8 GRADE
MODIFIED
NTI Packets: 21-25
Maroon & Gold
April 13th-17th

Student Name: _____

Teachers:
Mrs. Koch & Mrs. Lemons: Reading
Ms. Herrington & Mr. Persinger: Math
Mr. Case & Mr. McEwan: Social Studies
Ms. Hanrahan & Ms. Klausman: Science
Mrs. Thomas & Mrs. Doyle: Resource

Attached you will find work for each day 21-25. You will have a reading, math, social studies, science, and explore class assignment for EACH DAY! Therefore, take it day by day! Everything is broken down for you by subject and by days. So, read each subject's cover sheet to know exactly what assignment you need to do EACH NEW DAY. If you are confused or need help,

please email any of your teachers, call the school (859-234-7123) or text/call Mrs. Lemons (859-298-4048) or Mr. Case (859-771-3945). BELOW you will find the emails for each of your teachers, WE WILL BE CHECKING EMAILS OFTEN THROUGHOUT EACH DAY. PLEASE, PLEASE EMAIL US FOR HELP.

Also, 8th Gold students, check in with your teachers on Zoom. Email them for specific days and times. The code to join Ms. Herrington is 949 182 5673. The code for Mr. Case is 816 129 2334. For more information, please email them in regards to their Zoom meetings. Appropriate school behavior is expected at all times during Zoom class instruction.

Be safe and wash your hands! We miss you!

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Reading NTI Days 21-25:
Fictional Unit:

Day 21:	Day 22:	Day 23:	Day 24:	Day 25:
Assignment: Watch a rated G or PG-13 movie, and complete attached movie guide. Movies must follow the rating requirements. Suggested Movie Titles (suggestions only): Aladdin , Lion King, Harry Potter, Willie Wonka & the Chocolate Factory, The Rugrats Movie, A Little Princess, Mary Poppins. Alternate Assignment: Read the passage attached & questions, read a short story of your choice, OR use any of the internet links on the back to read a fictional passage. You may choose the movie option above OR do the reading.	Assignment: Write a detailed summary of the movie you watched on Day 21. Your summary should explain the following plot details: The Beginning The Rising Action The Climax The Falling Action The Resolution Therefore, the beginning, middle, and end of the movie should be described. The summary should consist of at least 8-10 sentences. Alternate: Write a summary of the passage you read on day 21 following the above details.	Assignment: Complete the following Prompts. Describe the protagonist (the lead/main character of the movie). Be sure to include strengths, weaknesses, physical appearance, and mental state of the character. Describe the antagonist (the character in conflict with protagonist). Be sure to include strengths, weaknesses, physical appearance, and mental state of the character. Which character do you like better? Explain why? Why are they in conflict with each other? Alternate: Do the above based on your reading passage from Day 21.	Assignment: Describe the mood and setting of the movie. Mood is the general feeling a piece of literature or movie gives someone. What was the mood or what were the moods of the movie you watched on Day 21? Describe what techniques were used to create the mood (lighting, music, weather, etc.). Detail the setting of the movie, but please remember, that the setting is made of TIME and PLACE. Alternate: do the above assignments based on the reading passage you read.	Assignment Options: Please pick one of the following options based on the movie or reading passage you did on Day 21. 1. Graphic Novel: turn your movie or passage into a graphic novel. Please use the worksheet provided as a guideline. Also, watch the following clip to help if needed: https://www.youtube.com/watch?v=iPBjrpYU7_0 2. Rewrite the ending! Now is your turn to recreate the movie's end (or passage you read). How would you tell this story? What would you change? 3. Lights, Camera, Action! Film a scene from the movie or create a scene from the reading. Have someone film you (and other actors- social distancing, of course) and email to your ELA teacher. 4. Draw any scene from the movie or passage and color it. Mood & setting must be accurate

Internet Options for Reading Passages:

https://www.mugglenet.com/
https://www.eastoftheweb.com
www.scholastic.com/learnathome
www.mobymax.com
https://login.edmentum.com/
https://www.poemuseum.org/poes-works-and-timeline (Edgar Allan Poe short stories and poems)
https://www.readworks.org/

Websites For Reading Games and Reading Fun:

https://www.roomrecess.com/
https://www.classtools.net/arcade/201604_bYVVY2
https://www.seussville.com/play/
https://www.eastoftheweb.com

Recommendations for Family Reading or Extra Reading:

https://www.commonsensemedia.org/book-lists

Websites for Vocabulary Enrichment:
https://www.classtools.net/arcade/201604_bYVVY2
www.freerice.com

NAME:

Topic: Movie Analysis Guide.

