* (line 38) used in an exclamatory question, *victam* is a participle modifying *Me*

Line 38 - see the reference to *posse* in line 37 above

Line 39 - *vetor* is a first person singular verb whose subject is "I", *Pallas* is the subject of the verb *potuit* in line 40

Line 40 - see the reference to *potuit* in line 39 above

Line 41 - *unius* modifies the proper noun *Aiacis Oilei*

Line 42 - *Ipsa* is the subject of the verbs *disiecit* and *evertit* in line 43 and *corripuit* and *infixit* in line 45, *rapidum* is an adjective modifying *ignem* and *iaculata* is a participle modifying the subject *Ipsa*

Line 43 - see the reference to *disiecit* and *evertit* in line 42 above

Line 44 - *exspirantem* modifies *illum* and *transfixo* is a participle modifying *pectore*

Line 45 - see the reference to the verbs *corripuit* and *infixit* in line 42 above, *acuto* is an adjective modifying *scopulo*

See also "Answer Key Supplement 1"

Tuesday, March 31st

Aeneid Book 1. 34-45 subject, verb, and adjective identifications

Line 46 - *ego* is the subject of the verb *gero* in line 48, *quae* is the subject of the verb *incedo*

Line 47 - *una* is an adjective modifying *gente*, *tot* is an adjective modifying *annos*

Line 48 - see the reference to the verb *gero* in line 46 above, *quisquam* is the subject of the verb *adorat*

Line 49 - *supplex* is the subject of the verb *imponent*

Line 50 - *flammato* is an adjective modifying *corde*, *dea* is the subject of the verb *venit* in line 52, *volutans* is a participle modifying the subject *dea*

Line 51 - *feta* is an adjective modifying *loca*, *furentibus* is an adjective modifying *Austris*

Line 52 - see the reference to the verb *venit* in line 50, *vasto* is an adjective modifying *antro*, *rex Aeolus* is the subject of the verbs *premit* and *frenat* in line 54

Line 53 - *luctantes* is an adjective modifying *ventos*, *sonoras* is an adjective modifying *tempestates*

Line 54 - see the reference to the verbs *premit* and *frenat* in line 52

See also "Answer Key Supplement 2"

Answer Keys

Wednesday, April 1st

Examples of Latin words divided into syllables:

1. dēligant: dē-li-gant
2. suāvis: suā-vis
3. Graecia: Grae-ci-a
4. quotiēns: quo-ti-ēns
5. Britanniae: Bri-tan-ni-ae
6. coniūrātiō: con-iū-rā-ti-ō

Thursday, April 2nd

Examples of Latin words divided into syllables marked long or short:

- | | | |
|-----------------------|-------------------------|---------------------------------|
| 1. Graecia: Grae-ci-a | 2. audit: au-dit | 3. cōspexērunt: cōn-spe-xē-runt |
| — 1 1 | — 1 | — — — 1 |
| 4. Ītalia: Ī-ta-li-a | 5. proelium: proe-li-um | 6. lacrimāvit: lac-ri-mā-vit |
| — 1 1 1 | — 1 1 | —/1 1 — 1 |

Examples of elisions between two words in a line of poetry:

1. rēg(e) hōram
2. hōr(am) ūna
3. av(ē) atque

Friday, April 3rd

Scansion of Aeneid Book 1.35-38

35 — 1 1 — — — — — 1 1 — 1 1 — —
vēla da|bant lae|t(ī) et spū|mās salis |aere ru|ēbant,
— — — — — — — — — — — 1 1 — 1
cum Iū|n(ō) aeter|num ser|vāns sub| pectore| vulnus
— — — — — — — — — — — 1 1 — 1
haec sē|cum: mē|n(e) incep|tō dē|sistere| victam
— — — — — — — — — — — 1 1 — 1
nec pos|s(e) Ītali|ā Teuc|rōr(um) ā|vertere |rēgem!

Answer Key Supplement 1

Aeneid I.21-40

Causes of Juno's anger, Juno's soliloquy

2

21 bine populum late regem belloque superbum

venturum excidio Libyae: sic volvere Parcas

Id metuens veterisque memor Saturnia belli,

p̄ma quod ad Troiam pro caris gesserat Argis

25 (necdum etiam causae Irarum saevique dolores

exciderant animo; manet alta mente repostum

iudicium Paridis spretaque iniuria formae

et genus invisum et rapti Ganymedis honores)

hls accensa super iactatos aequore toto

30 Troas, reliquias Danaum atque immittis Achilli,

arcebat longe Latio, multosque per annos

errabant acti fufis maria omnia circum.

Tantae molis erat Romanam condere gentem.

Vix e conspectu Siculae tel uris in altum

35 vela ban laeti et spumas salis aere (Uebani)

cum luno aeternum servans sub pectore vulnus

haec secum: "Me incepto esistere ; ctam

ne" ...osse Italia Teucrorum avertere regem?

Quippe vetr atts. Pallasne exurere classem

40 Argivum atque ipsos otuit immergere ponto

014,+ df. '>', hf: Jik, Sic.4 o.n lo., J & hOffy M

... .. liu,-fi,e deep and were charging (through) the foam of the sea with their bronze (prow), when Juno, preserving an eternal wound under her chest, said these things to herself: 'Am I, defeated, to cease from my undertaking...'

Answer Key Supplement 2

Aeneid I.41-60

End of Juno's soliloquy, land of Aeolus

3

41 ūn tus o noxam et fur ias iac is o i e r

! ES i l o v i s r a p i d i m i a c u l a t a e n u b i b u s i g n e n i

disi ē c i t q u e r a t ē s ē v e r t i t q u e a e q u o r a v e n t i s,

i l l u m e x s p r a n t e m t r a n s f i x i o p t e r e f l a m m a s

45 t u r b i n e r i p u c o p u l o q u e i n f l x i a c u t;

a s t s g o, q u a e d i v u l i n c e d o e g i n a I o v i s q u e

et s o r o r e t c o n i u n x, u i i a c u m t e n t e t a i f i n h o s

bell g e r o E t g u i s q u a m n u m e n i n o n i s a d o r a t

praeterea aut s u p p l e s o n e n h o n o r e m ?

50 T a l i a f l a m m a t o s e c u m d i f q u e v l u t a n s

n i m b o r u m i n p a t r i a m, l o f a e t a f u r e n t i b u s A e o l i a,

A e o l i a v e n i t H i c v a s t o r e x A e o l u s a n t r o

l u c t a n t e s v e n t o s t e m p e s t a t e s q u e s o n o r a s

i m p e r i o p r e m i t a c v i n c l i s e t c a r c e r e f r e n a t

55 I l l i i n d i g n a n t e s m a g n o c u m m u r m u r e m o n t i s

c i r c u m c l a u s t r a f r e m u n t; c e l s a s e d e t A e o l u s a r c e

s c e p t r a t e n e o s m o l l i t q u e a n i m o s e t t e m p e r a t t r a s;

n i f a c i a t, i n a r i a a c t e r r a s c a e l u m q u e p r o f u n d u m

q u i p p e f e r a n t r a p i d i s e c u m v e r r a n t q u e p e r a r a s.

60 S e d p a t e r o m n i p o t e n s s p e l u n c i s a b d i d i t a t r i s

but I, who walk proudly as the queen of the gods and both the sister and spouse of Jove, have been waging war with one race for so many years.

Invocation of the Muse: Why must the pious suffer?

