6th Grade Lesson Plan Packet

5/11/2020-5/15/2020

GreatHearts Irving

Remote Learning Packet

Please submit scans of written work in Google Classroom at the end of the week as a single PDF file.

Week 7: May 11-15, 2020

Course: 6 World Cultures

Teacher(s): Mrs. Malpiedi patricia.malpiedi@greatheartsirving.org
Mr. Loomis joseph.loomis@greatheartsirving.org

Weekly Plan:

Monday, May 11
- ☐ Study Timeline flashcards
- ☐ Complete "European Exploration" assignment

Tuesday, May 12
- ☐ Study Timeline flashcards
- ☐ Complete "Marco Polo" assignment

Wednesday, May 13
- ☐ Watch "Dates" Video (on Google Classroom)
- ☐ Study Timeline flashcards and complete Timeline Review

Thursday, May 14
- ☐ Take Timeline Assessment (on Google Classroom)
- ☐ Begin Study Guide for next week's Assessment

Friday, May 15
- ☐ Attend Office Hours at 10:30am (Optional)
- ☐ Catch up or review this week's work
- ☐ Upload packet work to Google Classroom (due Sunday, May 17)

Statement of Academic Honesty

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

____
Student Signature

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

____
Parent Signature

Packet Instructions

How do I complete the work in this packet?

1. Print it out and write directly on the packet;
   OR
2. Download the file and type your answers onto it with a PDF editor;
   OR
3. View the packet but record all of your answers on loose leaf paper. If you do this, you MUST put full headings (name, class, teacher, date) and titles on all pages. Completion points can be deducted for missing headings and titles.

How, where, and when do I turn in my work?

HOW: Scan or photograph all of your work and save it as a single PDF file. If you worked directly on the PDF, simply save the file with your changes.

WHERE: Upload the PDF to the "Week 6 Packet" post on Google Classroom. Please do not email them to your teacher.

WHEN: Work must be submitted no later than 11:59pm on Sunday May 17, 2020.

The instructions above apply to all of your classes, regardless of subject.
Best of luck, dear students!

This week we will spend time reviewing our Timeline flashcards in preparation for an assessment <u>this Thursday, 3/14</u> on dates. We will also learn about the Age of Exploration through primary and secondary source readings. Our video this week will have you work through a syllogism.

Next week you will learn about the Industrial Revolution and take an <u>assessment</u> on the topics we have covered in our packets. A study guide is provided with this Thursday's lesson plan.

Monday, May 11

1. Take out *both* sets of Timeline Flashcards: those we made during Week 2 of the Remote Learning packets and those we made during Week 4. Review them for at least 10 minutes. (*View the "Timeline Review" on pages 11-12 of this packet to get a sense for what you will be tested on this Thursday.*)
2. Complete the "European Explorers" worksheet on pages 4-7 of this packet.

Tuesday, May 12

1. Study your Timeline Flashcards or the Timeline Review.
2. Complete the "Marco Polo" worksheet on pages 8-10 of this packet.

Wednesday, May 13

1. Go to Google Classroom. Find the post entitled, "WED May 13: Dates video." At the bottom of the post is a link to a video. Watch the video.
2. Study your Timeline Flashcards or the Timeline Review. You will take the Timeline Assessment tomorrow. *How can I check that I am ready?* Complete the Timeline Review on pages 11-12 of this packet from memory.

Thursday, May 14

1. Review your Timeline flashcards for 5 minutes.
2. Go Google Classroom. Find the post entitled, "THURS May 14: Timeline Assessment." At the bottom of the post is a Google Form. Click on it and take the assessment.
3. We will have another assessment next Thursday 3/21 on the material we have studied since starting these remote packets. Use the study guide on pages 13-14 of this packet to begin preparing.

Friday, May 15

1. (Optional) Attend Office Hours at 10:30am. The link for this meeting can be found on the "Stream" of your World Cultures Google Classroom page.
2. Catch up or review this week's work.
3. Upload your packet work as a single PDF file to Google Classroom.

The following items should be a part of that file:

- ❏ "European Explorers" assignment
- ❏ "Marco Polo" assignment

The following should be completed on Google Classroom:

- ❏ Timeline Assessment (Google Form)

These three items are due by 11:59pm on Sunday, May 17th. Have a good weekend!

GreatHearts Irving

Monday, May 11, 2020

European Exploration

Instructions: Complete the reading and then the four questions which follow. Feel free to annotate as you read.

European Exploration

In the second half of the 15th century, European sailors and navigators began to plan voyages which would take them beyond the limits of the world they knew. This was partly a result of the new interest in the world encouraged by the Renaissance (*see* pages 330–331), but the main reason was to set up new trading links with the spice-producing countries of Asia.

Until the Byzantine empire fell in 1453, spices were brought overland to Constantinople and then taken across the Mediterranean to the countries of Europe. This made them expensive.

In spite of this, spices were an essential part of everyday life. There was no refrigeration so the only way to preserve meat was by salting it. Adding spices helped to hide the salty taste, and they also concealed the taste of meat which had gone bad despite being salted.

After 1453, direct land links between Europe and Asia were cut completely. If

Dias

In 1486, Bartholomeu Dias (1450–1500) was given the command of three ships to explore the coast of Africa. Strong gales blew him around the Cape of Good Hope, but he turned back as his crew were unwilling to go any farther. He drowned near the Cape in 1500.

Da Gama

After rounding the Cape of Good Hope in 1497, Vasco da Gama (1469–1525) sailed up the east coast of Africa and with the help of an Indian sailor crossed the ocean to Calicut in India. He sailed home with a cargo of spices. He returned to India in 1502 and again in 1522.

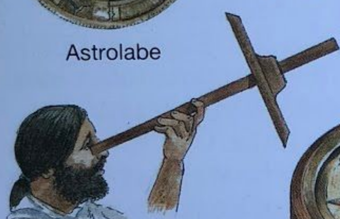
▼ *Vasco da Gama's small ships were a development of the caravel and its triangular, lateen sail. They had both square and lateen rigged sails which made them a great deal more maneuverable on the open sea.*

NAVIGATIONAL INSTRUMENTS

Navigation at sea was very primitive at this time. The only instruments that were available were the compass, the astrolabe, and the backstaff.

The compass was the most important navigational aid because it showed in which direction the ship was sailing. This was still a relatively new invention in Europe, but the Chinese had used it since the 12th century. Both the astrolabe and the backstaff used the Sun or a star to calculate a ship's latitude (how far north or south of the equator the ship was). But they were difficult to use if the sky was overcast. It was also difficult to work out how fast a ship was going and its longitude (how far east or west the ship was).


Astrolabe


Backstaff


Compass

spices were to reach Europe, then a sea route to the East had to be found. When the Portuguese began exploring the west coast of Africa in the 1460s (*see* pages 306–307), they set up forts and traded in gold, ivory, and silver.

Gradually they sailed farther south and Bartholomeu Dias reached the Cape of Good Hope at the tip of Africa in 1488. Ten years later, he helped Vasco da Gama to plan a voyage which took him around the Cape and across the Indian Ocean to Calicut. Da Gama was followed by Pedro Cabral who returned from India with a cargo of pepper. This encouraged other navigators to try and sail farther east. In 1517, the Portuguese reached China, and nearly 30 years later they arrived in Japan. The Portuguese were not only driven by trade but also by a determination to spread Christianity.

While the Portuguese sailed east, the Spanish sailed west. In 1492, Queen Isabella sponsored Christopher Columbus, a navigator from Genoa in Italy, to find a route to India. Existing maps showed the world to be much smaller than it really is. When Columbus reached a group of islands across the Atlantic, he was sure he had reached his goal and called them the West Indies. In fact, they were the Caribbean Islands off the coast of North America. Columbus made three more voyages there, but he never realized his mistake.

Another Italian, Amerigo Vespucci, reached the northeast coast of South America in 1499. On a second voyage in 1501 he explored as far as the Rio de la Plata, Uruguay, and realized he had found a new continent. A map in 1507 named the continent America after him.

Other Europeans tried to find a northern route to India. One was John Cabot, a Venetian who was sponsored in 1497 by Henry VIII of England, to

Magellan

Ferdinand Magellan (c. 1480–1521) led the first expedition to sail around the world in 1519. The voyage took three years but he only survived as far as the Philippines. He gave the Pacific Ocean its name. The Magellan Straits in South America, are also named after him.

Columbus

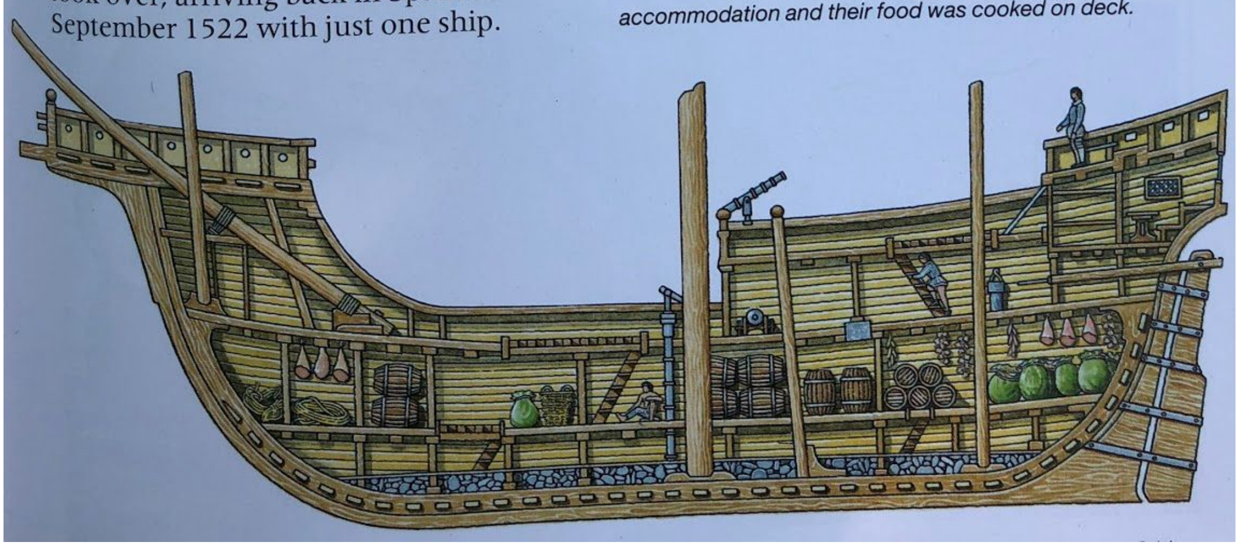
Christopher Columbus (1451–1506) first went to sea as a pirate. In 1476, he settled in Portugal after being shipwrecked. When the Portuguese king would not sponsor his voyage to reach India by sailing west, he asked the Spanish monarchs. They took six years to say yes.

explore the northern ocean. Another explorer called Jacques Cartier sailed up Canada's St. Lawrence River in 1535 and claimed land near it for France.

In August 1519, Ferdinand Magellan left Spain to find a western route to the Spice Islands (Moluccas). He crossed into the Pacific, but was killed in the Philippines. Juan Sebastian del Cano then took over, arriving back in Spain in September 1522 with just one ship.