Movies choice must be rated G or PG-13!

1. What is the title of the movie?

2. Who are the main characters in the movie?

3. Where does the movie take place?

4. What is the time period of the movie?

Answer all questions!

6. What type of conflict is presented in this movie (internal conflict = struggle is inside the character or external conflict = struggle is outside of the character)?

7. Who is the protagonist (main/lead character)?

8. Who or what is the antagonist (person or thing in conflict with protagonist)?

Happy Viewing!

9. Describe in detail, your favorite scene/part of the movie.

5. How do you rate this movie on a scale from 1 (horrible) to 5 (best ever)? Explain rating.

Day 25: Please complete work here for options 2 through 4. (Choose 1 only)

Alternate Assignment. Read and do questions, if you do not watch a movie.

Rumpelstiltskin

by The Grimm Brothers

Once there was a miller who was poor, but who had a beautiful daughter. Now it happened that he had to go and speak to the King, and in order to make himself appear important he said to him, "I have a daughter who can spin straw into gold."

The King said to the miller, "That is an art which pleases me well. If your daughter is as clever as you say, bring her tomorrow to my palace, and I will try what she can do."

And when the girl was brought to him he took her into a room which was quite full of straw, gave her a spinning-wheel and a reel, and said, "Now set to work, and if by tomorrow morning early you have not spun this straw into gold during the night, you must die."

Thereupon he himself locked up the room, and left her in it alone. So there sat the poor miller's daughter, and for the life of her could not tell what to do. She had no idea how straw could be spun into gold, and she grew more and more miserable, until at last she began to weep.

But all at once the door opened, and in came a little man, and said, "Good evening, Mistress Miller; why are you crying so?"

"Alas!" answered the girl, "I have to spin straw into gold, and I do not know how to do it."

"What will you give me," said the manikin, "if I do it for you?"

"My necklace," said the girl.

The little man took the necklace, seated himself in front of the wheel, and "whirr, whirr, whirr," three turns and the reel was full. Then he put another on, and whirr, whirr, whirr, three times round, and the second was full too. And so it went on until the morning, when all the straw was spun, and all the reels were full of gold. By daybreak the King was already there, and when he saw the gold he was astonished and delighted, but his heart became only more greedy. He had the miller's daughter taken into another room full of straw, which was much larger, and commanded her to spin that also in one night if she valued her life.

The girl knew not how to help herself, and was crying, when the door again opened, and the little man appeared and said, "What will you give me if I spin that straw into gold for you?"

"The ring on my finger," answered the girl. The little man took the ring, again began to turn the wheel,

and by morning had spun all the straw into glittering gold.

The King rejoiced beyond measure at the sight, but still he had not gold enough. He had the miller's daughter taken into a still larger room full of straw, and said, "You must spin this, too, in the course of this night; but if you succeed, you shall be my wife."

"Even if she be a miller's daughter," thought he, "I could not find a richer wife in the whole world."

When the girl was alone the manikin came again for the third time, and said, "What will you give me if I spin the straw for you this time also?"

"I have nothing left that I could give," answered the girl.

"Then promise me, if you should become Queen, your first child."

"Who knows whether that will ever happen?" thought the miller's daughter. Not knowing how else to help herself in this strait, she promised the manikin what he wanted, and for that he once more span the straw into gold.

And when the King came in the morning and found all as he had wished, he took her in marriage, and the pretty miller's daughter became a Queen.

A year after, she had a beautiful child, and she never gave a thought to the manikin. But suddenly he came into her room, and said, "Now give me what you promised." The Queen was horror-struck, and offered the manikin all the riches of the kingdom if he would leave her the child. But the manikin said, "No, something that is living is dearer to me than all the treasures in the world." Then the Queen began to weep and cry, so that the manikin pitied her. "I will give you three days' time." said he. "If by that time you find out my name, then shall you keep your child."

So the Queen thought the whole night of all the names that she had ever heard, and she sent a messenger over the country to inquire, far and wide, for any other names that there might be. When the manikin came the next day, she began with Caspar, Melchior, Balthazar, and said all the names she knew, one after another. But to every one the little man said, "That is not my name."