Arma virumque cano, Troiae qui primum ab oribus _____

Italiam fato profugus Laevinae venit _____

lit ora- mul tum ille et terris iactatus et alto _____

vl superum, saevae memorem Iunonis obfracta, _____

5 multa quoque et bello passus, dum conderet urbe _____

faferretque deos Latio- genus unde Latinum _____

Albanique patres atque altae moenia Romae. _____

Musa, mihi causas memora, quo numine laeso _____

quidve dolens regna deum tot volvere casus _____

10 insignem pietate virum, tot adfere laboras _____

impulerit. Tantaene animis caelestibus fraus? _____

Urbs antiqua fuit (Tyrii tenuere coloni) _____

Karthago, Italiam contra Tiberinaeque longe _____

ostia, dives opum studiisque asperrima belli; _____

15 quam Iuno fertur terris magis omnibus unam _____

posthabita coluisse Samo: hic illius arma, _____

hic currus fuit; hoc regnum dea gentibus esse, _____

sive qua fata sinant, iam tum tenditque fovetque. _____

Progeniem sed enim Troiano a sanguine ducit _____

20 audierat Tyrias olim quae verteret arces; _____

- 21 hinc populum late regem belloque superbum _____
venturum excidio Libyae: sic volvere Parcas _____
Id metuens veterisque memor Saturnia bem, _____
prima quod ad Troiam pro carls gesserat Argls _____
- 25 (necdum etiam causae frarum saevlque dolores _____
exciderant animo; manet alta mente repostum _____
iudicium Paridis spretaeque iniuria formae _____
et genus invlsum et rapfi Ganymedis honores) _____
hls accensa super iactatos aequore toto _____
- 30 Troas, reliquias Danaum atque immJtis Achiln, _____
arcebat longe Latio, multosque per annos _____
errabant acfi fufis maria omnia circum. _____
Tantae molis erat Romanam condere gentem. _____
Vix e conspectu Siculae telluris in altum _____
- 35 vela dabant laefi et spumas salis aere ruebant, _____
cum luno aeternum servans sub pectare vulnus _____
haec secum: "Mene incepto desistere victam _____
nec posse Italia Teucrorum avertere regem? _____
Quippe vetar fufis. Pallasne exurere classem _____
- 40 Arglvum atque ipsos potuit sommergere ponto _____

41 ūnius ob noxam et furias Aiacis Oī"lel? _____

Ipsa Iovis rapidum iaculata e ml bibus ignem _____

disiecitque rates evertitque aequora venfis, _____

illum exsp"frantem transfixo pectore flammās _____

45 turbine corripuit scopuloque Tnfixit acūto; _____

ast ego, quae dTvum incedo regTna Iovisque _____

et soror et coniūnx, ūna cum gente tot annos _____

bella gero. Et quisquam numen lūnonis adorat _____

praeterea aut supplex arTs imponēt honorem?" _____

50 Talia flammato secum dea corde volūtans _____

nimborum in patriam, loca teta furentibus AustrTs, _____

Aeoliam venit. HTc vasto rex Aeolus antro _____

luctantes ventas tempestatesque sonoras _____

imperio premit ac vinc!Ts et carcere frenat. _____

55 IIIIT indignantes magno cum murmure montis _____

circum claustra fremunt; celsa sedet Aeolus arce _____

sceptra tenens mollitque animas et temperat "fras; _____

nT faciat, maria ac terras caelumque profundum _____

quippe ferant rapidT secum verrantque per auras. _____

60 Sed pater omnipotens speluncTs abdidit atrTs _____

Part Three: Metrics

Meter or rhythm in poetry

English verse derives its rhythm, or repeated pattern of sound, from the natural stress accent of the English language. For example, Shakespeare's plays are written in iambic pentameter:

x / x / x / x / x /

If music be the food of love, play on.

Latin verse derives its rhythm from the length of time taken to pronounce each syllable. The rhythm depends upon the succession of long and short syllables and, to a lesser degree, upon the word accent. Latin poetry was meant to be read aloud; long and short vowels were clearly distinguished by Roman ears.

1 Finding syllables

A syllable is a single uninterupted sound unit within a word. For example, **audiámus** contains four syllables or sound units: **au-di-á-mu s**.

The number of syllables in a Latin word equals the number of vowels or diphthongs (*two vowels pronounced together*). In a syllable a vowel may be by itself or have a consonant(s) before and/or after it (e.g. **do-ce-o**, **spe-ci-es**, **fert**). Latin diphthongs are **ae**, **au**, **oe**.

A consonant is pronounced with the vowel that follows it, e.g. **ro-gá- vit**.

If two vowels or a vowel and diphthong appear together, pronounce them separately, e.g. **di-es**, **fi-li-ae**.

If two consonants appear together, pronounce them separately, e.g. **spec-tá-tor**, **sol-li-ci-tus**.

If more than two consonants appear together, pronounce all except the last with the preceding vowel and the last with the following vowel, e.g. **cunc-tor**.

If the word is compounded, pronounce its original parts separately, e.g. **con-sü-mit**.

Notes:

The combination **qu** = **kw**; do not treat the **u** as a vowel.

The letter **i** is a consonant or a vowel. **i** is a consonant if it occurs between vowels (**Troiae**, **cuius**) or if it begins a word and is followed by a vowel (**iam**, **iungo**).

The letter **u** may be combined with the previous **s** or **g** depending on pronunciation, e.g. **san-guis**, **per-suá-de-o**, **su-us**, or **ar-gu-o**.

Divide the following words into syllables: deligant, suavis, respondeo, Graecia, quotiens, audit, Italia, init, Britanniae, proelium, coniüratio.

2 Length or quantity of syllables

The arrangement of a line of Latin verse is based on a pattern of syllables with long (-) or short (C) quantities.

A syllable is long by nature if it contains (1) a long vowel or (2) a diphthong, e.g. di-cit, cae-ni-le-us.

A syllable is long by position if it contains a short vowel followed by (1) two consonants, one of which may start the next word, e.g. cae-ru-le-üs **pon-tus** or (2) a double consonant or **x** or **z**, e.g. **In-re-lix**.

A syllable is doubtful (i.e. it can be either short or long as the poet wishes) if it contains a short vowel followed by a consonant and then an **l** or **r** (liquid consonants), e.g. **ne-c** la-cri-mis (Virgil, *Aeneid* V.173) or pal-mas ... üt-ras-que (Virgil, *Aeneid* V.233).

Otherwise a syllable is short.

Mark the long and short syllables in the following: deligant, respondeo, Graecia, audit, Italia, init, Britanniae, proelium, init Graeciam.

3 Word stress (´)

In a word of two syllables, the stress falls on the first syllable, e.g. **á-mo**, **á-mas**.

In a word of three or more syllables, the stress falls on the second last (penultimate) syllable if that syllable is long, e.g. **por-tá-mus**, **con-féc-tus**.

In all other words of three or more syllables, the stress falls on the third syllable from the end (antepenultimate).

Mark the stress on the following words: amicus, ancilla, equus, filius, leo, mercator, monebant, monent, regina, sacerdos, trahet.

4 Rhythmic patterns

Each line of Latin poetry is an arrangement of long and short syllables. Each arrangement carries its own pattern composed of a set number of bars or feet (1): e.g. a dactylic foot = - -, a spondaic foot = - -, a trochaic foot = - -.

A Scansion of dactylic hexameter

In the dactylic hexameter, there are six feet. The fifth foot is almost always a dactyl. To determine the poetic rhythm of a dactylic hexameter line, divide it into its component feet () using the following pattern:

1		2		3		4		5		6
								(- -)		

For example:

t m l i h i l c ; e l ; | t ; s s p l n c ; p t l ; d s { i t i t l i m b ; r

Copy the following line and scan it, i.e. mark the rhythm and feet.

erramus pelag6, totidem sine sidere noctes

B Elision

Latin poetry practices elision; in certain circumstances the final syllable of a word is slurred/combined with the first syllable of the next word. On a page you would put parentheses around this final syllable if it (1) ends in a vowel or diphthong before a word beginning with a vowel or **h**, e.g. **dix-it e-um-qu(e) i-mis sub fluc-ti-bus** or (2) ends in a vowel + **m** before a word beginning with a vowel or **h**, e.g. **ax-(em) u-mer-6 tor-quet**. Some of you may be familiar with elision from words such as *l'église* or *l'homme* in French.

Indicate the elisions in the following: rege horam, terra üna, terrae incola, horam üna, regem horam, casum audio.

Copy and scan the following:

postquam altum tenuere rates nec iam amplius üllae
apparent terrae, caelum undique et undique pontus

C Caesura

The ending of a word within a foot is called a **caesura** (cut). The mark for a caesura is ||. In a hexameter line the main caesura often falls midway.