▲ *Navigators from Spain, Portugal, England, and France tried many different routes to reach the spice-producing islands of the Moluccas. This widened European knowledge of the world, led to increased trade, and the setting up of new empires.*

▼ *Columbus set sail on his voyage in a ship similar to this one. He took three ships; the flagship* Santa Maria, *was only 120 feet (36 m) long but it was twice the size of the other two, the* Pinta *and the* Niña. *The crew had no accommodation and their food was cooked on deck.*



1. Please fill out the following chart about European exploration.

Efficient cause (what is the thing that caused it?)	
Name two people who gave money for the voyages (patrons, sponsors).	
Name a natural cause of the voyages (what in nature helped the travellers to travel? Hint: you can't see it)	
Material cause (what is the thing made out of? The stuff of the thing.)	
Name at least 3 of the leaders/captains of the expeditions.	
What kinds of things did they travel in?	
Formal cause (What is the thing? Its definition.)	
Give a definition of exploration in your own words.	
Final cause (What is the thing for, in the end, its final goal?)	
Give at least two reasons why the explorers wanted to go on voyages.	

2. Which countries (5) did the explorers come from? (1 complete sentence)

3. Which continents/regions (3) and countries/islands (8) did they explore? (at least 2 sentences)

4. Why is America named as such? (1 sentence)

Tuesday, May 12, 2020

Marco Polo

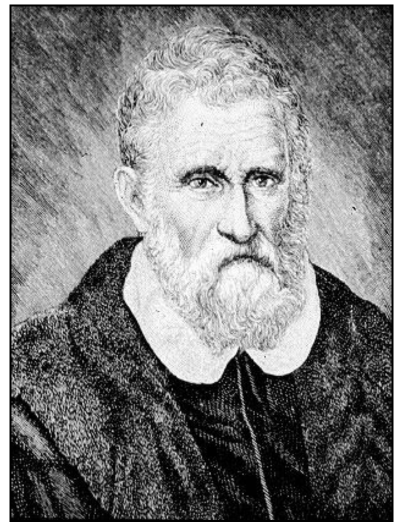
<u>**Instructions**</u>: Complete the reading and then the four questions which follow using complete sentences. Feel free to annotate as you read.

Medieval Explorers

Many bold men made long, and often dangerous journeys in the Middle Ages. Trade was the reason for many of these journeys. The greatest European traveler was Marco Polo, a young Venetian merchant. He traveled to the court of Kublai Khan in China and worked there for many years. Returning in 1295 laden with jewels he later composed a vivid account of his travels.

Marco Polo (1254 - 1324)

Marco Polo, his father, and uncle took three years to reach China in 1275. In 1284, Marco became China's messenger to India. His return to Venice in 1295 sparked great interest in the East.



Excerpt from *The Travels of Marco Polo*

"Chapter XIII - Of the Great Country of Persia; with some Account of the Three Kings"

Persia is a great country, which was in old times very **illustrious** and powerful; but now the **Tartars** have wasted and destroyed it.

In Persia is the city of Saba, from which the Three **Magi** set out when they went to worship Jesus Christ; and in this city they are buried, in three very large and beautiful monuments, side by side. And above them there is a square building, carefully kept. The bodies are still **entire**, with the hair and beard remaining. One of these was called Jaspar, the second Melchior, and the third Balthasar. **Messer** Marco Polo asked a great many questions of the people of that city as to those Three Magi, but never one could he find that knew aught of the matter, except that these were three kings who were buried there in days of old. However, at a place three days' journey distant he heard of what I am going to tell you. He found a village there which goes by the name of Cala Ataperistan which is as much as to say, "The Castle of the Fire-worshippers." And the name is rightly applied, for the people there do worship fire, and I will tell you why.

Vocabulary

Illustrious: outstanding in dignity
Tartars: people of central Asia led by Genghis Khan
Magi: plural of *magus:* persian priest

Entire: whole, complete
Messer: a title of honor

They relate that in old times three kings of that country went away to worship a Prophet that was born, and they carried with them three **manner** of offerings, Gold, and **Frankincense**, and **Myrrh**; in order to ascertain whether that Prophet were God, or an earthly King, or a Physician. They agreed to go all three together, and on doing so they beheld the Child with the appearance of its actual age, **to wit**, some thirteen days. Then they adored, and presented their Gold and Incense and Myrrh. And the Child took all the three offerings, and then gave them a small closed box; **whereupon** the Kings departed to return into their own land.	**Manner:** kinds **Frankincense and Myrrh**: very expensive substances **To wit:** that is to say **Whereupon:** at which time
"Chapter XIV - What <u>Befell</u> when the Three Kings Returned to their Own Country"	**Befell:** simple past of to befall: what happened
And when they had ridden many days they opened the little box, and inside it they found a stone. On seeing this they began to wonder what this might be that the Child had given them, and what was the **import thereof**. And what the gift of the stone implied was that this Faith which had begun in them should **abide** firm as a rock. For He well knew what was in their thoughts. **Howbeit**, they had no understanding at all of this signification of the gift of the stone; so they cast it into a well. Then straightway a fire from Heaven descended into that well wherein the stone had been cast. And when the Three Kings beheld this marvel they were **sore amazed**, and it greatly repented them that they had cast away the stone; for well they then perceived that it had a great and holy meaning. So they took of that fire, and carried it into their own country, and placed it in a rich and beautiful church. And there the people keep it continually burning, and worship it as a god.	**Import thereof:** its importance **Abide:** stay **Howbeit:** nevertheless; despite that **Sore amazed:** extremely amazed

1. During which centuries did Marco Polo live and where was he from? (1 complete sentence)

2. Do you remember the year of Jesus' birth? If you cannot remember, look through your notes on Judaism and Christianity, or at your Timeline. Then calculate how many <u>years</u> have gone by in between the birth of Jesus and Marco Polo's life. What is the equivalent of the years in <u>centuries</u>? (3 sentences)

3. Persia is the ancient name for what is more or less the modern country of Iran.
    a. Look at the map on p. 549 of your textbook. Name two modern countries that border Iran on the west. (1 sentence)
    b. Next, look at the map on p. 159 of your textbook and name two modern countries that border Iran on the east. (1 sentence)

4. In your own words, why do you think the Kings took the fire back to their home and worshipped it as a god? (2 - 3 sentences)

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Wednesday, May 13, 2020

Timeline Review

Instructions: Can you fill in the blanks from memory? If so, you are ready for tomorrow's Timeline Assessment. Please use and study this review until you are ready for the assessment. Check your answers from the timelines in the Week 2 and Week 4 packets.

Event	Date Started	Date Ended
Ancient Mesopotamia	__________ (Sumerians settle in Mesopotamia and build city-states--the first civilization.)	625 BC (End of the Assyrian Empire)
__________	4000 BC (Towns develop along the Nile River. King Menes will unite Upper and Lower Egypt in 3300 BC.The New Kingdom, the time of Egypt's "Golden Age" will take place from 1550 to 1070 BC.)	525 BC (The Persians conquer Egypt)
__________	c. 4000 BC (Civilization develops in the Indus Valley. The two largest cities by 2000 BC are Mohenjo-Daro and Harappa.)	AD 543 (End of the Gupta Empire)
Ancient China	__________ (The first towns appear around the Huang He, or Yellow River.)	AD 906 (End of the Tang Dynasty)
__________	c. 3200 BC (Growth of the Cycladic civilization)	146 BC (End the Hellenistic period)
Ancient Rome	__________ As legend tells, Rome is founded by Romulus and Remus. Rome will see different phases in status and forms of government including the Roman Republic (509 to 27 BC), and the Roman Empire (27 BC to AD 476).	AD 476 (The last of the western Roman emperors is overthrown.)
The Byzantine Empire	AD 330 (Constantine founds Constantinople in modern-day Istanbul. The Byzantine Empire is also known as the Eastern Roman Empire.)	__________ (Fall of Constantinople to the Ottoman Turks)
Judaism	__________ (God establishes the covenant, or sacred promise, with Abraham, the leader of the Hebrews and grandfather to Jacob (later renamed Israel.)	
Christianity	__________ (Jesus Christ is born around 3 BC. He begins teaching publicly at about age 30. His teachings were spread after his death on the cross in c. AD 30 throughout the Roman world and then beyond.)	

Islam	(Muhammad is born in AD 570. At 40 years old he writes the Koran based on visions he has with the Archangel Gabriel. He and his followers flee to Medina in 622, and his following grows from there.)	
Middle Ages		
The Franks & Charlemagne	751 (Charles Martel's son, Pepin the Short, begins the Carolingian Dynasty)	987 (The last Carolingian King dies in France)
	793 (The first Viking raid occurs in Lindisfarne, England)	1066 (The last Viking raid is the failed attempt of Harald Hadrada to conquer England)
	1054 (The Roman Catholic Church and the Eastern Orthodox Church start to separate from each other)	
The Crusades	1095 (The First Crusade to Jerusalem)	1291 (The fall of Acre: the end of the Crusades to the Middle East)
Gothic Architecture	(Approximate date when the Early Gothic style of architecture appears)	(Approximate date when the last style of Gothic architecture, the Flamboyant, ceases to be used)
	1347 (The Black Death first arrives in Europe)	1352 (The plague temporarily stopped, although it would reappear later during the Middle Ages)
	1337 (The King of France, Phillip VI, confiscates England's french lands)	1453 (The King of France, Charles VII, defeats the English at the Battle of Castillon)
Renaissance		
Protestant Reformation	(Martin Luther nails the 95 Theses to the church door in Wittenberg)	
Colonization	1400s (The Portuguese and Spanish empires begin exploration of the Americas)	Mid-1800s (First phase of decolonization begins but some parts of the world are still being colonized)
	1400s (The Portuguese and Spanish empires begin exploration of the America)	Mid-1600s (The Dutch discover lands now called Australia, New Zealand and the nearby islands)
Industrial Revolution	(The First Industrial Revolution begins in England and spreads to the rest of Europe)	1914 (The Second Industrial Revolution ends with the beginning of the First World War)

____
____
____

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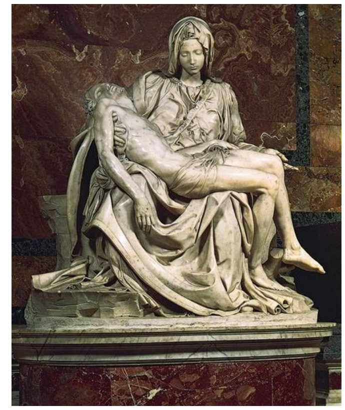
Thursday, May 14, 2020

5/21 Assessment Study Guide

Instructions: Next Thursday, May 21, 2020 you will take an assessment on the material we studied throughout our Remote Learning Packets. If you can answer the questions below from memory, you are ready for the assessment. Please spend at least five minutes today reading over and/or completing this study guide. You will also have time allotted next week to work on and correct the study guide.

1. Can you point out the following on an unlabeled world map?
   - ❏ Southeast Asia
   - ❏ Western Europe
   - ❏ the Middle East
   - ❏ Africa
   - ❏ North America
   - ❏ South America
   - ❏ Indian Ocean
   - ❏ Atlantic Ocean
   - ❏ Pacific Ocean
2. In the excerpt we read from *History of the Peloponnesian War*, what claim did Thucydides make about how people usually receive new information?
3. When did the Black Plague arrive in Europe and how did it spread?
4. What are the dates for the Hundred Years' War? Which two countries were fighting and why? Who won?
5. What were the architectural advances of the Medieval Period?
6. What is the etymology of "Renaissance"?
7. Who was Lorenzo de Medici and what was his role in Italian art and culture during the Renaissance?
8. Can you identify the names of these works of art and the artists who made them?