On the second day she had inquiries made in the neighborhood as to the names of the people there, and she repeated to the manikin the most uncommon and curious. "Perhaps your name is Shortribs, or Sheepshanks, or Laceleg?" but he always answered, "That is not my name."

On the third day the messenger came back again, and said, "I have not been able to find a single new name, but as I came to a high mountain at the end of the forest, where the fox and the hare bid each other good night, there I saw a little house, and before the house a fire was burning, and round about the fire quite a ridiculous little man was jumping: he hopped upon one leg, and shouted-'Today I bake, tomorrow brew / The next I'll have the young Queen's child / Ha! glad am I that no one knew / That Rumpelstiltskin I am styled.'"

You may think how glad the Queen was when she heard the name! And when soon afterwards the little man came in and asked, "Now, Mistress Queen, what is my name?"

At first she said, "Is your name Conrad?"

"No."

"Is your name Harry?"

"No."

"Perhaps your name is Rumpelstiltskin?"

"The devil has told you that! The devil has told you that!" cried the little man, and in his anger he plunged his right foot so deep into the earth that his whole leg went in. Then in rage he pulled at his left leg so hard with both hands that he tore himself in two.

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Dear ReadWorks Educators, Administrators, Parents, and Supporters:
We support educators, families, and districts
As schools close across the country due to COVID-19, and we work to keep each other safe and healthy, educators, districts, and families are facing an unprecedented teaching challenge. Here at ReadWorks, we are even more dedicated to our nonprofit mission than ever before: to support the effective teaching and learning of reading. In this ever-changing situation, we wanted to be sure to clarify some of our policies and update you on what we'll be doing going forward.

ReadWorks platform and materials are free, always
Teachers, parents, and students never have to pay to access ReadWorks digitally or otherwise. All adults, no matter who they are, may create a digital class and assign reading content and curriculum to students for free. We have always believed that students deserve barrier-free access to the highest-quality reading materials and instruction, and that belief has only grown stronger during this crisis.

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Families will need to play a more active role in supporting education at home than ever before. ReadWorks is here for families and, as always, invites parents, guardians, and family members to create free accounts. Please consider sharing ReadWorks with the families in your network. We are creating dedicated resources to support families including a free 30-minute webinar on Wednesday, March 18th at noon ET.

Name: _____ Date: _____

1. Who spun the straw into gold?

A. the miller

B. the miller's daughter

C. the king

D. the little man

2. What problem does the miller's daughter face at the beginning of the story?

A. She does not love the king, but her father has threatened to kill her if she does not marry the king.

B. She does not know how to spin straw into gold, but the king has threatened to kill her if she does not spin his straw into gold.

C. She wants her necklace and ring back, but she has already given them to the little man in exchange for his help.

D. She is afraid of the little man, but he is the only one who can spin straw into gold for her.

3. The little man is positive that nobody knows his name. What evidence from the text best supports this conclusion?

A. "'I will give you three days' time,' said he. 'If by that time you find out my name, then shall you keep your child.'"

B. "'Ha! glad am I that no one knew / That Rumpelstiltskin I am styled.'"

C. "'Perhaps your name is Shortribs, or Sheepshanks, or Laceleg?' but he always answered, 'That is not my name.'"

D. "And when soon afterwards the little man came in, and asked, 'Now, Mistress Queen, what is my name?'"

4. Why might Rumpelstiltskin have been jumping and shouting in his house?

A. He was panicking because he thought his house had caught on fire.

B. He was celebrating, thinking he was going to get the Queen's child.

C. He was performing a magical spell to get the Queen's child.

D. He was upset because he knew that the Queen knew his name.

5. What is a theme of this story?

A. It's important to keep one's promises.

B. One should not be greedy.

C. It's important to forgive others.

D. One should pity the less fortunate.

6. Read these sentences from the text:

"[The manikin said,] 'What will you give me if I spin the straw for you this time also?'

"'I have nothing left that I could give,' answered the girl.

"'Then promise me, if you should become Queen, your first child.'

"'Who knows whether that will ever happen?' thought the miller's daughter; and, not knowing how else to help herself in this strait, she promised the manikin what he wanted, and for that he once more span the straw into gold."

What does the phrase "not knowing how else to help herself in this strait" mean based on these sentences?

A. not knowing how to act like a Queen

B. not knowing how to spin straw into gold

C. not knowing how to break a promise

D. not knowing how else to solve her problem

7. Choose the answer that best completes the sentence:

The miller's daughter gave the manikin her necklace, _____ he spun the straw into gold.