For example:

tum mihi | caerule | us || sup | ra caput | adstitit | imber

D Scansion of elegiac couplet

The elegiac couplet is comprised of two lines, a dactylic hexameter alternating with a pentameter line, which is actually the first two and a half feet of a hexameter twice.

To determine the rhythmic pattern of an elegiac couplet, divide it into its component feet as follows:

Line 1
 1 - 1 - 1 -
 1 - - - - - -

Line 2
 1 - 11 1 - 1

For example:

accipe | frit;r | no mul r m a | nantia fletu

; tqu(e) in | p;rp;t 1 1 u , 11 frater;, 1 v(e) tqu e v le

Copy and scan the following:

exigis ut nostros donem tibi, Tueca, libellos.
non faciam: nam vis vendere, non legere.

E Scansion of hendecasyllables

To determine the rhythmic pattern of a hendecasyllabic line, divide it as follows:

— | — — — | — — | — — | — —

For example:

pas-s; r | m r- - s i ;st m;- i ;e p- i ;l-l;e,

pas-s; r | d -li-c i- i ;e e- i ;e p- i ; l;l e,

qu;m plūs | il-l(a) -e - i lls s - i Is; _ i mi-b;t.

Copy and scan the following:

vi-va-mus, me-a Les-bi(a), at-qu(e) a-me-mus.

mi-ra-ris ve-te-res, Va-cer-ra, so-los

nec lau-das ni-si mor-tu-os po-e-tas.

F Final suggestions

"Scanning" poetry on paper, that is, marking the long and short vowels, is just a way of keeping a record of the rhythm, a device to help you read Latin poetry aloud with an appreciation of the sound effects developed by the Roman poets. A preponderance of dactyls produces a fast pace or light or lilting effect. A preponderance of spondees suggests tension or a slow or difficult movement and produces a more solemn, grand, or ominous effect; several elisions suggest strong emotion.

When you are scanning a line of Latin poetry

- copy the Latin correctly,
- mark elisions and do not count as a syllable,
- mark the syllables you know are long,
- deduce the remaining syllables from the metric pattern,
- read the Latin aloud.

Scansion: Finding Syllables

After reading the “Finding syllables” section of the scanned document “Part Three: Metrics” (p. 303), answer the following questions in complete sentences:

1. What is a syllable?

2. What determines the number of syllables in a word?

3. What is a diphthong? Give three examples of common Latin diphthongs.

4. A consonant is pronounced with the vowel that follows it (e.g. *ro-gā-vit*), but what if two or more consonants appear together (e.g. *cūnc-tor*)? How are those consonants pronounced?

5. How are compounded words (i.e. words with a prefix like *re-spondeō*) pronounced?

6. When are the letters *i* and *u* considered consonants?

Hint: The letters **u** and **i** are treated as **consonants** depending on pronunciation (i.e. when the letter **u** is pronounced like a “w” and when the letter **i** is pronounced like a “y” as in *se-quor*, *san-guis*, *per-suā-de-ō*, *Trō-iae*, *cu-ius*, *iun-gō*).

Divide the following Latin words into syllables:

7. passer _____

10. init _____

8. audit _____

11. proelium _____

6. Ītalia _____

12. cōnsūmit _____

Scansion: Length of Syllables

After reading the “Length or quantity of syllables” section of the scanned document “Part Three: Metrics” (p. 304), answer the following questions in complete sentences:

1. What is the arrangement of a line of Latin verse based on?

2. What syllables are considered long by nature?

3. What syllables are considered long by position?

4. What does it mean for a syllable to be “doubtful” and what is the condition under which this can occur?

Nota Bene: The letter **h** is considered an aspiration, not a consonant, and therefore cannot make a short vowel long by position (e.g. cāp-**tāt** **ha**-rūn-dine).

Divide the following Latin words into syllables and mark syllables as long (¯) or short (ˇ):

- | | | | |
|--------------|-------|-------------------|-------|
| 5. dēligant | _____ | 8. Britanniae | _____ |
| 6. passer | _____ | 9. init | _____ |
| 7. respondeō | _____ | 10. init Graeciam | _____ |

Scansion: Elision

After reading the “Elision” section of the scanned document “Part Three: Metrics” (p. 305), answer the following questions in complete sentences:

1. What is elision?

2. How is elision represented on a page?

3. What are the conditions under which elision occurs?

Nota Bene: When reading a line of poetry that contains an elision, the combined syllables are spoken as one unit and the letter/s in parentheses are not pronounced.

Indicate the elisions in the following words with parentheses:

4. postquam altum

5. terrae incola

6. rēgem hōram

7. terra ūna

8. caelum undique et

9. cāsum audiō

Scansion: Dactylic Hexameter

Read the following information regarding meter and feet:

In Latin poetry, every line has a specific **arrangement of long and short syllables** which forms a pattern we refer to as **meter**.

Every meter is composed of **smaller units of long and short syllables** called **feet**. We use a bar (|) to note the end of a metrical foot. In the meter we will be studying, dactylic hexameter, there are three types of metrical feet:

Dactyl = | - ~ ~ |
Spondee = | - - |
Trochee = | - ~ |

Read the following information regarding dactylic hexameter. Referring to the “Scansion of dactylic hexameter” section of the scanned document “Part Three: Metrics” (p. 304), fill in the blanks with the missing information.

In dactylic hexameter, there are _____ feet (from the Greek *hexa* [έξα] meaning “six”).

The fifth foot is almost always a _____. The sixth foot is only composed of two syllables (either a spondee or a trochee). The first four feet can be any combination of dactyls or spondees. Written out, the pattern for dactylic hexameter is as follows:

1 2 3 4 5 6
- ~ ~ | - ~ ~ | - ~ ~ | - ~ ~ | - ~ ~ | - -
- - - - - - - - (- -) - ~

Read the “Final suggestions” section of the scanned document “Part Three: Metrics” (p. 306) Then scan the following lines (*Aeneid*, Book 1.34-38) by marking the rhythm and feet. Be sure to keep in mind the rules for finding syllables, marking those syllables long or short, and elision. The first line is done for you. Once you finish, check your work against the answer key and make corrections with a different pen.

vīx ē | conspec | tū Sicū | lae tel | lūris in | altūm

35 vēla dabant laetī et spūmās salis aere ruēbant,
cum Iūnō aeternum servāns sub pectore vulnus
haec sēcum: mēne inceptō dēsistere victam
nec posse Ītaliā Teucrōrum āvertere rēgem!

Scansion: Dactylic Hexameter

After correcting lines 34-38, scan lines 1.39-45.

Quippe vetor fātīs. Pallasne exūrere classem

40 Argīvum atque ipsōs potuit sommergere pontō

ūnius ob noxam et furiās Aiācis Oīleī?

Ipsa Iovis rapidum iaculāta ē nūbibus ignem

disiēcitque ratēs ēvertitque aequora ventīs,

illum expīrantem trānsfixō pectore flammās

45 turbine corripuit scopulōque īnfixit acūtō;

Remote Learning Packet

NB: Please keep all work produced this week. Details regarding how to turn in this work will be forthcoming.

March 30 - April 3, 2020

Course: 10 Precalculus

Teacher: Mr Simmons michael.simmons@greatheartsirving.org

Weekly Plan:

Monday, March 30

“Exponential and Logarithmic Equations” worksheet

Tuesday, March 31

Check answers to “Exponential and Logarithmic Equations” worksheet

4.6: 5-49 odd

Wednesday, April 1

Check answers to 4.6: 5-49 odd

“Exponential and Logarithmic Models I” worksheet

Thursday, April 2

Check answers to “Exponential and Logarithmic Models I” worksheet

Friday, April 3

“Exponential and Logarithmic Models II” worksheet

Statement of Academic Honesty

I affirm that the work completed from the packet is mine and that I completed it independently.