 _________________________ by ______________________	 _________________________ by ______________________	 _______________________ by ____________________

9. What were the 95 Theses and in what year did Martin Luther nail them to the church door at Wittenberg, Germany?

10. Who were the prominent European Explorers from the Age of Exploration? What countries were they from and what were they searching for?

11. In what century did the Industrial Revolution start? What were some of the inventions of the Industrial Revolution?

12. On what date was America founded?

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Remote Learning Packet

Please submit scans of written work in Google Classroom at the end of the week.

Week 7: May 11-15, 2020

Course: 6 Latin

Teacher(s): Miss Salinas annie.salinas@greatheartsirving.org
Ms. Baptiste deborah.baptiste@greatheartsirving.org

Weekly Plan:

Monday, May 11

- ☐ Optional video: *Lucia et Alexander*
- ☐ *Lucia et Alexander* worksheet

Tuesday, May 12

- ☐ Optional video: Education in Rome
- ☐ Stage 10 culture questions pt. 1

Wednesday, May 13

- ☐ Stage 10 culture questions pt. 2

Thursday, May 14

- ☐ Stage 10 culture questions pt. 3

Friday, May 15

- ☐ attend office hours
- ☐ catch-up or review the week's work

Statement of Academic Honesty

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

____
Student Signature

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

____
Parent Signature

Salvete discipuli! Welcome to Week 7 of remote learning. This week, we're focusing on the Stage 10 Culture section, and learning about education in Ancient Rome! Have you ever wondered what Quintus and Lucia's school day is like? It's quite different from ours - for starters, Quintus' school didn't even have a building! Watch Tuesday's video for more.

Monday, May 11

Today, we're reading our last short story of Stage 10. This one, *Lucia et Alexander*, is a conversation between Lucia and Melissa. It makes me laugh!

→ (Optional) Watch the video on Google Classroom, reading the story out loud.

→ Then, complete the worksheet on the story *Lucia et Alexander.*

Tuesday, May 12

Today, we'll begin our culture questions for Stage 10!

→ (Optional) Watch the video on Google Classroom introducing the culture section.

→ Then, complete the worksheet on part 1 of the culture questions.

Wednesday, May 13

Today, we'll continue our culture questions for Stage 10.

→ Complete the worksheet on part 2 of the culture questions.

Thursday, May 14

Today, we'll finish our culture questions for Stage 10.

→ Complete the worksheet on part 3 of the culture questions.

Friday, May 15

Euge, no new work on Fridays! You can use today to catch up on anything you might have missed, or to upload your completed packet to the Google Classroom.

If you have questions, comments, ideas, or want to see my lovely face, attend Office Hours today at 9:00am by following the link in the stream of our Google Classroom. See you there!

Monday

Story questions: *Lucia et Alexander*

Open your red book to page 140. Then complete this worksheet. As you read the Latin story, read it out loud to see if you can pronounce each of the words.

This passage is a short play in the form of a dialogue (a conversation, here between two people).

1. What do you know about the two characters in play? (List one thing for each person.)

   a. Lucia____

   b. Melissa____

2. Where are the two young women walking in line 1? ____________________________

3. Whom does Lucia see? __________________________________

4. Does Melissa know Alexander? Give proof for your answer from line 4.

____

5. Lucia tells us **three** things about Alexander (lines 5-7):

   a. Alexander is a ______________________ young man.

   b. Every _________ in the ______________ Theodorus ________________ Alexander and ______________________.

   c. Quintus and Alexander are ____

6. What does Melissa think of Alexander?

____

7. Lucia thinks that Alexander is very clever (**callidissimus)**. What evidence does she give for this opinion (lines 9-10).

____

____

8. What is Melissa's opinion of Quintus? (line 8)

____

9. Between the two (Alexander and Quintus) who is more clever in Lucia's opinion? (line 12)

____

10. Translate the following statement by Lucia (lines 12-13):

nōs Rōmānī nōn semper sumus meliōrēs quam Graecī.

_________ Romans are not ______________ ______________ than the _______________.

12. Melissa asks Lucia, "Does Alexander ___________________ you?" (line 14)

13. What is Lucia's answer? (line 15)_____________________________

14. Do you believe her? Why or why not?

____

____

15. In this play, we see examples of regular adjectives, comparatives, and superlatives.
Fill in the blanks for the following adjectives:

callidus *clever*	_______________________ *more clever*	______________________ *very/ most clever*
bonus *good*	______________________ *better*	______________________ *best*
__________________ *brave*	fortior	_____________________ *bravest*

Tuesday

Culture questions: Education in Rome, pt. 1

Use pages 143-144 of your red book to complete this worksheet.

1. At what age was formal schooling usually begun?

___

2. How many students and teachers were there in the first school a Roman child would attend?

___

___

3. What did a typical Roman classroom look like?

___

___

4. What were the duties of a *paedagōgus*?

___

___

5. What three things did children study with the *lūdī magister*?

___

___

6. Did Roman children have to attend school?

___

7. Was there an educational fee?

___

8. Why would children go to school?

___

___

9. What are the definitions of these terms? a) tabulae b) stilus c) papȳrus

___

___

10. What instruments were used for writing on papyrus?

____

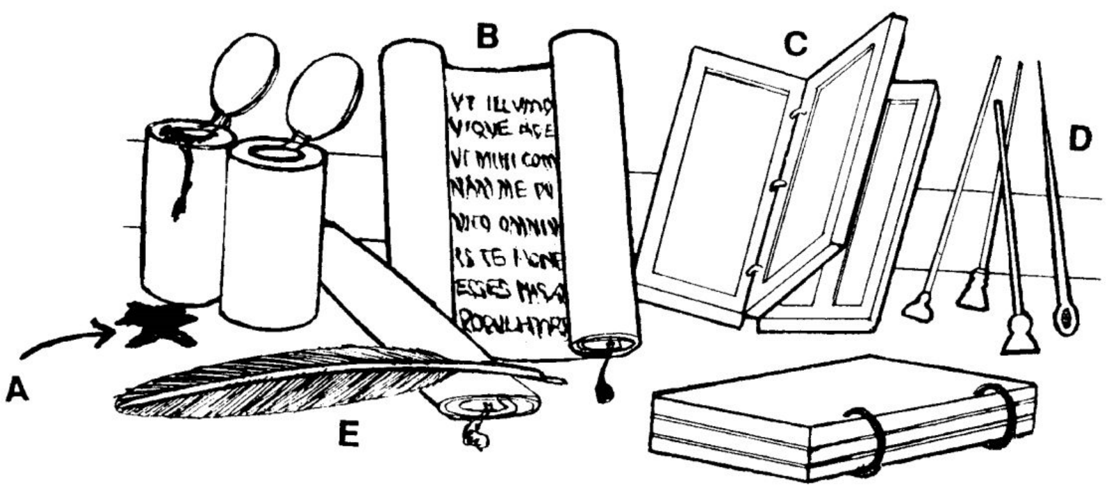
11. What was ink made from?

____

Stage 10 Writing materials

Refer to pages 143-144 in your textbook. What are the writing materials below made of? Choose the right substances from the box below and write them down in the appropriate space below the picture. Some of the articles could be made from more than one substance.

feather	wax	plastic	aluminum	resin	reed
wood	ivory	soot	stainless steel	bone	bronze



A is made from ______________ ______________

B is made from ______________

C is made from ______________ ______________

D is made from ______________ ______________ ______________

E is made from ______________

What three substances in the box above were not used by the Romans?

Why not?

Wednesday

Culture questions: Education in Rome, pt. 2

Use pages 144 of your red book to complete this worksheet.

1. How did students work in school in Ancient Rome?

____

____

2. What was classroom discipline like?

____

____

3. How long was a school day?

____

____

4. When did the students have holidays?

____

____

5. When did Quintus go to secondary school?

____

____

6. What was his teacher’s name at this level?

____

____

7. What was the major way to study the works of authors such as Homer, Virgil and Horace besides listening and reciting the pieces?

____

____

8. What two other subjects were taught? For what reason were they taught?

____

____

9. When would Quintus leave the *grammaticus*?

____

____

10. What two languages would he know well?

____

____

11. Why was it important for him to know Greek?

____

____

12. What declension is the noun *grammaticus?* ____________________

Decline below:

Singular	Plural
NOM. *grammaticus*	NOM.
DAT.	DAT.
ACC. *grammaticum*	ACC.

Thursday

Culture questions: Education in Rome, pt. 3

Use pages 143-145 of your red book to complete this worksheet.

1. Who was the teacher at the third level of education?

2. What two things did he teach?

3. In what three ways would a Roman use the skills gained in this school?

4. When the *rhetor* taught public speaking, what were four parts to this training?

5. For what scientific or technical achievements are the Greeks and Romans famous?

6. a) What was the purpose of ordinary Roman schools?
   b) What four abilities did this include?

7. How did a student learn (a) science or (b) technical skills?

____

____

8. Apart from the ludi magister, where else could girls learn basic literacy?

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9. What might a Greek slave have taught the girls from wealthy families?

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10. What skills did girls from poorer families learn?

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____

11. Now that you've learned about the Roman education system, one last culture question: What most surprised you about the Roman education system? Would you like to be a student in Ancient Rome along with Quintus and Lucia? Why or why not?

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____

____

12. And now, one grammar question: What declension is *rhetor*?_____________________

Decline below:

Singular	Plural
NOM. *rhetor*	NOM.
DAT.	DAT. *rhetoribus*
ACC.	ACC.

GreatHearts Irving

Remote Learning Packet

Please submit scans of written work in Google Classroom at the end of the week.

Week 7: May 11-15, 2020

Course: 6 Literature & Composition

Teacher(s): Ms. Arnold jacqueline.arnold@greatheartsirving.org
Ms. Brandolini catherine.brandolini@greatheartsirving.org

Weekly Plan:

Monday, May 11
- ☐ practice poem
- ☐ read & annotate TWTW Ch X & look over reading guide

Tuesday, May 12
- ☐ practice poem
- ☐ read & annotate TWTW Ch XI & look over reading guide

Wednesday, May 13
- ☐ practice poem
- ☐ read & annotate TWTW Ch XII & look over reading guide

Thursday, May 14
- ☐ practice poem
- ☐ take TWTW Ch X-XII quiz on Google Classroom

Friday, May 15
- ☐ attend office hours
- ☐ catch-up or review the week's work

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, May 11

Recite the poem aloud at least two times. Remember to follow the punctuation of the lines, to pronounce each word clearly, and to avoid a monotone recitation! You can recite along with the recording on GC!

Carefully read and annotate TWTW Chapter X. When you are finished reading, make sure you are capable of answering the following questions. You do not need to write down the answers to these questions, but you do need to be able to answer them:

1. Summarize Toad's encounter with the barge-woman. What gets him into trouble? How does she see through his disguise? How does he enact revenge?
2. What bargain does Toad strike with the gipsy?
3. Evaluate Toad's Song (p123). Does Toad seem to be learning anything from all of his scrapes and misfortunes?
4. Summarize Toad's encounter with the motor-car. To whom does it belong? How does he convince them to let him drive? What ultimately happens to them?
5. Think back over the chapters with Toad. What qualities in other people allow Toad to get away with his behavior? Should people treat him differently? Or does the fault completely lie with him?

Further Reflection: When Toad is struggling to resist the temptation to take control of the motor-car, he says to himself "Why strive? why struggle?" (126). How ought one respond to temptation? How can one combat the vices of pride and vanity and instead cultivate virtue?