A. but

B. yet

C. so

D. like

8. The first time the little man comes to the miller's daughter, she gives him her necklace. What does she give to the little man the second time he appears?

9. Why did the little man make the miller's daughter promise to give him her first child?

Support your answer with evidence from the text.

10. Rumpelstiltskin is greedy.

Using evidence from the text, form an argument for or against this description of Rumpelstiltskin.

NTI Completion Sheet: Please review ALL assignment details from the front page!

Day 22: Summary of movie or reading.

Day 23: Character descriptions.
Protagonist Description: (main character)

Antagonist Description: (Goes against Protagonist)

Which character do you like best? Explain your answer.

Why are the characters in conflict?

Day 24: Mood and Setting.
Describe the mood of the movie or story you read. Please give good descriptions as you explain the mood. (feeling)

If you watch the movie, what film techniques were used to create the mood? Think about weather, lighting, and music.

If you read a story, what elements were used to create the mood? (word choice, dialogue (conversation), etc.)

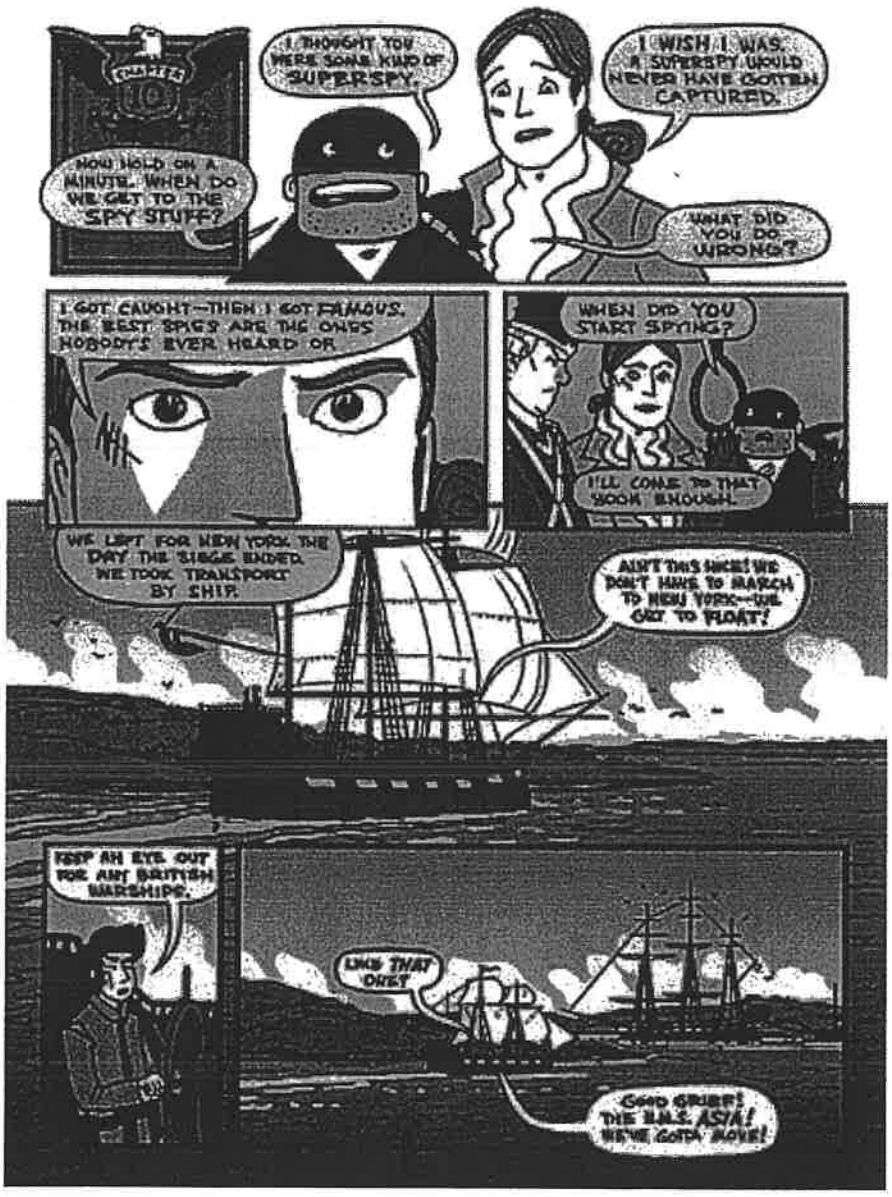
Give a detailed description of the setting. Be sure to include BOTH time and place, please.