I affirm that, to the best of my knowledge, my child completed this work independently

Student Signature

Parent Signature

Monday, March 30

Dearest students, hello! I hope you've enjoyed your leisure over the past two weeks. While I am heartbroken that I can't be with you in person to guide you through the wonderful beauties of mathematics over these next few weeks, I see some good coming from the circumstances, as each of you will be challenged - and surely will rise to meet the challenge - to engage in mathematical inquiry in a more independent way. The frustrations you will feel in your isolated struggle for mathematical understanding, no matter your success, will doubtless sow seeds of true mathematical thought - and winter always ends in a fruitful spring. The essentially collaborative nature of our class has unfortunately (though necessarily) been temporarily suspended, so take courage as you embark on this lonely adventure, and look forward to our reunion in good time. Have fortitude, and I look forward to seeing you all again.

In the meantime, your individual adventures in math will be guided by written instructions contained in packets like this one. Today's single instruction is to finish solving - as well as justifying each step in solving - the equations on the worksheet that you have already begun entitled "Exponential and Logarithmic Equations." I'm including the list of equations here. Remember that to solve an equation means to find all values which, when plugged in for x , make the equation true, and that to justify each step of a solution means to state by what rule or property you are able to deduce one fact from another. **DO NOT** use any materials (such as the textbook) to aid your attempt to solve these equations, other than your notes. The point of this exercise is **NOT** to get the right answer. The point is to think mathematically, which means struggling to solve the equations by thinking creatively. Don't spend more than 40 minutes on math today. If you don't finish all the equations by the end of those 40 minutes, that's okay. Enjoy!

1. $2^{x-1} = 2^{2x-4}$
2. $8^{x+2} = 16^{x+1}$
3. $2^{5x} = \sqrt{2}$
4. $3^{x+1} = -2$
5. $5^{x+2} = 4^x$
6. $100 = 20e^{2x}$
7. $4e^{2x} + 5 = 12$
8. $e^{2x} - e^x = 56$
9. $2 \ln(x) + 3 = 7$
10. $2 \ln(6x) = 7$
11. $\ln(x^2) = \ln(2x + 3)$

Tuesday, March 31

1. At the end of this packet is an answer key to the equations you solved yesterday. Check each answer carefully, correcting your own answers completely as you go.
2. Complete the problem set 4.6: 5-49 odd.

Wednesday, April 1

1. Check your answers to the problem set 4.6: 5-49 odd with the back of the book.
2. Spend the remainder of your 40 minutes today attempting to answer the questions posed in the “Exponential and Logarithmic Models I” worksheet on the next page.

Thursday, April 2

1. Carefully read through the answer key for the “Exponential and Logarithmic Models I” worksheet, pausing and thinking as instructed.
2. Spend any extra time that you might have of the total 40 minutes reviewing your understanding of exponential growth and decay.

Friday, April 3

1. Complete the “Exponential and Logarithmic Models II” worksheet.

Exponential and Logarithmic Equations

Precalculus

Mr. Simmons

Spend 25 minutes of focused time working on these problems. You do not have to go in order. If you have not finished by the end of 25 minutes of focused work, that's okay. If all you do is stare at the problem for 25 minutes in frustration, as long as you're actively trying the whole time, that's okay. Remember that 25 minutes of focused time is equivalent to something like two hours of unfocused time, which is what I see most students engaged in when they study. Be focused.

For each of the following equations, list *every possible* value for x that would make the equation true. (In other words, solve for x .) Justify each step of your argument.

1. $2^{x-1} = 2^{2x-4}$

2. $8^{x+2} = 16^{x+1}$

3. $2^{5x} = \sqrt{2}$

4. $3^{x+1} = -2$

5. $5^{x+2} = 4^x$

6. $100 = 20e^{2x}$

7. $4e^{2x} + 5 = 12$

8. $e^{2x} - e^x = 56$

9. $2 \ln(x) + 3 = 7$

10. $2 \ln(6x) = 7$

11. $\ln(x^2) = \ln(2x + 3)$

Exponential and Logarithmic Equations – Answer Key

Precalculus

Mr. Simmons

For each of the following equations, list *every possible* value for x that would make the equation true. (In other words, solve for x .) Justify each step of your argument.

1. $2^{x-1} = 2^{2x-4}$

Solution.

$$2^{x-1} = 2^{2x-4}$$

$$x - 1 = 2x - 4 \quad (\text{by the one-to-one property of exponentiation})$$

$$3 = x \quad (\text{by the addition and subtraction properties of equality})$$

$$x = 3 \quad (\text{by the reflexive property of equality})$$

Since I used the one-to-one property of exponentiation in my argument, I will prove it here:

Theorem (THE ONE-TO-ONE PROPERTY OF EXPONENTIATION). *Let $b, m, n \in \mathbb{R}$ ($b > 0, b \neq 1$).*

If

$$b^m = b^n,$$

then

$$m = n.$$

Proof. Let $b, m, n \in \mathbb{R}$ ($b > 0, b \neq 1$). Then

$$m = \log_b(b^m) \quad (\text{by the definition of a logarithm})$$

$$= \log_b(b^n) \quad (\text{by substitution, since } b^m = b^n)$$

$$= n \quad (\text{by the definition of a logarithm}).$$

□

2. $8^{x+2} = 16^{x+1}$

Solution.

$$\begin{aligned}
 8^{x+2} &= 16^{x+1} \\
 (2^3)^{x+2} &= (2^4)^{x+1} \quad (\text{by substitution, since } 2^3 = 8 \text{ and } 2^4 = 16) \\
 2^{3(x+2)} &= 2^{4(x+1)} \quad (\text{by the power rule of exponents}) \\
 3(x+2) &= 4(x+1) \quad (\text{by the one-to-one property of exponentiation}) \\
 3x+6 &= 4x+4 \quad (\text{by distribution}) \\
 2 &= x \quad (\text{by the subtraction property of equality}) \\
 x &= 2 \quad (\text{by the reflexive property of equality})
 \end{aligned}$$

3. $2^{5x} = \sqrt{2}$

Solution.

$$\begin{aligned}
 2^{5x} &= \sqrt{2} \\
 2^{5x} &= 2^{\frac{1}{2}} \quad (\text{equivalent notation}) \\
 5x &= \frac{1}{2} \quad (\text{by the one-to-one property of exponentiation}) \\
 x &= \frac{1}{10} \quad (\text{by the division property of equality})
 \end{aligned}$$

4. $3^{x+1} = -2$

Solution. This equation has no solution, since there is no power that a positive number (e.g., 3) can be taken to to get a negative number (e.g., -2).

5. $5^{x+2} = 4^x$

Solution.

$$\begin{aligned}
 5^{x+2} &= 4^x \\
 x+2 &= \log_5(4^x) \quad (\text{by the definition of a logarithm}) \\
 x+2 &= x \log_5(4) \quad (\text{by the power rule of logarithms}) \\
 x - x \log_5(4) &= -2 \quad (\text{by the subtraction property of equality}) \\
 x(1 - \log_5(4)) &= -2 \quad (\text{by factoring}) \\
 x &= \frac{-2}{1 - \log_5(4)} \quad (\text{by the division property of equality})
 \end{aligned}$$

6. $100 = 20e^{2x}$

Solution.

$$\begin{aligned}
 100 &= 20e^{2x} \\
 5 &= e^{2x} \quad (\text{by the division property of equality}) \\
 2x &= \ln(5) \quad (\text{by the definition of a logarithm}) \\
 x &= \frac{1}{2} \ln(5) \quad (\text{by the division property of equality})
 \end{aligned}$$

7. $4e^{2x} + 5 = 12$

Solution.

$$\begin{aligned}4e^{2x} + 5 &= 12 \\4e^{2x} &= 7 \quad (\text{by the subtraction property of equality}) \\e^{2x} &= \frac{7}{4} \quad (\text{by the division property of equality}) \\2x &= \ln\left(\frac{7}{4}\right) \quad (\text{by the definition of a logarithm}) \\x &= \frac{1}{2} \ln\left(\frac{7}{4}\right) \quad (\text{by the division property of equality})\end{aligned}$$

8. $e^{2x} - e^x = 56$

Solution.

$$\begin{aligned}e^{2x} - e^x &= 56 \\(e^x)^2 - e^x - 56 &= 0 \quad (\text{by the power rule of exponents}) \\e^x &= \frac{-(-1) \pm \sqrt{(-1)^2 - 4(1)(-56)}}{2(1)} \quad (\text{by the quadratic formula}) \\e^x &= 8, -7 \quad (\text{simplification}) \\x &= \ln(8) \quad (\text{by the definition of a logarithm})\end{aligned}$$