Tuesday, May 12

Recite the poem aloud at least two times. Remember to follow the punctuation of the lines, to pronounce each word clearly, and to avoid a monotone recitation! You can recite along with the recording on GC!

Carefully read and annotate TWTW Chapter XI. When you are finished reading, make sure you are capable of answering the following questions. You do not need to write down the answers to these questions, but you do need to be able to answer them:

1. What was the shocking news Ratty told Toad?
2. Describe both of Toad's attempts to regain his home.
3. What secret had Toad's father told Badger? Why didn't he tell this secret to Toad?
4. What roles did Ratty, Mole, and Otter play in preparing them for Battle?
5. Why is Toad so jealous of Mole? How has Mole grown/developed over the course of the book? Have we seen similar growth in Toad?

Wednesday, May 13

Recite the poem aloud at least two times. Remember to follow the punctuation of the lines, to pronounce each word clearly, and to avoid a monotone recitation! You can recite along with the recording on GC!

Carefully read and annotate TWTW Chapter XII. When you are finished reading, make sure you are capable of answering the following questions. You do not need to write down the answers to these questions, but you do need to be able to answer them:

> *1. Describe both of the mishaps Toad experiences on their way to Toad Hall. Was Badger right to let him stay with the group?*
> *2. Describe the Battle. Who did what? How long did it last? How did the weasels and stoats react?*
> *3. What happened to the captured weasels? Why was Mole's treatment of them better than Badger's suggestion to "give them a licking"?*
> *4. Why did the other animals not like Toad's programme of entertainment and invitations?*
> *5. Describe the altered Toad at the end of the chapter. Find quotations from the book that tell us whether or not this was a genuine change.*

Thursday, May 14

Recite the poem aloud at least two times. Remember to follow the punctuation of the lines, to pronounce each word clearly, and to avoid a monotone recitation! You can recite along with the recording on GC!

Log into Google Classroom and take the Ch 10-12 quiz.

Friday, May 15

There is no lesson for today. Take advantage of this time to catch-up on any late work, to review TWTW, and to attend Literature office hours (12:00-12:30; Zoom link is in GC). Have a lovely and relaxing weekend!

GreatHearts Irving

Remote Learning Packet

Please submit scans of written work in Google Classroom at the end of the week.

Week 7: May 11-15, 2020
Course: Math Fundamentals
Teacher(s): Ms. Schweizer rose.schweizer@greatheartsirving.org

Weekly Plan:

Monday, May 11
☐ Correct Chapter 11 Review and study notes
☐ Take Chapter 11 Assessment Part 1 on GC

Tuesday, May 12
☐ Take Chapter 11 Assessment Part 2

Wednesday, May 13
☐ Read pages 1-4
☐ Watch Video on GC
☐ Section 1.2 pg. 8 13-29 odd
☐ Section 1.4 pg. 14 13-29 odd

Thursday, May 14
☐ Read pages 5-6
☐ Watch Video on GC
☐ Section 2.4 pg. 45 25-30 all
☐ Section 2.5 pg. 48 19- 27 all

Friday, May 15
☐ Attend office hours
☐ Catch-up or review the week's work

Statement of Academic Honesty

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Student Signature

Parent Signature

Monday, May 11

Use 20 minutes to correct your Chapter 11 study guide from last Thursday using the answer key in this week's packet. Go over any questions you missed and study your notes. Email me if you have questions.

After you have studied for 20 minutes, take part 1 of the Chapter 11 Assessment on Google Classroom. It should take about 20 minutes. Make sure you are answering the questions thoroughly and carefully. You may use your book or your notes, but may not ask anyone for help.

If you are not able to take the assessment on Google Classroom, complete the Chapter 11 Assessment Part 1 in this packet.

Tuesday, May 12

Complete the Chapter 11 Assessment Part 2 in this Packet. If possible, please print out the Part 2 and show all your work on that piece of paper. If that is not possible, make sure you are copying down the questions and clearly showing your work.

Wednesday, May 13

Congratulations! We have covered all of the new material for the year! Now we are starting to review material from the entire year, beginning with Chapter 1.
Read Pages 1-4 of the packet and then watch today's video on Google Classroom. Complete the exercises in the book, copying down the original equation and showing each step of the solution. Correct your finished work, trying to fix any mistakes.
When you are completing the exercises, write out which property you use for each problem.

Thursday, May 14

Today we are reviewing how to solve inequalities. Read pages 5-6 of the packet and watch the video on Google Classroom on graphing inequalities. Complete the exercises in the book, copying down the original equation and showing each step of the solution. Correct your finished work, trying to fix any mistakes.

Friday, May 15

Spend the day submitting your work, attending office hours, and finishing up any assignments. Office hours are from 9:30-10:00.

Answer Key

Chapter 11 Review:

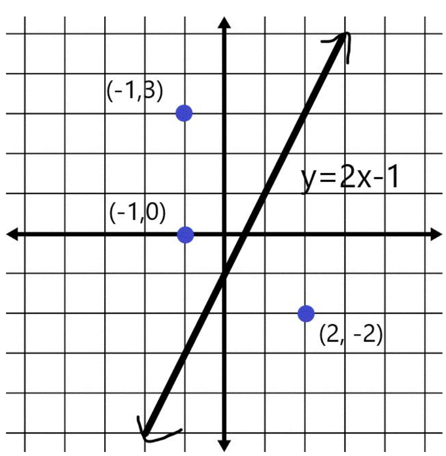
1. 12, 12
2. -4, 4
3. 8, 8
4. <
5. >
6. 7
7. -3
8. -8

   subtracting
9. -24
10. -6
11. 2

    adding
12. -24
13. -100
14. 75
15. -48
16. -19
17. 9

    Positive

    Negative
18. y = -5
19. x = -26
20. n= 20
21. 22.



Wednesday:

The answers are in the back of the textbook.

Thursday:

Section 2.4

25. b>45
26. h>92
27. x<72
28. d<39
29. t>14
30. m<41

Section 2.5

19. m>14
20. x<22
21. t<14
22. z>90
23. g<117
24. w>288
25. p=100
26. t=1111
27. c=1

Name____ Date _____________________

Chapter 11 Assessment Part 1

1. What is the opposite of 49?
2. What is the absolute value of 49?
3. What is the value of |-71|?

Write <or > in the blank to make a true statement.

4. -16 _____ -17
5. -0.45 ____ 0
6. -13 _____ -10

Simplify each expression. Show all your work.

7. -21-(-4)
8. -54-54
9. -21· -11
10. -153 ÷ 3
11. -222 ÷ -6

Answer each question thoroughly.

12. Explain the difference between whole numbers and integers. Give an example of a number that is both a whole number and an integer. Give an example of a number that is an integer but not a whole number.

13. What is the ordered pair for the origin?

14. Why does multiplication of a positive and a negative number have a negative product?

Name____ Date ______________________

Chapter 11 Assessment Part 2

Solve each equation. Show all your work.

1. $-8+(-3\times -15)+11$

2. -6(-2)(-4)

3. $-17y=-102$

4. $w+-9=-23$

5. $\frac{-1}{4}a+5=-45$

6. $-2g+4=2$

7. Show on a number line 8 and the opposite of 8. What is true of the absolute value of both numbers?

8. In Lansing, Michigan the temperature was -8° F at 8 am. The temperature rose 15° F by noon. Then the temperature dropped by 25° F by 8 pm. What was the temperature at 8 pm?

Name____ Date ______________________

Graph and label each ordered pair.

9. $(-4,-3)$

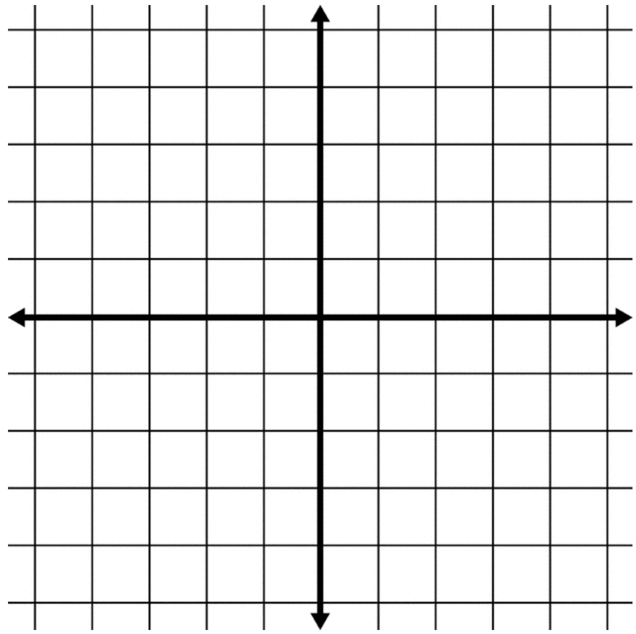
10. $(0,5)$

11. $(-2,1)$

12. $(3,6)$

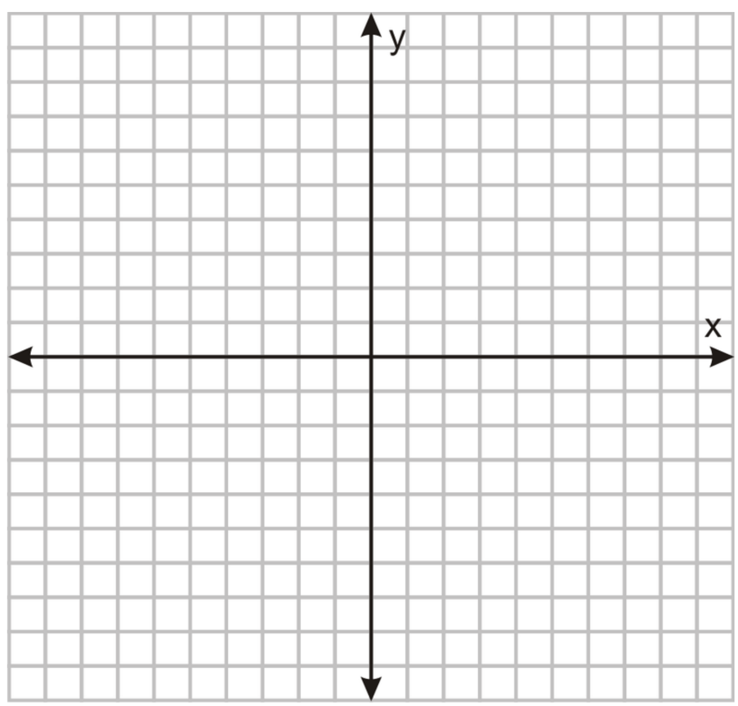
13. $(1,-3)$

14. $(-5,0)$



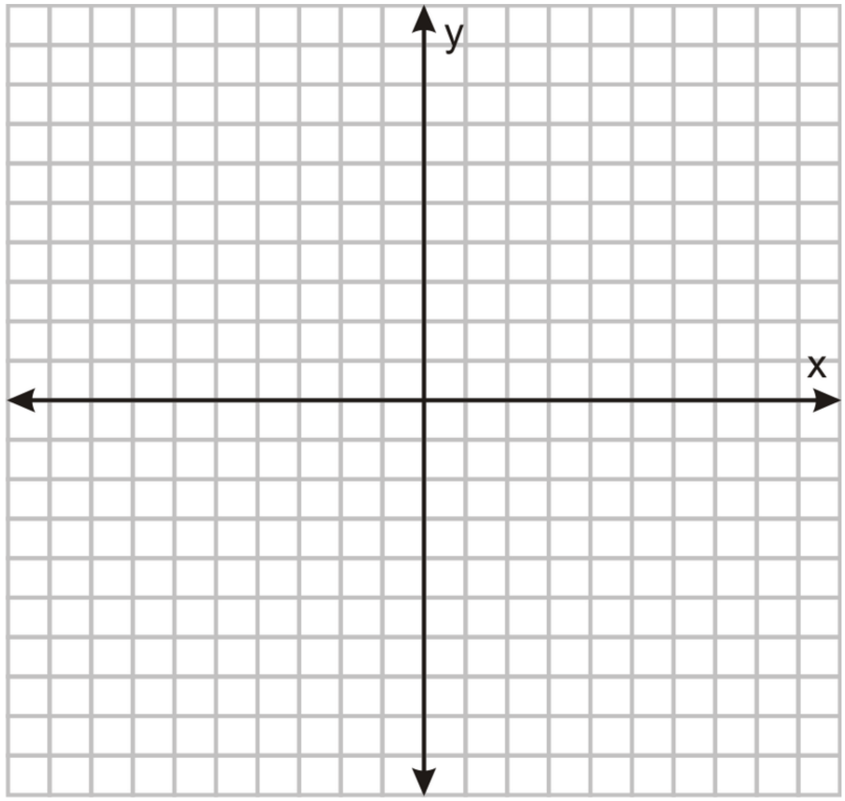
Make a table of values and then graph the given equations. Use at least 5 values for x.