Day 25: You need to complete one of the following options:

Option1: Graphic Novel Clip of movie or reading. There is a handout attached for that option.
Option 2: Rewrite the ending of the movie or story.
Option 3: Film a scene of any part of the movie or story.
Option 4: Draw a scene.

**Options 2-4 can be completed on the back of the Movie Analysis Worksheet.
****Please read your assignment sheet again, page one of packet, for more information on the options above!

Day 25: Journal Option Graphic Novel Template



Day 25:
Graphic Novel Option.
This is an example from Nathan Hale to help guide you as you make a graphic novel of the movie you watched or the story you read.

NTI Days 21-25 Math Assignments Modified

Topic: General Review

Day 21: Monday April 13	Two Step Equations (with answer bank)	Page 1
Day 22 Tuesday April 14	Pythagorean Theorem Distance on a Coordinate Plane. Or 15 minutes of Moby Max Math (only if you were told through text if this was an option for you) • Username and Password and school code on sheet on left side of folder)	Pages 2-3
Day 23: Wednesday April 15	Drive Thru Menu Math • Use Quickie Chicken and On the Go Burgers Menu	Pages: 4(front and back)-5
Day 24: Thursday April 16	Functional Relationships Or 15 minutes of Moby Max Math (only if you were told through text if this was an option for you) • Username and Password and school code on sheet on left side of folder)	Pages: 6-8
Day 25: Friday April 17	Drive Thru Menu Math: Figuring Sales Tax • Use Quickie Chicken and On the Go Burgers menu • Can use calculator or try without	Pages: 4(front and back), 9-10

Comments:

There is a combination of 8th grade math review and basic math review. There are many examples and notes included to help refresh your memory. Please show work where directed.

If you have any questions, you can contact Ms. Thomas three different ways:

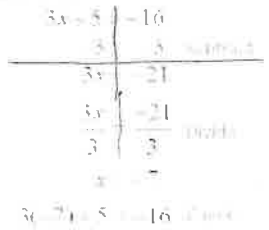
1. Text, Phone, Facetime: (859) 298-8096
2. Email: laurie.thomas@harrison.kyschools.us
3. Zoom appt. On Monday the 13th and Wednesdays at 11:00.

Day 21
Mon April 13

Two Step Equations

Name: Date:

1. Add or subtract to isolate the variable term.
2. Multiply or divide to solve for the variable.
3. Check your solution.



1. $2x + 5 = 7$	2. $3x - 4 = 11$	3. $-2y + 4 = 8$
4. $8x - 9 = 47$	5. $9c - 3 = -39$	6. $13x - 2 = -28$

Answer Bank:

-2	1	-4	-2	5	7

Day 22
Tuesday April 14

* Notes *

Unit: Pythagorean Theorem
Student Handout 4

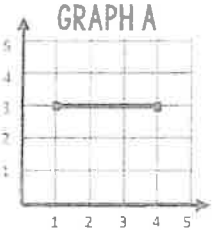
Name _____

Date _____ Pd _____

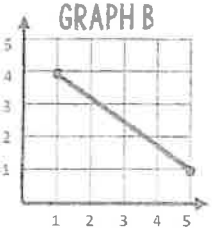
DISTANCE ON A COORDINATE PLANE

* Remember, The opposite of squaring, is square rooting

GRAPH A



GRAPH B

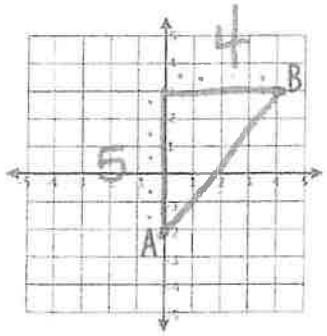


FINDING DISTANCE ON A COORDINATE PLANE

- Sometimes finding the distance between points on a coordinate plane is as simple as looking and counting the number of units, like in Graph A.
- Other times, we might need to find a diagonal distance, like in Graph B.
- To find a diagonal distance on a coordinate plane, we can create our own right triangle and use the Pythagorean Theorem to calculate the distance.
- The diagonal distance would then represent the hypotenuse, or c.