9. $2 \ln(x) + 3 = 7$

Solution.

$$\begin{aligned}2 \ln(x) + 3 &= 7 \\2 \ln(x) &= 4 \quad (\text{by the subtraction property of equality}) \\\ln(x) &= 2 \quad (\text{by the division property of equality}) \\x &= e^2 \quad (\text{by the definition of a logarithm})\end{aligned}$$

10. $2 \ln(6x) = 7$

Solution.

$$\begin{aligned}2 \ln(6x) &= 7 \\\ln(6x) &= \frac{7}{2} \quad (\text{by the division property of equality}) \\6x &= e^{\frac{7}{2}} \quad (\text{by the definition of a logarithm}) \\x &= \frac{1}{6} e^{\frac{7}{2}} \quad (\text{by the division property of equality})\end{aligned}$$

11. $\ln(x^2) = \ln(2x + 3)$

Solution.

$$\ln(x^2) = \ln(2x + 3)$$

$$x^2 = 2x + 3 \quad (\text{by the one-to-one property of logarithms})$$

$$x^2 - 2x - 3 = 0 \quad (\text{by the subtraction property of equality})$$

$$(x - 3)(x + 1) = 0 \quad (\text{by factoring})$$

$$x = 3, -1 \quad (\text{by the division and addition/subtraction properties of equality})$$

Since I used the one-to-one property of exponentiation in my argument, I will prove it here:

Theorem (THE ONE-TO-ONE PROPERTY OF LOGARITHMS). *Let $b, m, n \in \mathbb{R}^+$ ($b \neq 1$). If*

$$\log_b(m) = \log_b(n),$$

then

$$m = n.$$

Proof. Let $b, m, n \in \mathbb{R}^+$ ($b \neq 1$). Then

$$m = b^{\log_b(m)} \quad (\text{by the definition of a logarithm})$$

$$= b^{\log_b(n)} \quad (\text{by substitution, since } \log_b(m) = \log_b(n))$$

$$= n \quad (\text{by the definition of a logarithm}).$$

□

Exponential and Logarithmic Models I

Mr. Simmons

Precalculus

1. The *half-life* of a radioactive isotope, such as Carbon-14, is the amount of time it takes some initial amount of that isotope to decay into half the initial amount. For example, 100 mg of Carbon-14 decays into 50 mg of Carbon-14 over the course of exactly one half-life of Carbon-14. The half-life of Carbon-14 happens to be 5,730 years. Keeping in mind that radioactive decay follows the natural exponential decay formula, come up with an equation that models the amount of Carbon-14 that remains after t years if it started with an initial amount of 100 mg.
2. Consider a pot of boiling water that has just been taken off the stove. At this initial time, the water is at 212 degrees Fahrenheit, but sitting in a room at room temperature (72 degrees), it will start to cool. This cooling follows a natural exponential decay curve. If after 100 minutes, the water is 80 degrees, what equation could model the temperature of the water as a function of time?
3. Come up with a general formula for modeling, as a function of time t , the temperature T of an object that is cooling or warming as it sits in a room of surrounding temperature T_s .

Exponential and Logarithmic Models I

Mr. Simmons

Precalculus

1. The *half-life* of a radioactive isotope, such as Carbon-14, is the amount of time it takes some initial amount of that isotope to decay into half the initial amount. For example, 100 mg of Carbon-14 decays into 50 mg of Carbon-14 over the course of exactly one half-life of Carbon-14. The half-life of Carbon-14 happens to be 5,730 years. Keeping in mind that radioactive decay follows the natural exponential decay formula, come up with an equation that models the amount of Carbon-14 that remains after t years if it started with an initial amount of 100 mg.

Solution. Hmm. We're told that radioactive decay follows the natural exponential decay formula, so let's start with that:

$$A(t) = ae^{rt}.$$

We know $a = 100$, since we're starting with 100 mg:

$$A(t) = 100e^{rt}.$$

How can we find out r ? t is our independent variable, so we want to leave it as a letter in our final answer, but in order to find our r , let's plug in a known point $(t, A(t))$, for example, the one we know from knowing Carbon-14's half-life. If you haven't already, take a moment to figure out what that is.

Carbon-14 has a half-life of 5,730 years, meaning that it takes 5,730 years for 100 mg of Carbon-14 to decay into 50 mg, giving us the equation

$$(50) = 100e^{r(5730)}.$$

Solving for r , we get

$$\begin{aligned}\frac{1}{2} &= e^{5730r} \\ 5730r &= \ln\left(\frac{1}{2}\right) \\ 5730r &= -\ln(2) \\ r &= -\frac{\ln(2)}{5730},\end{aligned}$$

giving us the final answer

$$A(t) = 100e^{-\frac{\ln(2)}{5730}t}.$$

Before moving on, answer the following questions:

-
- (a) How did we substitute $-\ln(2)$ in for $\ln\left(\frac{1}{2}\right)$?
- (b) Would r have been different if we had started with a different initial amount a ?
2. Consider a pot of boiling water that has just been taken off the stove. At this initial time, the water is at 212 degrees Fahrenheit, but sitting in a room at room temperature (72 degrees), it will start to cool. This cooling follows a natural exponential decay curve. If after 100 minutes, the water is 80 degrees, what equation could model the temperature of the water as a function of time?

Solution. Again, we're told that we should model this situation using natural decay. (Think about why.) So we start with

$$T(t) = T_i e^{rt},$$

where T is the temperature of the water, T_i is its initial temperature, and t is time elapsed in minutes. If we go about this problem in a similar way to the previous problem, then we plug in our initial value and a known point to get

$$\begin{aligned}(80) &= 212e^{r(100)} \\ \frac{80}{212} &= e^{100r} \\ 100r &= \ln\left(\frac{80}{212}\right) \\ r &= \frac{\ln\left(\frac{80}{212}\right)}{100},\end{aligned}$$

and so a final answer of

$$A(t) = 212e^{\frac{\ln\left(\frac{80}{212}\right)}{100}t}.$$

Is this the right answer? (Answer this question before moving on.)

No. No it is not. Why not? (Answer this question before moving on.)

See, if we used that equation, then larger and larger values of t would result in smaller and smaller values of T , as illustrated by the following calculations:

$$T(100) = 80$$

$$T(200) \approx 30$$

$$T(300) \approx 11$$

$$T(400) \approx 4.$$

But does it make any sense for a pot of water sitting in a room temperature environment to tend toward 0 degrees Fahrenheit? Have you ever seen water spontaneously freeze? We need to use common sense to think about our answer.

So what temperature *would* the water tend toward? The answer seems to be 72 degrees Fahrenheit. But what do we have to do to get an equation that will reflect this tendency? Answer this question before moving on. Do *not* give up before you've spent at least 10 minutes on it. Hint: graph $T(t)$.

We want the temperature to tend toward 72 degrees Fahrenheit, meaning that as $t \rightarrow \infty$, $T(t) \rightarrow 72$. Look familiar? We're going to have a horizontal asymptote at $T(t) = 72$. Graphically speaking, how do we get an exponential curve to have a horizontal asymptote at $T(t) = 72$? (Answer this question before moving on.)

That's right, we shift it up. This is achieved by adding a vertical shift value to the initial natural decay formula. Since we want to shift up 72, we'll add 72:

$$T(t) = ae^{rt} + 72.$$

Now we can plug known values and solve for unknowns:

$$(80) = ae^{r(100)} + 72$$

$$8 = ae^{100r}$$

$$\frac{8}{a} = e^{100r}$$

$$100r = \ln\left(\frac{8}{a}\right)$$

$$r = \frac{\ln\left(\frac{8}{a}\right)}{100},$$

so

$$T(t) = ae^{\frac{\ln \frac{8}{a}}{100}t} + 72.$$

But what's a ? We're tempted to just plug in 212 for a , since in the natural decay formula a stands for the initial amount. But try plugging in 212 for a and see what you get. (Do this before moving on.)