15. $y = 2x - 4$



Name____ Date ________________________

16. $y = -\frac{1}{5}x + 2$



1 Properties Review

What were those important properties that we learned in Chapter 1? They have popped up throughout the year and we have used them many times over. Let's do a short review of them so we can focus on how we can and cannot use them.

1.1 Commutative Property

Looking at the word **commutative**, we notice it has the word *commute* inside of it. Since a commuter is someone who travels every day for work, we know this property tells us which numbers can travel inside an equation.

When we are adding two numbers, does it matter which order the numbers are in? For example, are the following two expressions the same?

$$13 + 9 = 22$$

$$9 + 13 = 22$$

As we can see, both equations have the same value.

This is because addition is a **commutative** operation. We can change the position of the numbers and get the same result.

Commutative Property of Addition
For any numbers a and b, $a + b = b + a$.

If this holds true for addition, what other operation will it be true for? What other operation is based on addition? **Multiplication!** Since multiplication is repeated addition, multiplication is also commutative. We can switch the position of the numbers and have the same value.

$$12 \cdot 11 = 121$$

$$11 \cdot 12 = 121$$

Commutative Property of Multiplication
For any numbers a and b, $a \cdot b = b \cdot a$

Can we use the commutative property in the following example?
Ex.

$$45 - 30$$

Let's see what happens. We know

$$45 - 30 = 15$$

If we switch positions the expression becomes

$$30 - 45$$

$$30 - 45 = -15$$

Since we know that $15 \neq -15$, the commutative property does NOT work for subtraction. YOU CAN NOT MOVE NUMBERS IN SUBTRACTION. Be very careful with your negative signs.

The commutative property can be used for *addition* and *multiplication* to make a problem simpler.

State whether you can use the commutative property in the following expressions.

1. $56 \cdot 92 \cdot 15$
2. $43 + 23 - 18$
3. $28 - 6 - 190$
4. $14 \div 7$

1.2 Associative Property

The commutative property is closely related to the **associative property**. We see the word *associate* which means to connect or work with, so the associative property connects numbers together.

In the expression

$$4 + 2 + 8$$

we notice that $8+2 = 10$ but according to the order of operations we need to do $4 + 2$ first. We can use the commutative property to rewrite the equation as

$$8 + 2 + 4$$

to solve this problem. However, since we know it doesn't matter in what order we add or multiply numbers, the associative property says we can change the order of operations by adding or moving parentheses. We can rewrite the expression as

$$4 + (2 + 8)$$

The commutative property tells us we can change the position of the numbers for addition or multiplication. The associative property tells us we can change the order in which we add or multiply since the order in which we add or multiply does not matter.

Associative Property of Addition
For any numbers a, b, and c, $(a + b) + c = a + (b + c)$
Associative Property of Multiplication
For any numbers a, b and c, $(a \cdot b) \cdot c = a \cdot (b \cdot c)$

Remember, this is ONLY for addition and multiplication, not subtraction or division.

1.3 Distributive Property

We can see the word *distribute*, which means to spread out or share out, in this property. The **distributive property** has to do with how we can spread out multiplication.

Consider the following expression:

$$8 \cdot 17$$

One way to solve this is to use our multiplication algorithm and find out

$$8 \cdot 17 = 136$$

But we can also break the problem down into simpler pieces. We can break 17 up into smaller numbers.

$$8 \cdot 17 = 8(10 + 7)$$

Now if we break the problem apart,

$$8 \cdot 10 + 8 \cdot 7 = 80 + 56$$

$$80 + 56 = 136$$

We get the same value. This is called the **distributive property**. It allows us to break a more difficult problem into smaller pieces with can easily be solved.

Distributive Property of Multiplication
For any numbers a, b and c, $a \times (b + c) = (a \times b) + (a \times c)$

This also works for subtraction as well Consider the expression

$$21 \cdot 19$$

We can break this expression up into more manageable pieces.

$$21 \cdot 19 = 21(20 - 1)$$

First rewrite 19 into numbers that are easy to multiply.

$$21(20 - 1) = 21 \cdot 20 - 21 \cdot 1$$

Next distribute the 21 to both numbers.

$$21 \cdot 20 - 21 \cdot 1 = 420 - 21$$

Solve.

$$21 \cdot 19 = 399$$

Distributive Property of Subtraction
For any numbers a, b and c, $a \times (b - c) = (a \times b) - (a \times c)$

2 Inequality Review

We've spent a lot of time this year solving different equations and a little time this year solving inequalities. Let's review how to solve different inequalities.

2.1 Types of Inequalities

We have approximately one symbol for equality in mathematics: $=$. However, there are many ways of being in-equal. Is the number greater? Is the number less? Here are five different inequalities with five different meanings.

$\neq$	not equal to
$<$	less than
$\leq$	less than OR equal to
$>$	greater than
$\geq$	greater than OR equal to

Notice the difference between $<$ and $\leq$. If we have the inequality

$$x < 4$$

Any number less than 4 makes this a true statement, but not including 4 for x. We can choose 3.99, but not 4.

If we have the inequality

$$x \leq 4$$

We know that x can be any number less than or equal to 4, INCLUDING 4.

2.2 Solving Inequalities

Fortunately, solving inequalities uses the same method as solving equations, which we have practiced throughout the whole year. To solve for all the possible values of the variable, use inverse operations to isolate the variable, to get it by itself.

Ex.

$$4x \geq 52$$
$$\frac{4x}{4} \geq \frac{52}{4}$$
$$x \geq 13$$

In order to cancel the multiplication, use the inverse operation of division. Notice that the inequality stays the same the entire time and does not change. Now we know that any number greater than or equal to 13 makes this a true statement.

Make sure that you are using the inequality in your answer. This statement is true for ANY number greater than or equal to 13, which means there are infinitely many possibilities. If you do not use the inequality, you aren't giving *all* the possible answers.

Ex.

$$y - 13 < 71$$
$$y - 13 + 13 < 71 + 13$$
$$y < 84$$

2.3 Video

Now watch today's video lesson on Google Classroom.

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Remote Learning Packet

Please submit scans of written work in Google Classroom at the end of the week.

Week 7: May 11-15, 2020

Course: Physical Education

Teacher(s): John.Bascom@GreatHeartsIrving.org
Joseph.Turner@GreatHeartsIrving.org
James.Bascom@GreatHeartsIrving.org

Weekly Plan:

Monday, May 11
- ☐ General Mobility Routine

Tuesday, May 12
- ☐ Workout

Wednesday, May 13
- ☐ General Mobility Routine

Thursday, May 14
- ☐ Workout

Friday, May 15
- ☐ Attend Office Hours (Not mandatory)
- ☐ General Mobility Routine (Not mandatory)

Statement of Academic Honesty

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____
Student Signature

____
Parent Signature

Monday, May 11

General Mobility Routine (15-20 minutes)

Complete Part I and record how long it took you. Also, record whether or not you were able to complete all of the exercises. If you had trouble with any specific exercises make note of these. Part II of the workout is not mandatory but is encouraged.

Note: no equipment is required for this workout and only a minimum of space. If space is a challenge make modifications as necessary.

We will have a video uploaded under the Week 6 Topic demonstrating all the exercises for the General Mobility Routine.

PART I:

1. Warmup by running for 2 minutes.
2. Then begin in a resting squat for 30s
3. Bear crawl forwards about 5 feet then straight back.
4. Step back into a pushup position
5. Perform 5 pushups
6. Downdog for 30s
7. Updog for 30s
8. Return to a pushup position
9. Perform 5 pushups

10. Stand up & perform 20 jumping jacks, 10 squats, 10 lunges, and 5 burpees
11. Return to a resting squat for 30 seconds
12. While in resting squat, perform 2 shoulder screws forwards, then 2 backwards, both sides
13. Bear Crawl sideways about 5 feet then return straight back
14. Step back into a pushup position
15. Step your right foot up directly outside your right hand
16. Then reach straight up toward the sky with your right hand & hold for 30s
17. Return to pushup position
18. Step your left foot up directly outside your left hand
19. Then reach straight up toward the sky with your left hand & hold for 30s

20. Return to pushup position
21. 5 pushups
22. Step your feet up to your hands and return to a resting squat
23. Remaining in the squat, grab your left ankle with your right hand and reach straight up toward the sky with your left hand & hold for 30s

24. Remaining in the squat, grab your right ankle with your left hand and reach straight up toward the sky with your right hand & hold for 30s
25. Hands down behind you Crab Walk forwards about 5 feet then straight back
26. Stand up & perform 20 jumping jacks, 10 squats, 10 lunges, and 5 burpees
27. Perform 3 slow Jefferson Curls
28. Rolling Bear Crawl x1 revolution one direction
29. Back Bridge for about 10-15 seconds
30. Rolling Bear Crawl x1 revolution in the opposite direction
31. Find a low hanging branch, pullup bar, ledge, rings, etc. to hang from for as long as you can hold

PART II:

1. Get into a plank
2. Alternate touching opposite elbow and knee for a total of 10 touches
3. Gorilla Hop x2 to the right
4. Gorilla Hop x 2 back to the left
5. Stand and perform 10 steam engine squats (fingers locked behind your head, every time you stand up from a squat touch opposite knee/elbow)
6. Hurdler's walk x6 steps forward
7. Hurdler's walk x6 steps backward
8. Frog Hop x2 forwards
9. Frog Hop x2 backwards

10. Get into a long lunge position
11. Keeping front foot flat on the ground, without touching the back knee to the ground, and trying to keep torso straight up and down slowly lower hips toward the ground. Hold for 15 seconds
12. Switch legs and repeat (hold for 15 seconds)
13. 3 slow Jefferson Curls
14. Rolling Bear Crawl x1 revolution one direction
15. Back Bridge for about 10-15 seconds
16. Rolling Bear Crawl x1 revolution in the opposite direction
17. Find a low hanging branch, pullup bar, ledge, rings, etc. to hang from for as long as you can hold

Tuesday, May 12

Context: Today's workout will focus on upper body strength with a little bit of cardio. This workout will be described using distances. If you do not have access to the space these distances require feel free to substitute a time, number of repetitions, etc. If possible try to record the time it takes you to complete this workout. We will ask you to report this time in the Week 7 Participation Assessment.