Use the Pythagorean theorem to find the distance between points A and B on each graph. Round answers to the nearest tenth. Count blocks on outside of triangle

1



$a^2+b^2=c^2$

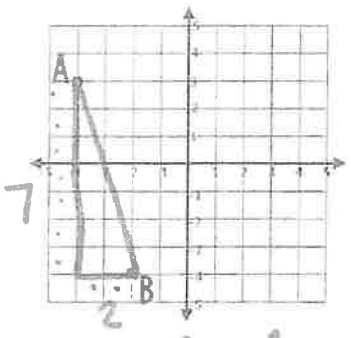
$5^2+4^2=c^2$

$25+16=c^2$

$\sqrt{41}=\sqrt{c^2}$

$6.4=c$

2



$a^2+b^2=c^2$

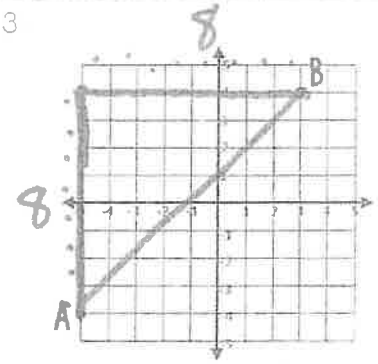
$7^2+2^2=c^2$

$49+4=c^2$

$\sqrt{53}=\sqrt{c^2}$

$7.3=c$

3



$a^2+b^2=c^2$

$8^2+8^2=c^2$

$64+64=c^2$

$\sqrt{128}=\sqrt{c^2}$

$11.3=c$

Name Show work on separate paper.

Day 22
Tuesday April 14

Score _____

Sheet 1

Distance Formula

Find the length of each line segment. Round the answer to two decimal places.