The problem is that if we plug in 212 for a , the equation *doesn't* give us an initial value of 212. The initial value is represented by $T(0)$, and if

$$T(t) = 212e^{\frac{\ln \frac{8}{100}}{100}t} + 72,$$

then

$$\begin{aligned} T(0) &= 212e^{\frac{\ln\left(\frac{8}{212}\right)}{100}(0)} + 72 \\ &= 212 + 72 \\ &= 294. \end{aligned}$$

Hmm. That's not right. So what should we plug in for a to get an initial value of 212? Well, let's start with

$$T(0) = 212$$

and solve for a :

$$\begin{aligned} (212) &= ae^{\frac{\ln\left(\frac{8}{a}\right)}{100}0} + 72 \\ 212 - 72 &= a \\ a &= 140. \end{aligned}$$

So it looks like a needs to be the difference between the initial temperature and the surrounding temperature. This makes sense, since we shifted up 72, the value of the surrounding temperature. So our final answer is

$$T(t) = 140e^{\frac{\ln\left(\frac{2}{35}\right)}{100}t} + 72.$$

3. Come up with a general formula for modeling, as a function of time t , the temperature T of an object that is cooling or warming as it sits in a room of surrounding temperature T_s .

Solution. This question is simply asking us to generalize our previous answer, so instead of writing

$$T(t) = 140e^{\frac{\ln\left(\frac{2}{35}\right)}{100}t} + 72,$$

we write

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

where $A = T_i - T_s$ and k is a constant that represents the continuous rate of cooling or warming.

The equation that you have just derived is popularly known as Newton's Law of Cooling.

Exponential and Logarithmic Models II

Mr. Simmons
Precalculus

Newton's Law of Cooling (which you derived in the previous worksheet) states that the temperature of an object, T , in surrounding air with temperature T_s , will behave according to the formula

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

where

- t is time,
- A is the difference between the initial temperature of the object and the surroundings, and
- k is a constant, the continuous rate of cooling of the object.

Use Newton's Law of Cooling to answer the following questions:

1. 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?

Remote Learning Packet

NB: Please keep all work produced this week. Details regarding how to turn in this work will be forthcoming.

March 30 - April 3, 2020

Course: 10 Spanish II

Teacher(s): Ms. Barrera anna.barrera@greatheartsirving.org

Supplemental links: www.conjuguemos.com
www.spanishdict.com

Weekly Plan:

Monday, March 30

- Cuando Eramos Ninos! Read about favorite childhood toys and school experience.
- Answering questions, reading about daycare centers and practicing the vocabulary.

Tuesday, March 31

- Cuando Eramos Ninos! Practice answering questions about readings having to do with childhood.
- Writing about what toys you use to play with when you are a child.

Wednesday, April 1

- Cuando Eramos Ninos! Reading about nursery rhymes and practicing your pronunciation
- Practicing the difference between the pronunciation of r and rr.

Thursday, April 2

- Translation and practicing when and how to use the regular irregular imperfect tense.
- Grammar practice using the workbook handouts.

Friday, April 3

- Cuando Eramos Ninos! Reading about science and your interests as a child
- Reading and translating.

Statement of Academic Honesty

I affirm that the work completed from the packet is mine and that I completed it independently.

I affirm that, to the best of my knowledge, my child completed this work independently

Student Signature

Parent Signature

Monday, March 30

Capitulo 4A: Cuando Eramos Ninos! Read about favorite childhood toys and school experience.

1. Textbook, page 192 - **Activity 9** *Las analogias* Read and write the correct answer that is related to the word. In a loose -leaf paper write down your answers for this exercise and the exercises to follow. Make sure you date all your exercises. Thank you.
2. Textbook page 192 - Culture: Las guarderías infantiles: Read about daycare centers in Spanish speaking countries then answer in Spanish the question next to Pre-AP integration.
3. Core Practice 4A-2: Que estan haciendo? Look at the drawings and tell what the people are doing.

Tuesday, March 31

Capitulo 4A: Cuando Eramos Ninos! Practice answering questions about readings having to do with childhood.

1. Textbook, page 192 - Activity 11 - *Y tu, que dices?* Answer the four questions having to do with toys in a complete sentence. You might have already done this activity but repetition is good for the memory.
2. Textbook, page 193 - Activity 12 - *Como cuidar al niño?* Read the announcement and then answer in Spanish the five sentences about the announcement. Answer in complete sentences.

Wednesday, April 1

Capitulo 4A: Cuando Eramos Ninos! Reading about nursery rhymes and practicing your pronunciation.

1. Textbook, page 193 - Pronunciación - the sounds of *r* and *rr*. Read about how to differentiate between the consonants *r* and *rr*. Now practice saying the words listed in the reading and then read the lullaby at least three times in order to practice the pronunciation between *r* and *rr*.
2. Textbook p. 194 - Grammar - Activity 14 - En la casa de nuestros abuelos. Write the entire paragraph and fill in the blank with the correct imperfect verb.
3. Guided Practice Activities 4A1 and 4A-2: The Imperfect tense, Regular verbs: Fill in the blanks with the correct verb then translate Exercise A through D.

Thursday, April 2

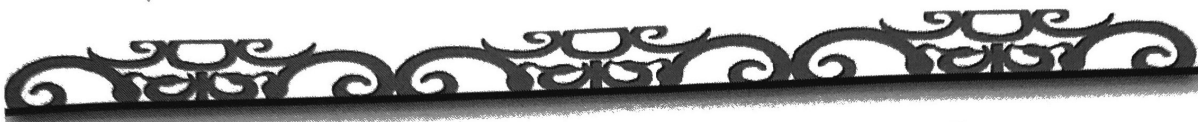
Capitulo 4A: Cuando Eramos Ninos! Translation and practicing when and how to use the regular and irregular imperfect tense.

1. Textbook p.196 Grammar - Read about the irregular verbs and then do Activity 16 - Los veranos en Boston. Write the entire article and then fill in the blank with the appropriate irregular imperfect tense.
2. Guided Practice Activities 4A-3 and 4A-3a: Fill in the blanks with the appropriate irregular imperfect tense and then translate Section A and Section B, Section A (the imperfect review).

Friday, April 3

Capitulo 4A: Cuando Eramos Ninos! Reading about science and your interests as a child.

1. Textbook p.197- Activity 17 *Un niño inteligente* (Las ciencias) Write the article in Spanish and fill in the blank with the correct regular or irregular imperfect tense.
2. Textbook p. 197 Activity 17. After you have finished this activity now I would like for you to translate the entire article with the answers that you filled in the previous activity.
3. Textbook p. 197 - Activity 18. *Y tu, que dices?* There are 3 questions that have more than 1 question in each. Answer the questions in Spanish using complete sentences.



Nombre _____

Hora _____

Capítulo 4A

Fecha _____

Core Practice **4A-2**

¿Qué están haciendo?

Look at the drawings and tell what the people are doing.



1. Los niños coleccionan _____.



2. Luisita le da de comer a _____ tres veces al día.



3. A Sergio le gusta jugar con _____.



4. Los niños juegan en el _____.



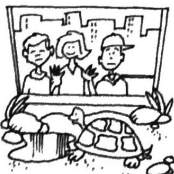
5. Carlitos y Ricardito están en _____.



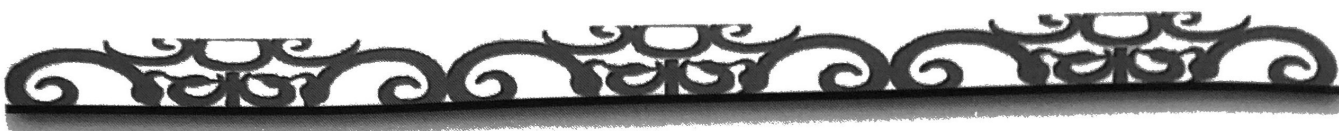
6. Manolo salta _____.



7. La joven _____ molesta a su hermanito.



8. Los niños quieren comprar una _____.



Nombre _____

Hora _____

Capítulo 4A

Fecha _____

Guided Practice Activities 4A-1**The imperfect tense: Regular verbs (p. 194)**

- The imperfect tense is used to talk about actions that happened repeatedly in the past.