Setup: You will be crawling and jogging between two points about 10 big steps apart.

Warmup: 3 minute light jog, 1 minute of shoulder warmup (arm circles, shoulder screws, etc.)

Workout: 1 round = 1 to 3 pushups, bear crawl across, jog back and forth between the two points x4 with hands overhead, 1 to 3 pushups, crab walk across, jog back and forth between the two points x4 with hands overhead.

Tier 1	3 Rounds
Tier 2	4 Rounds
Tier 3	5 Rounds
Tier 4	6 Rounds

Wednesday, May 13

General Mobility Routine

Thursday, May 14

Context: Today is a build your own workout day. The goal is for you to come up with a workout on your own. You may use any equipment you want, or none at all! You may craft the workout to be high or low intensity, high or low repetitions, any distance, etc.. We will offer some guidelines that you must follow, but the rest is up to you.

Try to craft a workout that will take about 15 minutes in total to complete. (or longer if you wish)

Begin with some form of a warm up.

Focus on **cardio** and **lower body** for the main part of the workout.

Finish the workout with a minute or two of light cool down.

When you have completed the workout describe what you did in “Week 7 Participation Assessment.” (On Google Classroom)

Friday, May 15

Office Hours (Not mandatory)

General Mobility Routine (Not mandatory)

Optional workout #1:

The workout below is **not** required. You could try to perform it on any day in addition to your daily routine. This workout will most likely take around 30 minutes.
Feel free to modify according to your ability by decreasing or increasing reps or sets. Rests between sets should be between 30s to 1 minute according to fatigue.

Workout:
3 sets of 20 squats
3 sets of 20 lunges
4 sets of 15 pushups
4 sets of 5 burpees
3 sets of 15 crunches
3 sets of 15 leg raises
3 sets of 1 minute high plank (pushup position)
4 sets of 10 jump lunges
4 sets of 10 jump squats

Optional Workout #2:

The workout below is **not** required. You could try to perform it on any day in addition to your daily routine. This workout will most likely take around 45 minutes. Feel free to modify according to your ability by decreasing or increasing the number of sprints and the times for the rest intervals and runs.

1. 5 minute light warmup run
2. 5 minute light warmup stretch
3. Final warmup: perform 3 near springs, 70% max speed, 80% max speed, 90% max speed.
4. Perform eight 50 meter springs with a 30s-60s rest in between. (you want to put a bit of stress on your cardio but make sure that you have recovered enough in order to truly sprint each time)
5. Then perform 10 near springs, between 70-90% with a 10s-20s rest, not long enough to catch your breath fully.
6. Then a 10 minute run at a moderately high speed to complete the cardio workout
7. 5 minutes cool down walk / light jog
8. 5 minutes light stretching.

Optional Workout #3: Squat mobility NEW and IMPROVED: (10-15 minutes)

Looking over the week 1 packets I have noticed that a lot of you have made a goal out of improving your resting squat. I have made a short video that will instruct you on a mobility routine similar to the one described last week but expanded and developed. That video is on google classroom under the Packet Week 7 topic.

Before doing this mobility routine it is not necessary, but would be beneficial to warm up and loosen up your body a bit. Nothing specific is necessary, but a good warmup routine might look something:

1. 1 minute of light running
2. 10-20 jumping jacks
3. A few downdogs and updogs
4. 5 pushups
5. 5 burpees
6. 10 squats

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Remote Learning Packet

Please submit scans of written work in Google Classroom at the end of the week.

Week 7: May 11-15, 2020

Course: Nature of Science

Teacher(s): Mr. Brandolini (david.brandolini@greatheartsirving.org); Mr. Mooney (sean.mooney@greatheartsirving.org); Mr. Schuler (david.schuler@greatheartsirving.org)

Weekly Plan:

Monday, May 11

- [ ] Read the Lecture on Faraday in this packet
- [ ] Read pp. 130-131 and the first two paragraphs on p. 133. Please note that pp. 130-131 may sound odd because they are notes from a live lecture the scientist gave.
- [ ] Complete the reading questions

Tuesday, May 12

- [ ] Read the Lecture on Thomson and Rutherford in this packet
- [ ] Look at the diagrams in *Nature of Science* page 135-137.
- [ ] Complete the reading questions

Wednesday, May 13

- [ ] Read the lecture document on Niels Bohr and *Nature of Science* page 138
- [ ] Complete the reading questions

Thursday, May 14

- [ ] Go to Google Classroom and complete the open note/book Assessment.

Friday, May 15

- [ ] Attend Office Hours (11:30am-12:00pm)
- [ ] Catch up on work if needed

Statement of Academic Honesty

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

Student Signature

Parent Signature

Monday, May 11

Name: ____
Section & Course: ____
Teacher: ____
Date: ____

Michael Faraday, *The Forces of Matter & Experimental Researches in Electricity*

Instructions for Today:

1. Read the document below. Then, read pp. 130-131 and the first two paragraphs on p. 133. Please note that pp. 130-131 may sound odd because they are notes from a live lecture the scientist gave. Finally, complete the questions at the end of this reading.

Consider water for a moment. We use it to clean and wash and to sustain our own frail bodies. It would be a rare and uncomfortable day indeed that we went entirely without interacting with it. Water is a whole with its own nature, and we are so accustomed to it, that we might sometimes neglect the fact that water has parts!

The fundamental parts of water are the two elements hydrogen and oxygen. These two elements come together in certain ratios (Pythagoras!) that result in the formation of water. You have probably known about these parts of water for a long time, but have you stopped to consider the oddity and wondrousness of this? Have you asked the fundamental questions that ought to bubble up as we consider it?

If it is true that hydrogen and oxygen come together to form water,

1. What is holding the hydrogen and oxygen together?
2. Can the bond holding them together be broken? If so, how?
3. How do two elements (hydrogen and oxygen) with very different natures come together to form a whole (water) that has its own very different nature from its parts?

In today's lesson, we will learn about a man who asked these questions and sought answers to the first two.

But before we get to this new thinker (will he be British again?! French? Where are the Americans?) and his thoughts (will he measure things, too?), let's re-orient ourselves within the Conversation we've been listening in on.

If you recall, going all the way back to Empedocles there has been a theory in some form or other that material substances are made up of some kind of tiny particles that are held together by forces. Empedocles referred to Love & Strife and Lavoisier to Attraction & Repulsion. John Dalton, whom we studied most recently, agreed that there were particles, which he called **atoms**, in a void that were drawn together and drawn apart by some kind of attractive & repulsive force. Both Lavoisier and Dalton were focusing on **heat** (or **caloric**) as having something to do with things, but our new scientist is able to make further headway in understanding.

This is where Mr. Michael Faraday comes in. (And for those who were guessing, yes, he's a Brit!)

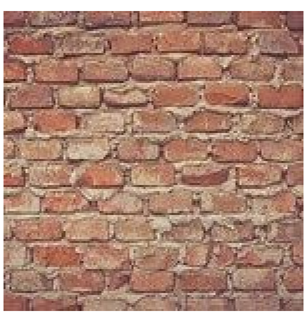
Mr. Faraday had key insights into the nature of these forces, and he, very much in keeping with the new emphasis on measurement and experimentation, set up clever experiments and then measured things that happened during those experiments.

Do you see the slight shift in focus we're having today? Many of the ideas we've studied recently have been about these particles (now called "atoms") themselves or their behaviors in groups (like gases), but **today we are not dwelling too carefully on atoms themselves but on the nature of the force (or forces) keeping them together (or drawing them apart).**

Now that we have focused on the right subject, let's get clear a couple of the key questions we should be asking ourselves:

1. This "force" holding atoms together, what is it?[1]
2. This "force" is it
    a. Material?
    b. Immaterial?
3. Is there one force guiding both Attraction and Repulsion or is it one force for attraction and a different force for repulsion?
4. Is this force part of the atoms themselves or something separate acting on the atoms?

Let's look at that second question on whether the force is material or immaterial. Basically, picture two different images, one each for material and immaterial.



Option A: Mortar is a *Material* substance holding bricks together

These two images are analogies designed to help us consider the fundamental question of whether atoms are held together by something material (like mortar) or immaterial (like gravity). Remember that Lavoisier and Dalton both said that the force drawing atoms *apart* was **material**. They talked about **caloric** being a "subtle fluid" that sits between atoms and helps control how close or far apart they are. Fluids, of course, are material.

Option B: Gravity is an *Immaterial* force drawing the man and Earth together

[1] There is some nuance here. Faraday may be making a distinction between the forces involved in keeping like things together (hydrogen→ hydrogen; water→ water) vs. unlike things (hydrogen → oxygen). There may be different forces involved in these different kinds of attractions/repulsions. See top of p. 131 in *Nature of Science*.

What do you think? Do you think atoms are drawn together by some kind of material substance surrounding them or by some kind of immaterial force? Let's see what Mr. Faraday thought.

Faraday set up a genius experiment with water[2]. Faraday set up two separate tubes upside down in water and, in a particular way, ran **electricity** through the water. And - lo and behold - what do you think started to fill up in each of the two upside down tubes? It was the different parts of water: hydrogen and oxygen! Faraday had separated them! What's more, he was able to **measure the quantity** (a very modern approach) of the hydrogen and oxygen. Remember how Dalton thought water was made up of equal parts hydrogen and oxygen? Well, Faraday was able to calculate that it was actually two parts hydrogen to one part oxygen (H_2O). While Faraday was not the first to discover this, his calculations were yet more evidence of water's parts.

But that measurement is an aside from the main focus. Mr. Faraday conducted more experiments to see if **electricity** really was at the heart of the two thousand-year old mystery of "Attraction and Repulsion". Mr. Faraday came to realize that it was not just that electricity affected the atoms, but that *the atoms themselves had electric charges as part of their very make-up*! He inferred that **electric charge** really was the Attractive & Repulsive force. Compare wind moving the leaves on a tree with what Faraday realized. The wind *affects* and moves leaves but there is no wind *in* leaves. But with atoms, they are *affected* and *moved* by electricity because *electricity exists within and as part of the atoms themselves*. Incredible!

Let's pause and take stock of our three big questions about these Forces that we looked at earlier and see if we've answered them.

1. This "force" holding atoms together, what is it?

We don't know if electricity is the only force, but it is a major player!

2. This "force" is it
    a. Material?
    b. Immaterial?

At this point, we don't know. Is electricity made of matter? Or is it immaterial? Faraday was humble enough to admit he didn't know. This is a mystery to be solved another day.

3. Is there one force guiding both Attraction and Repulsion or is it a different force for each?

Electricity appears to be behind **both** Attraction and Repulsion. But there's some nuance to this answer. How can the same thing be responsible for opposite effects? Competing opposites - which of our Pre-Socratic friends' ears are perking up right now? Additionally, there may be other forces involved (don't forget about heat!).

4. Is this force part of the atoms themselves or something separate acting on the atoms?

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[2] We would have done this experiment together but you can actually do it at home; search for "Electrolysis of Water Experiment" if you're interested!