Answer Bank

5.39

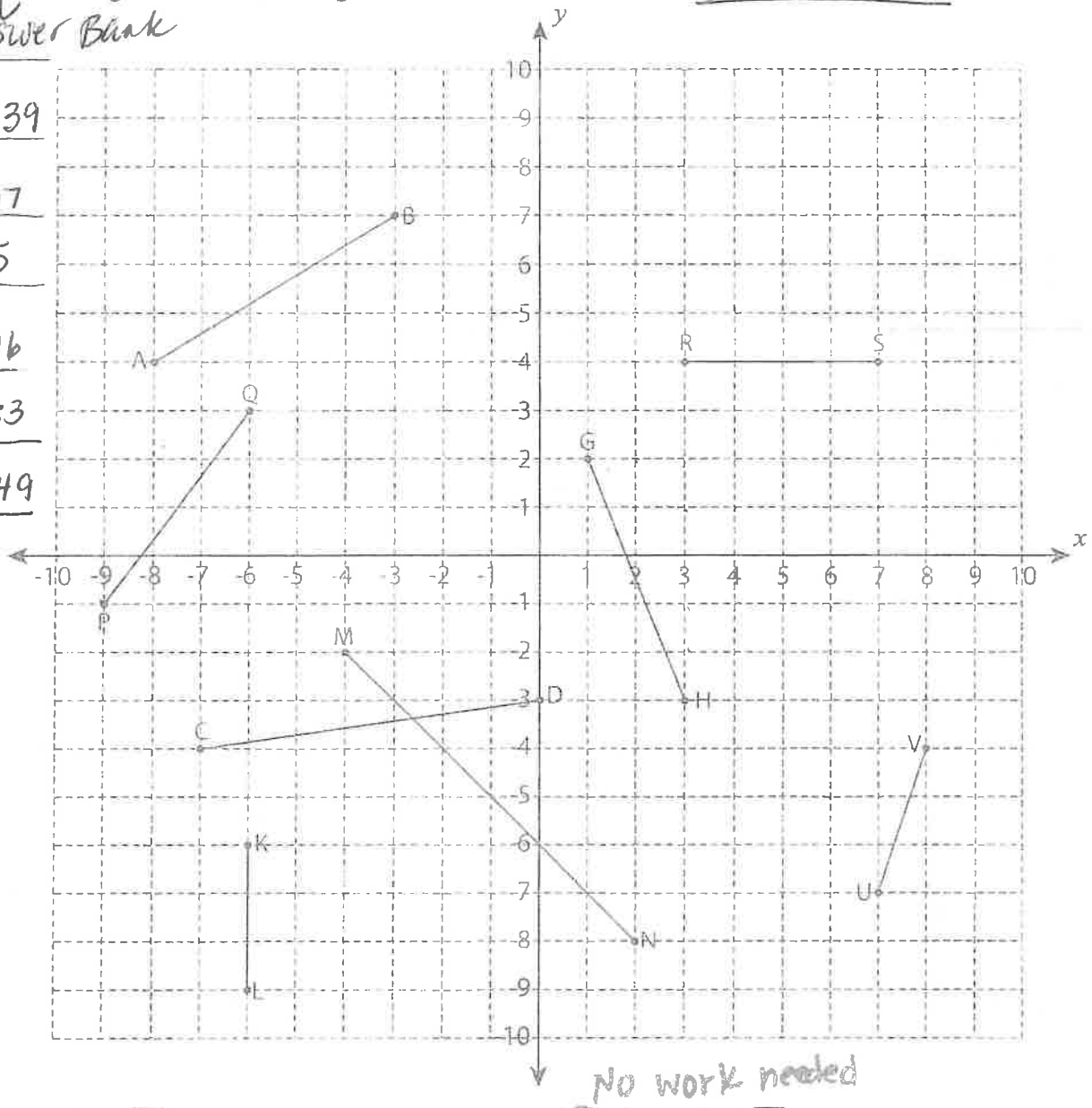
7.07

5

3.16

5.83

8.49



1) Length of $\overline{AB}$ = _____

2) ~~Length of $\overline{RS}$~~ = _____ No work needed

3) Length of $\overline{PQ}$ = _____

4) Length of $\overline{GH}$ = _____

5) Length of $\overline{UV}$ = _____

6) Length of $\overline{CD}$ = _____

7) Length of $\overline{MN}$ = _____

8) Length of $\overline{KL}$ = _____ No work needed

pg. 4

Quickie Chicken

SPECIALTIES

Chicken Strips	$2.87
Chicken Pot Pie	$3.49
Chicken & Noodle Soup	$2.76
BBQ Chicken Wings	$8.64
Chicken Poppers	$2.55

MEALS

(includes chicken, 2 sides, dessert, med. drink)

2-Piece Meal	$6.99
3-Piece Meal	$8.15
8-Piece Family Meal	$18.95
Chicken Strip Meal	$7.74
Popper Snack Meal	$5.37

SANDWICHES

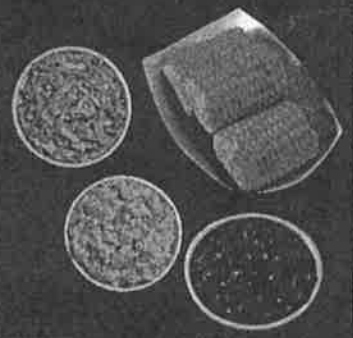
Crispy Chicken Sandwich	$4.25
Grilled Chicken Sandwich	$4.25
BBQ Chicken Sandwich	$4.10
Roasted Chicken Wrap	$3.79

SALADS

	Sm.	Lg.
House Salad	$2.39	$4.22
Chicken Caesar Salad	$4.19	$5.76
Chicken Popper Salad	$4.22	$5.81
Chicken Waldorf Salad	$4.39	$5.92

SIDES

Mashed Potatoes & Gravy	$1.86
Mac & Cheese	$2.44
Corn on the Cob	$1.15
Coleslaw	$1.69
Biscuits	$1.19
Baked Beans	$1.44
Potato Salad	$2.27



DESSERTS

Slice of Chocolate Cake	$4.56
Pudding in a Cup	$3.88
Slice of Pecan Pie	$4.56
Oatmeal Cookie	$1.00