Rafael caminaba y Ramiro corría en el parque.

Rafael used to walk and Ramiro used to run in the park.

- Here are the regular forms of **-ar**, **-er**, and **-ir** verbs in the imperfect tense:

	jugar	hacer	vivir
yo	jugaba	hacía	vivía
tú	jugabas	hacías	vivías
usted/él/ella	jugaba	hacía	vivía
nosotros/nosotras	jugábamos	hacíamos	vivíamos
vosotros/vosotras	jugabais	hacíais	vivíais
ustedes/ellos/ellas	jugaban	hacían	vivían

- Note the accents on **jugábamos** and throughout the conjugations of the **-er** and **-ir** verbs.
- These expressions can cue you to use the imperfect: **generalmente, por lo general, a menudo, muchas veces, de vez en cuando, todos los días, nunca.**

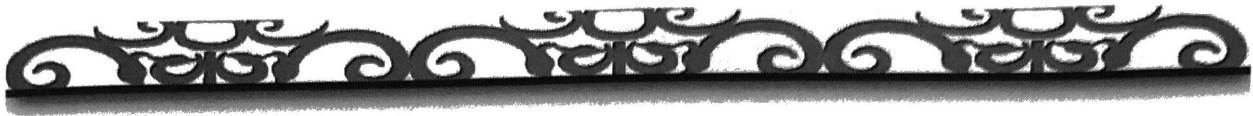
A. Write the infinitive form of each conjugated verb. The first one is done for you.

- | | | | |
|------------------|--------------------------|--------------|-------|
| 1. jugaba | _____ <i>jugar</i> _____ | 5. ofrecía | _____ |
| 2. molestaba | _____ | 6. permitían | _____ |
| 3. coleccionaban | _____ | 7. corríamos | _____ |
| 4. obedecías | _____ | 8. vivíamos | _____ |

B. Fill in the blanks with the correct form of the **-ar** verbs in the imperfect tense. Follow the model.

Modelo Tú habl*abas* _____ con mucha gente.

- Alicia siempre molest_____ a su hermana.
- Mis tíos nunca nos regal_____ nada a nosotros.
- Pedro le d_____ agua al perro muchas veces.
- Yo siempre me port_____ bien enfrente de mis padres.
- A menudo nosotros jug_____ en el parque.



Nombre _____ Hora _____

Capítulo 4A

Fecha _____

Guided Practice Activities 4A-2

The imperfect tense: regular verbs (continued)

C. Write the correct endings for the -er and -ir verbs below. Follow the model.

Modelo Por lo general, yo obedec *ía* _____ a mis padres.

1. Mis primos me ofrec _____ sus bloques de vez en cuando.
2. A menudo mis tíos me permit _____ comer una galletas.
3. Generalmente, mamá pon _____ la mesa.
4. Mis hermanos y yo hac _____ la cama todos los días.
5. Tú viv _____ en la misma ciudad que yo.

D. Complete the sentences below to describe what people *used to do*. Use the drawings and the verbs in parentheses as clues. Follow the model.



Modelo Mario _____ *saltaba* _____ a la cuerda. (saltar)



1. Ellos _____ dinosaurios en la escuela primaria. (coleccionar)



2. Ellas _____ todos los días. (pelearse)



3. Nosotros _____ al tenis los domingos. (jugar)



4. Tú _____ en la biblioteca los fines de semana. (leer)

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Nombre _____

Hora _____

Capítulo 4A

Fecha _____

Guided Practice Activities 4A-3**The imperfect tense: irregular verbs (p. 196)**

- There are only three irregular verbs in the imperfect tense: **ir**, **ser**, and **ver**. Here are their forms:

	ir	ser	ver
yo	iba	era	veía
tú	ibas	eras	veías
usted/él/ella	iba	era	veía
nosotros/nosotras	íbamos	éramos	veíamos
vosotros/vosotras	ibais	erais	veíais
ustedes/ellos/ellas	iban	eran	veían

- Note that only the **nosotros** forms of **ir** and **ser** carry accents.
- **Ver** uses the exact same endings as regular **-er** verbs, and is only irregular because of the added "e".

A. Choose the correct verb in parentheses to complete each sentence. Circle your choice. Use the chart above to help you. Follow the model.

Modelo Clara y Nubia (**eran** / **iban**) mis amigas.

1. Por lo general, yo (**era** / **veía**) a mis primas.
2. Mis primos nunca (**veían** / **iban**) conmigo al mercado.
3. Mis hermanos y yo (**éramos** / **íbamos**) muy traviesos.
4. ¿Tú (**ibas** / **veías**) muchas películas?

B. Complete the following sentences using the imperfect form of the verb in parentheses. Follow the model.

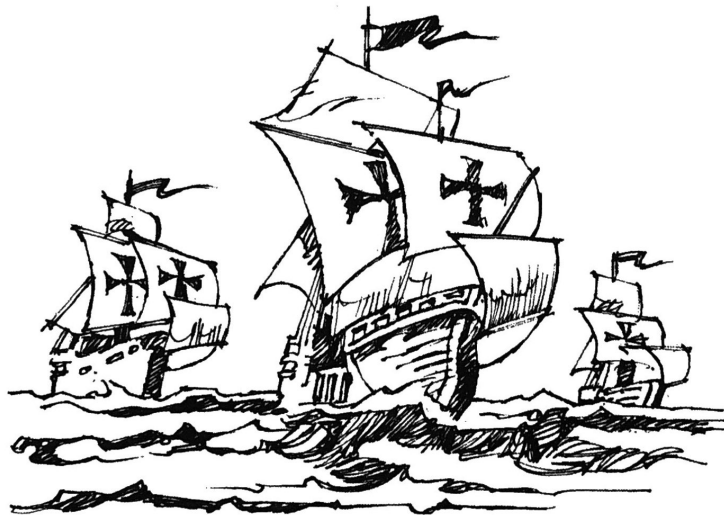
Modelo Nosotros (**ir**) íbamos a la escuela todos los días.

1. ¡Mi mamá (**ser**) _____ muy traviesa de niña!
2. Nosotros generalmente (**ver**) _____ la tele en casa.
3. De niña, yo (**ir**) _____ a la casa de mis tíos de vez en cuando.
4. La familia de mi mamá (**ver**) _____ a la abuela durante las vacaciones.
5. Juana y yo (**ser**) _____ muy buenas amigas.

Capítulo 4A**Guided Practice Activities 4A-3a****The imperfect tense: review**

A. Below are two paragraphs about Christopher Columbus. As you read, fill in the blanks with the appropriate imperfect form of the verbs given. The first one has been done for you.

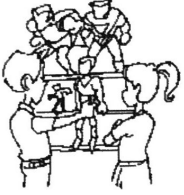
Cuando Cristóbal Colón _____ *tenía* _____ (tener) diez años, le _____ (gustar) mucho navegar (*to sail*) con su papá. Cristóbal y sus amigos _____ (imaginar) lugares distantes y exóticos que ellos _____ (ir) a visitar algún día. Sus padres siempre _____ (decir): "Es importante imaginar y descubrir (*discover*)". Cristóbal _____ (pensar) mucho y realmente _____ (querer) buscar un lugar nuevo.



Cuando _____ (ser) mayor, él _____ (hablar) de vez en cuando con los reyes (*kings, rulers*) de España para pedirles dinero para sus exploraciones. Los reyes _____ (decir): "Cristóbal, tú _____ (ser) un buen explorador de niño con tu padre. Tú _____ (ver) muchos lugares nuevos. Es importante ahora descubrir una nueva ruta a la India". Cristóbal siempre _____ (explorar) y _____ (ver) muchos lugares nuevos, pero nunca encontró la ruta a la India.

¿Qué están haciendo?

Look at the drawings and tell what the people are doing.



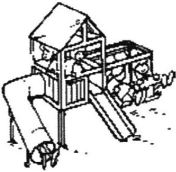
1. Los niños coleccionan muñecos.