Mr. Faraday says that this **electric attractive & repulsive force** is part of the atoms themselves. Very interesting! But there's much more to explore here. How can something attract and repel at the same time? Mr. Faraday provided some key insights, but he did not discover everything there is to know with this question, but he is a bridge of sorts connecting the past to our next thinkers, Thomson & Rutherford. You will have to wait until tomorrow to learn more about question 4!

Reading Questions for Monday's Lecture on Michael Faraday

1. Today's lesson focused on

a. The parts of water	b. The nature of atoms	c. The substance/force holding atoms together	d. The movement of atoms in the void

2. Lavoisier and Dalton thought the Attractive Force was

a. Heat/Caloric	b. Magnetism	c. Electricity	d. Particles	e. Connecting Hooks

3. What did Faraday discover was the Attractive & Repulsive force/substance?

a. Heat/Caloric	b. Magnetism	c. Electricity	d. Particles	e. Connecting Hooks

4. According to Faraday, where does this force come from?

a. From lightning	b. From the air	c from fire	d. From outside the atoms	e. From within the atoms

5. Do you think electricity is made of matter (like mortar) or immaterial (like gravity)? Explain.

____
____
____
____

Tuesday, May 12

Name: ____
Section & Course: ____
Teacher: ____
Date: ____

Thomson and Rutherford — New Models of the Atom

Democritus was the first to think of the atom, and the idea has been taken up again and again by different thinkers, including Lucretius, Newton, Lavoisier, and, most notably, Dalton, who was the first to use the term "atom" since ancient times. Regardless of what they called it, all of these thinkers agreed on one thing about the atom: it was eternal, indestructible, and completely solid (with no void or empty spaces in it). It was, as the Greek roots of the word suggest, "*a - tomos*," or "un-cuttable."

Today, you will learn how their idea of the atom—that it had no parts—was seriously challenged.

From Lavoisier to Faraday

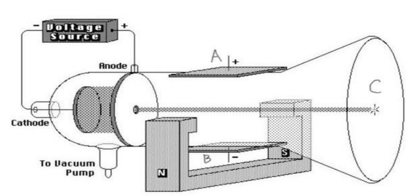
Lavoisier first described how the little particles of matter are affected by the forces of *Attraction* and *Repulsion*. Dalton followed and said that *Attraction* brings atoms together to form "compounds" (e.g., hydrogen + oxygen = water). If compounds form by coming together through *Attraction,* then shouldn't compounds be separable through *Repulsion*? Shouldn't we, for example, be able to separate water into hydrogen and oxygen through *Repulsion*, which, as Lavoisier said, was *heat*, or *caloric?*

This seems like a reasonable hypothesis. But then along came Mr. Faraday, separating water into hydrogen and oxygen *not by caloric*, but by *electricity*. What did this mean? What did atoms and their forces have to do with electricity? Are there *electrical* forces at work in the atom?

J.J. Thomson and the "Cathode Ray Tube Experiment"

A British natural scientist (another Brit!) named J.J. Thomson heard about Faraday's experiments with electricity and was very intrigued. He started to experiment with electricity and atoms.

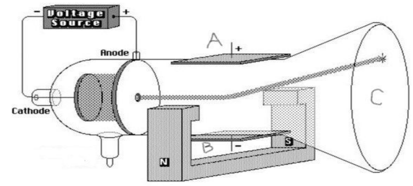
In one very important experiment, Mr. Thomson used a "Cathode Ray Tube" (pictured to the right). A Cathode Ray Tube is a glass tube with little electrically charged pieces in it. There is the *anode*, which is a negatively charged piece of metal, and a *cathode*, which is a positively charged piece of metal. Find these on the diagram (see also *NoS* p.135).



The huge difference in electrical charge (called "voltage") causes rays of particles to flow from the *cathode* to the *anode*; these rays are called *cathode rays*. There is a little hole in the *anode* that allows a ray of particles to pass through to the other end of the tube (which I've labeled C). Can you find the *cathode ray* on the diagram.

Now, notice the little metal plates (A and B), one labeled positive (+) and one negative (-). Thomson charged these metal plates, thus creating an electric field for the ray to pass through on its way to the end of the tube. Take a look at the diagram below to see what happened!

When he created this electrical field, the cathode ray was *bent towards the positive plate!* Thomson inferred that the particles must therefore be negatively charged!



Then, by carefully *measuring how much* the ray was deflected[3], Thomson calculated the *weight* of each particle.

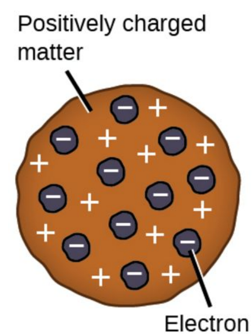
Do you remember Dalton's emphasis on measuring *weight*? Dalton had weighed his twenty elements and had found hydrogen to be the lightest atom. Since, he reasoned, no piece of matter is smaller than an atom—remember, he thought atoms were "solid" and "uncuttable"—that must mean that hydrogen is the very smallest existing piece of matter. Nothing is smaller than a hydrogen atom, said Dalton, and every other natural scientist at the time agreed.

But then Thomson's results came in. The little particle in the beam weighed $\frac{1}{2000}$ of the weight of a hydrogen atom! In other words, what everyone thought to be the smallest material particle in the universe *weighed 2,000 times more than this little particle*.

Thomson tried the experiment with every kind of material he could, and the results were always the same. Thus, he reasoned, *all atoms were actually composed of even smaller parts*. He had just discovered one of those smaller parts in the cathode ray, and he named it the *electron*.[4]

The "Plum Pudding" Model of the Atom

All atoms, then, have little negatively-charged parts, called *electrons*. But since everyone knew that atoms as a whole have neutral charge, therefore all atoms must consist of both positively and negatively charged materials.



He theorized that the positive and negative materials were structured in a particular way, as shown in the diagram on the right: there is positively charged matter, with little electrons evenly spaced throughout it. This model of the structure of the atom has come to be known as the "Plum Pudding" model, due to its resemblance to an English dish by that name.

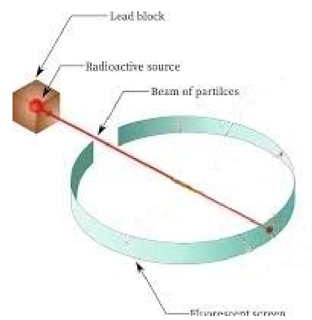
Can you see it? Each atom had positively charged material (the "pudding"), with little negative *electrons* (the "raisins") sprinkled throughout it.

"Plum Pudding" Doesn't Last Forever

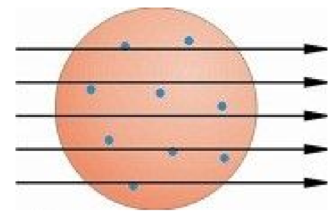
Thomson had discovered the existence of the *electron*, thus overturning the ideas of Dalton and others who had thought the atom was the smallest particle of matter. *Atoms themselves are composed of even smaller parts!* This was a groundbreaking discovery and one that was to have a profound effect on the way that we have thought about atoms ever since. But, for all that, his "Plum Pudding" would not last long. Indeed, it was soon tossed out in favor of another model discovered by one of Thomson's contemporaries, a natural scientist named Ernest Rutherford.[5]

[3] He also used a magnetic field to help with this measurement--do you see the N and S of the magnet in the diagram?
[4] From the Greek "electrum" (amber) + ion (to go). These particles "go" to the electrode of the opposite charge.
[5] Also British! These British natural scientists are really giving the ancient Greeks a run for their money!

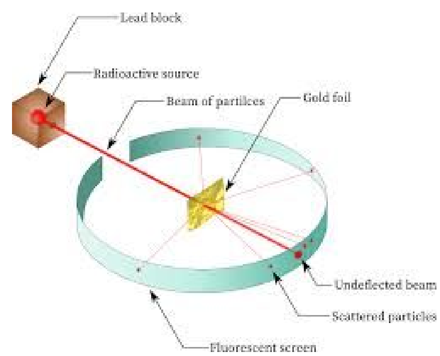
Rutherford and the "Gold Foil Experiment"



Ernest Rutherford, like Thomson, had a knack for devising good experiments. His most famous is called the "*Gold Foil Experiment*." In this experiment, Rutherford fired a ray of *α* particles (pronounced "alpha particles") from a hole in a lead box, aimed at a fluorescent screen. Don't worry too much about how he achieved this (unless you'd like to do some independent research of your own!), but the main thing to know is that this ray of particles was kind of like the *cathode ray* from Thomson's experiment, except that the particles were *much, much heavier*.

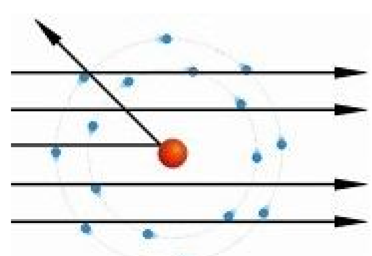


Once he had his little ray of *α* particles, he placed a very, very, *very* thin piece of gold foil[6] in the path of the beam. Imagining the gold atoms to be the "plum puddings" that Thomson had described, Rutherford hypothesized that the super heavy and positively-charged *α* particles would fly straight through the thin gold foil. His hypothesis is shown in the diagram on the right: the black arrows are the paths of the *α* particles. There's simply nothing solid enough in these "plum pudding" gold atoms to stop the *α* particles from passing through, said Rutherford with a confident smile.



But when Rutherford performed the experiment, he found that *most* of the particles passed right through, as he expected, but that certain *α* particles were deflected and ***bounced right back!*** Rutherford described his experience thus:

"It was quite the most incredible event that has ever happened to me in my life. It was almost as incredible as if you fired a 15-inch shell at a piece of tissue paper and it came back and hit you."



How could this be explained? In order to repel an *α* particle, there would have to be 1) a highly-concentrated positive charge, and 2) a highly-concentrated and very dense center of mass. Mr. Thomson's "Plum Pudding" model said that both the electrical charge and the mass of the atom were evenly spread out across the whole atom. But this simply couldn't explain what was happening! There must be a highly dense, highly concentrated amount of mass and charge at the center of the atom in order to deflect an *α* particle. Do you see it in the diagram to the right? The center in *this* model has enough density, and weight, and positive charge, to cause one *α* particle to be deflected back.

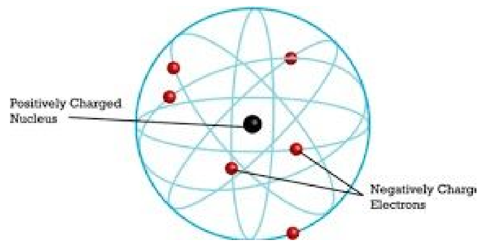
[6] He used gold foil because it is possible to make gold really, really thin--so thin, in fact, that it is only a few atoms thick! This was the closest he could get to making a single layer of atoms.

The "Nuclear" (or "Planetary") Model of the Atom
Rutherford thus made a number of startling inferences:

1) Most of the mass of the atom exists in an extremely dense form at the center of the atom. This mass has a positive charge. He called it the *nucleus*[7].
2) The negatively-charged *electrons* orbit around the nucleus, making up the remainder of the atom's volume—an atom gets most of its size from the wide orbits of its electrons.
3) Almost all of the volume of the atom is *just empty space*. (The theory of "void" continues! Democritus and Lucretius cheer!)

His theory of the atom resulted in picture somewhat like this:

The whole circle represents the total volume of the atom. At the center, is the positively charged nucleus, which contains almost all of the mass of the atom. Orbiting in circular paths around the nucleus are the negatively charged electrons. Because of the resemblance to planets revolving around the sun, this model is sometimes called the "planetary model" of the atom.



Unanswered Questions
Rutherford's theory was brilliant. Yes, it seemed like a great explanation of why the α particles bounced back (something Thomson's model could not explain). But there were still some serious problems with Rutherford's idea. For example, other natural scientists asked him why the electrons would not immediately crash into the nucleus, since positive and negative charges were attracted. Why would they stay evenly spaced out like that? Rutherford had no answer.

There is also the problem of the existence of empty space, or void. The idea keeps coming back as a tempting way to explain things—but how is it possible? Can void *exist*? Can *nothingness* be *something*? Aristotle, 2,000 years earlier, had warned that this was impossible. If void cannot exist, then what is really there between the nucleus and the electrons? Is this what an atom looks like? Or is there a completely different explanation that we simply haven't thought of yet?

It is important to keep in mind that these models of the atom are, well, *models*. They are *theories* about what we think the atom *might* look like. Democritus and Lucretius had theories about what atoms looked like, and Thomson and Rutherford do too. They are *inferences*, or very educated guesses, based on experimental evidence. No one has taken a magnifying glass or a microscope and seen an atom. As nice as Rutherford's little diagram is, we must remember that it is **not** a photograph[8]. It is a *theory*. And Rutherford would have been the first to admit that, though he was doing his best, the atom might not actually look like what he was imagining.

At the same time, however, Rutherford's model was a good one. It was not a random guess. It was based on experimental evidence that he had collected with his gold foil experiment, and it seemed like a good explanation of what he had observed.

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[7] Nucleus comes from the Latin word meaning *nut*, or *kernel*. Imagine the kernel of a sunflower seed (the little, edible part inside the shell). The nucleus is the little kernel of the atom.
[8] To this day, we have no photograph revealing the internal structure of an atom.

Please answer the following questions about the reading.

1. In the introduction to today's reading, it states that the popular idea that atoms have no __________ will be seriously challenged.

2. Upon hearing about Faraday's discoveries, J.J. Thomson began experimenting with __.
    a. Water
    b. Electricity
    c. Gases
    d. Oxygen and Hydrogen

3. Thomson's Cathode Ray Tube used positively and negatively charged electrodes to produce a _________________ ray that traveled across to the other end of the tube.

4. What happened when he created an electrical field for the cathode ray to pass through? ____

5. By measuring this effect, Thomson was able to calculate the weight of each particle in the ray, and found that they each weighed ____________ of the smallest atom, hydrogen.

6. He concluded that, therefore, the atom is *composed of even smaller parts*. He had discovered one of those parts, and he called it the _____________________.

7. He drew up a model of what he thought the inner structure of an atom was like. It came to be called the "Plum Pudding" model of the atom. It said the atom was made of___.
    a. an electron at the center, with protons orbiting around it
    b. solid material, with electrical charge surrounding it
    c. a hollow sphere of positively-charged material, with electrons inside
    d. positively charged matter, with electrons sprinkled throughout it

8. This model was challenged by Rutherford's __________________________ Experiment.

9. When Rutherford fired α particles at a sheet of gold foil, he found, to his surprise that some of the α particles did not pass through the foil, but ____________________!

10. Rutherford thought that this must mean that____.
    a. The atom's positive material was densely concentrated at the center of the atom.
    b. Electrons orbited around the nucleus
    c. Most of the atom was actually just empty space, or void.
    d. All of the above
    e. Choices *a* and *b* only

11. Rutherford called this dense, positive part the ____________, which is why his model is often called the "________________" model. It is also called the "Planetary" model.

12. True / False: Rutherford's model is a *theory* about the atom's structure, not a photograph.

13. True / False: Today we have actual photographs of the internal structure of atoms and thus have no need for theories and models.

Wednesday, May 13

Niels Bohr, "On the Constitution of Atoms and Molecules" (NoS pg. 138)

Instructions: Today, please read the document below. Then, read pg. 138. Finally, complete the worksheet at the end of the reading. Note that the worksheet draws from both the document and the textbook.

The atom continues! Yesterday, we came to the shocking revelation that this *atomos*, the supposedly smallest and "un-cuttable" part, **was made of smaller parts**! Today, we are going to conclude by looking at the contribution of one of Ernest Rutherford's colleagues, the Danish scientist Niels Bohr. Just as each Pre-Socratic thinker stood on the shoulders of the giants before him, so too did Niels Bohr benefit from all of the knowledge and models of atoms that came before him.

I. The Recap

First, let's briefly review how we got to Bohr: remember that Faraday had discovered the importance of *electrical forces* in determining the structure and movement of an atom. It turns out that, just like the North and South magnetic forces, electrical forces come in two opposite varieties: a *positive* charge and a *negative* charge. As you continue to study science in the coming years, you'll find that many fundamental forces in nature work on this principle of opposites.

As you read yesterday, we have J.J. Thompson to thank for the discovery that atoms contain both a positive charge and smaller, negatively charged **electrons**. Then, in 1911 Ernest Rutherford had established his "planetary model"[9] of the atom, having discovered that most of the atom is empty void, and that the negative electrons were drawn towards a nucleus that had a *positive* charge; this is what held each individual atom together. Since the nucleus is positively-charged, Rutherford named its material the **proton**. Rutherford had discovered that the amount of positive charge within an atom's nucleus was closely related to the mass of the atom, and helped determine the number of electrons that surrounded the nucleus.[10]

Yesterday, however, we mentioned that other scientists asked Rutherford why the electrons were not drawn immediately into the protons in the nucleus; Bohr acknowledges a deeper problem, which is that Rutherford's model assumed that the electrons were *unstable.* Bohr argued that in Rutherford's model, the electrons had uneven orbits and would eventually lose energy and then eventually crash into the nucleus due to being attracted to the opposite charge. Since all the observable material in the universe is *not* immediately crashing into its own nuclei, Bohr concluded that Rutherford's model needed several adjustments.

II. The Bohr Model

In 1913, Bohr proposed a new model of the atom that made a few small but significant changes to the Rutherford model. He sought to explain why atoms *didn't* collapse by proposing a model where the

---

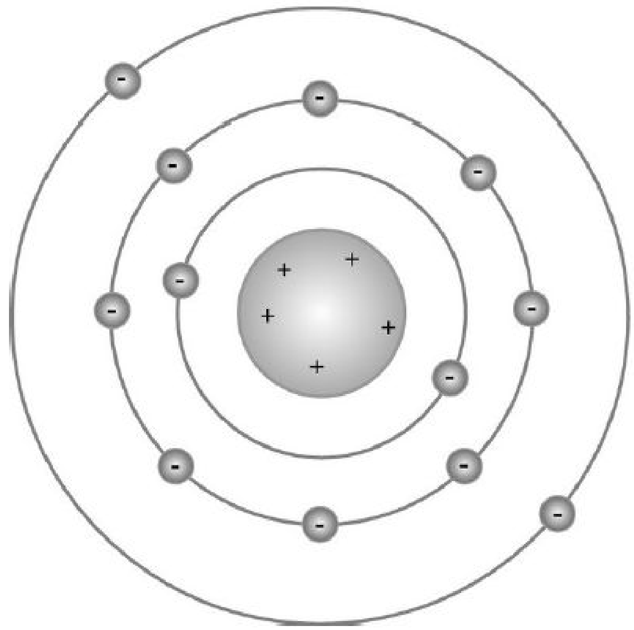
[9] Remember, a model is NOT the same thing as a definitive picture of the thing; it is a theoretical diagram.

[10] You may be familiar with the **atomic number** and the **atomic mass** that we use in the modern table of elements. These unified measurements wouldn't be put into place for a few more decades; what Rutherford was helping us discover was that there was a *numerical relationship* between the amount of electric charge and the mass of an atom.

electrons were in a steady, stable orbit--rather similar to the way the planets orbit around the sun, but in a more regular pattern.

An important principle for understanding Bohr's model is the fact that ***normal atoms always have an electrical charge of 0, meaning that there is an equal number of protons and electrons. Therefore, the size of the nucleus (or in other words, the amount of positively-charged protons) determines how many electrons are in an atom***. Here we can see an example of Bohr's model of the atom:

- The large sphere in the center filled with (+) signs represents the nucleus, made up of those positive protons.
- Surrounding the nucleus, we can see smaller spheres with (-) signs, representing the negatively charged electrons. The circles show the arc of the orbit that the electrons follow.
- Bohr's **major contribution** to atomic models is the idea that there are *multiple layers of electron orbits*.
- Each layer can only contain a specific number of electrons; if a nucleus is big enough to need more electrons, they join on a new layer above the rest. There is a set, mathematically precise distance between each layer, and electrons on one layer will never collide with another layer or the nucleus[11]. This helped scientists come to better understand the properties of larger and heavier atoms.



III. The Pros and Cons

Bohr's model has proven incredibly useful for illustrating an *abstract* picture of the structure of the atom and its subatomic parts. It is not, however, an accurate and literal image of what the internal structure of an atom *actually* looks like, since, as we said Tuesday, no one has ever seen it.

Bohr's model has also proven incredibly useful for illustrating the idea of *molecular bonding*, or when atoms share an electron between each other to form **molecules**. (This very concept is what Faraday's experiment with splitting water molecules observes!). What the model does *not* do, however, is explain *why* exactly those bonds occur, or what they really look like.

Like any diagram, Bohr's model has many practical uses. It is critical to look back over this week, however, and note that for everything we can begin to discover, *the mystery of the ultimate substances is still not resolved!* It's up to us today to take what we learn from these great minds and study them well, so that *we* can continue the great conversation!

[11] No, I am not getting into the physics and quantum mechanics required to calculate these orbits today!

Name:____
Section & Course: ____
Teacher: ____
Date:____

Wednesday, May 13: Niels Bohr, "On the Constitution of Atoms and Molecules" Worksheet

1. Which scientist's work does Bohr's model of the atom hope to most directly address?

   a. Newton　　　　b. Thompson

   c. Lavoisier　　　　d. Rutherford

2. What word does Rutherford propose for the positively charged material within an atom's nucleus?

   a. Proton　　　　b. Nucleon

   c. Neutron　　　　d. Electron

3. According to the document, "***normal atoms always have an electrical charge of ___________, meaning that there is an _____________________ number of protons and electrons.***"

4. What was Bohr's major contribution to the already existing atomic models? (Complete Sentence)

____

____

5. On page 138, who does Bohr credit as an inspiration for his theory of regular, circular orbits for electrons? (CS)

____

6. Based on the description in the document above, draw your own copy of the Bohr model of the atom, including positive and negative charge symbols. Then, label the parts of the atom in your diagram using the names of the parts below:

A. Electron	B. Nucleus	C. Electron Orbit

Thursday, May 14

Today, you will be taking the Chemistry Assessment on Google Classroom. You may study as much as you'd like beforehand and, while you are taking the assessment, you are encouraged to look at any notes, readings, packets, or textbook pages that you need to in order to answer the questions correctly. The questions will be based on the readings/questions that you have been doing each day for this Chemistry unit.

Best of luck! I hope you enjoy revisiting all of these most important ideas and discoveries in the great chemistry conversation, beginning with the ancient Greeks and continuing into our own time.

Friday, May 15

Today, use your time to finish up any work from earlier in the week, attend Office Hours, and upload your packet to Google Classroom.

I hope to see you in Office Hours! It will be today, from11:30am-12:00pm. The link to the zoom meeting can be found on the Google Classroom page for this class.