2. Luisita le da de comer a los peces tres veces al día.



3. A Sergio le gusta jugar con los dinosaurios.



4. Los niños juegan en el patio de recreo.



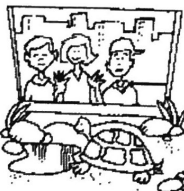
5. Carlitos y Ricardito están en la guardería infantil.



6. Manolo salta a la cuerda.



7. La joven traviesa molesta a su hermanito.



8. Los niños quieren comprar una tortuga.

Capítulo 4A

Guided Practice Activities 4A-1

The imperfect tense: Regular verbs (p. 194)

- The imperfect tense is used to talk about actions that happened repeatedly in the past.

Rafael caminaba y Ramiro corría en el parque.
Rafael used to walk and Ramiro used to run in the park.

- Here are the regular forms of **-ar**, **-er**, and **-ir** verbs in the imperfect tense:

	jugar	hacer	vivir
yo	jugaba	hacía	vivía
tú	jugabas	hacías	vivías
usted/él/ella	jugaba	hacía	vivía
nosotros/nosotras	jugábamos	hacíamos	vivíamos
vosotros/vosotras	jugabais	hacíais	vivíais
ustedes/ellos/ellas	jugaban	hacían	vivían

- Note the accents on **jugábamos** and throughout the conjugations of the **-er** and **-ir** verbs.
- These expressions can cue you to use the imperfect: **generalmente, por lo general, a menudo, muchas veces, de vez en cuando, todos los días, nunca.**

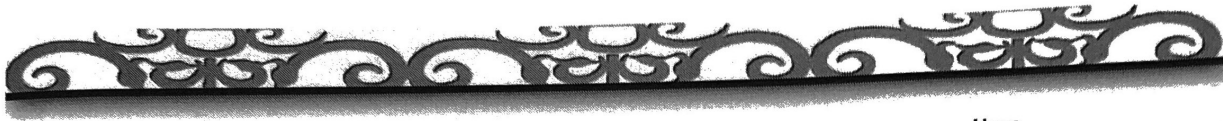
A. Write the infinitive form of each conjugated verb. The first one is done for you.

- | | | | |
|------------------|--------------------------------|--------------|-----------------------------|
| 1. jugaba | <u> jugar </u> | 5. ofrecía | <u> ofrecer </u> |
| 2. molestaba | <u> molestar </u> | 6. permitían | <u> permitir </u> |
| 3. coleccionaban | <u> coleccionar </u> | 7. corríamos | <u> correr </u> |
| 4. obedecías | <u> obedecer </u> | 8. vivíamos | <u> vivir </u> |

B. Fill in the blanks with the correct form of the **-ar** verbs in the imperfect tense. Follow the model.

Modelo Tú hablabas con mucha gente.

1. Alicia siempre molestaba a su hermana.
2. Mis tíos nunca nos regalaban nada a nosotros.
3. Pedro le daba agua al perro muchas veces.
4. Yo siempre me portaba bien enfrente de mis padres.
5. A menudo nosotros jugábamos en el parque.



Nombre _____

Hora _____

Capítulo 4A

Fecha _____

Guided Practice Activities 4A-2**The imperfect tense: regular verbs (continued)**

C. Write the correct endings for the -er and -ir verbs below. Follow the model.

Modelo Por lo general, yo obedec ía a mis padres.

1. Mis primos me ofrec ían sus bloques de vez en cuando.
2. A menudo mis tíos me permit ían comer una galletas.
3. Generalmente, mamá pon ía la mesa.
4. Mis hermanos y yo hac íamos la cama todos los días.
5. Tú viv ías en la misma ciudad que yo.

D. Complete the sentences below to describe what people *used to do*. Use the drawings and the verbs in parentheses as clues. Follow the model.

**Modelo**Mario _____ saltaba a la cuerda. (saltar)

1. Ellos _____ coleccionaban dinosaurios en la escuela primaria. (coleccionar)



2. Ellas _____ se peleaban todos los días. (pelearse)



3. Nosotros _____ jugábamos al tenis los domingos. (jugar)



4. Tú _____ leías en la biblioteca los fines de semana. (leer)



Capítulo 4A

Guided Practice Activities 4A-3

The imperfect tense: irregular verbs (p. 196)

- There are only three irregular verbs in the imperfect tense: **ir**, **ser**, and **ver**. Here are their forms:

	ir	ser	ver
yo	iba	era	veía
tú	ibas	eras	veías
usted/él/ella	iba	era	veía
nosotros/nosotras	íbamos	éramos	veíamos
vosotros/vosotras	ibais	erais	veíais
ustedes/ellos/ellas	iban	eran	veían

- Note that only the **nosotros** forms of **ir** and **ser** carry accents.
- **Ver** uses the exact same endings as regular **-er** verbs, and is only irregular because of the added "e".

A. Choose the correct verb in parentheses to complete each sentence. Circle your choice. Use the chart above to help you. Follow the model.

Modelo Clara y Nubia (eran/ iban) mis amigas.

1. Por lo general, yo (era / veía) a mis primas.
2. Mis primos nunca (veían / iban) conmigo al mercado.
3. Mis hermanos y yo (éramos / íbamos) muy traviesos.
4. ¿Tú (ibas / veías) muchas películas?

B. Complete the following sentences using the imperfect form of the verb in parentheses. Follow the model.

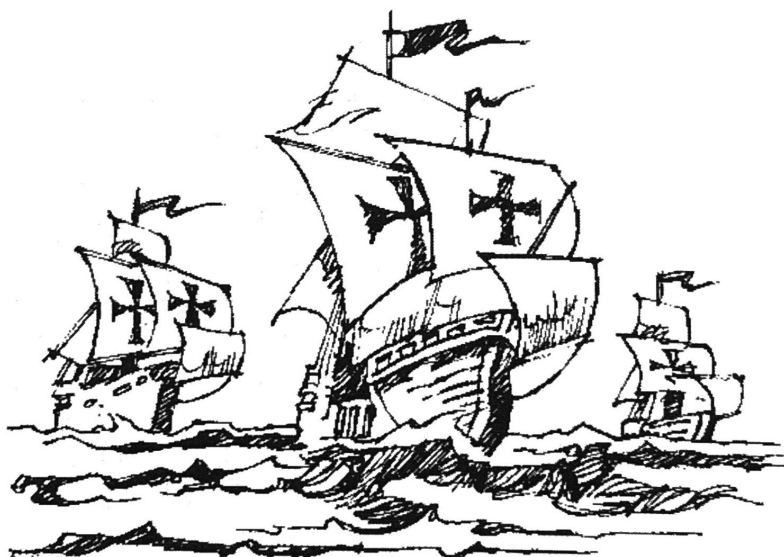
Modelo Nosotros (ir) íbamos a la escuela todos los días.

1. ¡Mi mamá (ser) era muy traviesa de niña!
2. Nosotros generalmente (ver) veíamos la tele en casa.
3. De niña, yo (ir) iba a la casa de mis tíos de vez en cuando.
4. La familia de mi mamá (ver) veía a la abuela durante las vacaciones.
5. Juana y yo (ser) éramos muy buenas amigas.

The imperfect tense: review

A. Below are two paragraphs about Christopher Columbus. As you read, fill in the blanks with the appropriate imperfect form of the verbs given. The first one has been done for you.

Cuando Cristóbal Colón tenía (tener) diez años, le gustaba (gustar) mucho navegar (to sail) con su papá. Cristóbal y sus amigos imaginaban (imaginar) lugares distantes y exóticos que ellos iban (ir) a visitar algún día. Sus padres siempre decían (decir): "Es importante imaginar y descubrir (discover)". Cristóbal pensaba (pensar) mucho y realmente quería (querer) buscar un lugar nuevo.



Cuando era (ser) mayor, él hablaba (hablar) de vez en cuando con los reyes (kings, rulers) de España para pedirles dinero para sus exploraciones. Los reyes decían (decir): "Cristóbal, tú eras (ser) un buen explorador de niño con tu padre. Tú veías (ver) muchos lugares nuevos. Es importante ahora descubrir una nueva ruta a la India". Cristóbal siempre exploraba (explorar) y veía (ver) muchos lugares nuevos, pero nunca encontró la ruta a la India.