BEVERAGES

Sm. $1.15 Med. $2.09 Lg. $2.35
Soda, Iced Tea, Lemonade, Orange Fizz

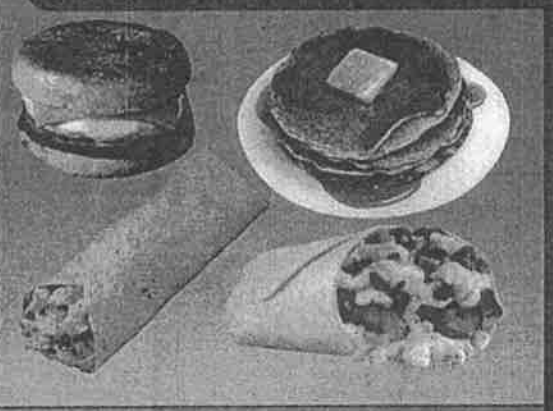
Milk $1.35 Coffee $1.77

ORDER HERE

ON THE GO BURGERS

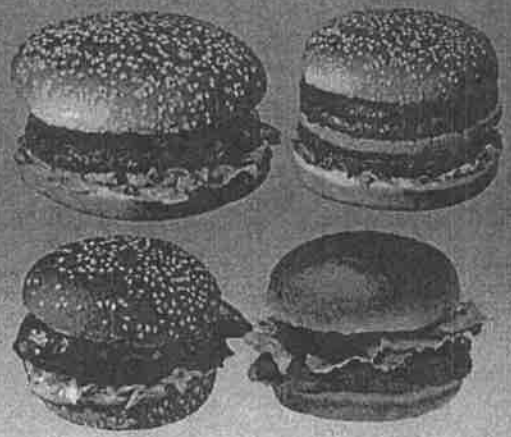
BREAKFAST

Scrambled Egg Wrap	$2.39
Egg & Cheese Bagel	$2.64
Biscuits & Gravy	$2.25
Breakfast Burrito	$3.15
Pancakes & Syrup	$2.75
Hash Brown Potatoes	$1.05
Sausage & Eggs	$2.86



BURGERS

Jr. Burger	$1.89
Jumbo Burger	$2.99
Double Burger	$3.87
Cheeseburger	$3.09
BBQ Chicken Burger	$3.76
Fish Burger	$2.99
Veggie Burger	$3.19



ORDER HERE

REAL DEAL MEALS!

#1 Jumbo Burger Deluxe
Jumbo Burger • Fries • Lg. Drink
$6.88

#2 Burger Light
Jr. Burger • Small Salad • Sm. Drink
$5.75

#3 Chicken Deluxe
Chicken Burger • Fries • Lg. Drink
$7.10

SALADS

	Sm.	Lg.
House Salad	$2.66	$3.99
Caesar Salad	$3.09	$4.99
Veggie Supreme Salad	$3.09	$4.99
Southwest Chicken Salad	$3.28	$5.29
Grilled Chicken Salad	$3.28	$5.29

EXTRAS

	Sm.	Lg.
French Fries	$1.46	$2.35
Chili Cheese Fries	$2.46	$3.35

Fish Sticks	6 pc.	$3.42	10 pc.	$5.18
Chick-ettes	6 pc.	$3.42	10 pc.	$5.18

DESSERTS

	Sm.	Lg.
Ice Cream Cone	$1.09	$1.87
Hot Fudge Sundae	$1.34	$2.09
Milk Shakes (Vanilla, Strawberry, Chocolate)	$2.45	$3.56

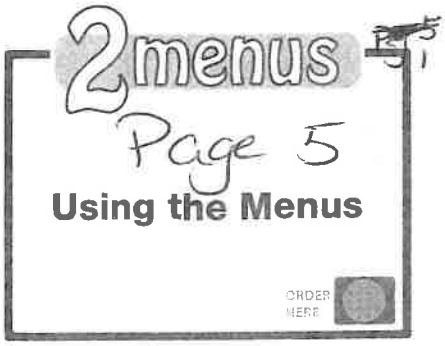
BEVERAGES

Sm. $1.09 Med. $1.39 Lg. $1.69
Soda, Iced Tea, Lemonade

Coffee	$1.55
Hot Chocolate	$1.88
Milk	$1.45

Name _____

Day 23
April 15



Use the *On the Go Burgers* and *Quickie Chicken* drive-thru menus to answer the questions.

1. How much does a Double Burger cost?

_____

2. Which side item at *Quickie Chicken* is the most expensive?

_____

3. What is the least expensive meal deal at *On the Go Burgers*?

_____

4. Which is more expensive: a Veggie Burger or a Crispy Chicken Sandwich?

_____

5. How much is an 8-Piece Family Meal?

_____

6. Which salad at *On the Go Burgers* costs the least?

_____

7. Which menu item at *Quickie Chicken* costs $3.49?

_____

8. Which costs less: a side of Potato Salad or a large order of Chili Cheese Fries?

_____

9. Which menu item at *On the Go Burgers* costs $6.88?

_____

10. What is the least expensive menu item at *Quickie Chicken*?

_____

Task 5 — Lucky Lucy Example*

m - move b - begin

Description

Lucky Lucy won $1,000 from a game show! She is spending it at a rate of $50 per day.

b = 1000 m = -50

Equation

$y = mx + b$ (m: move, b: begin)

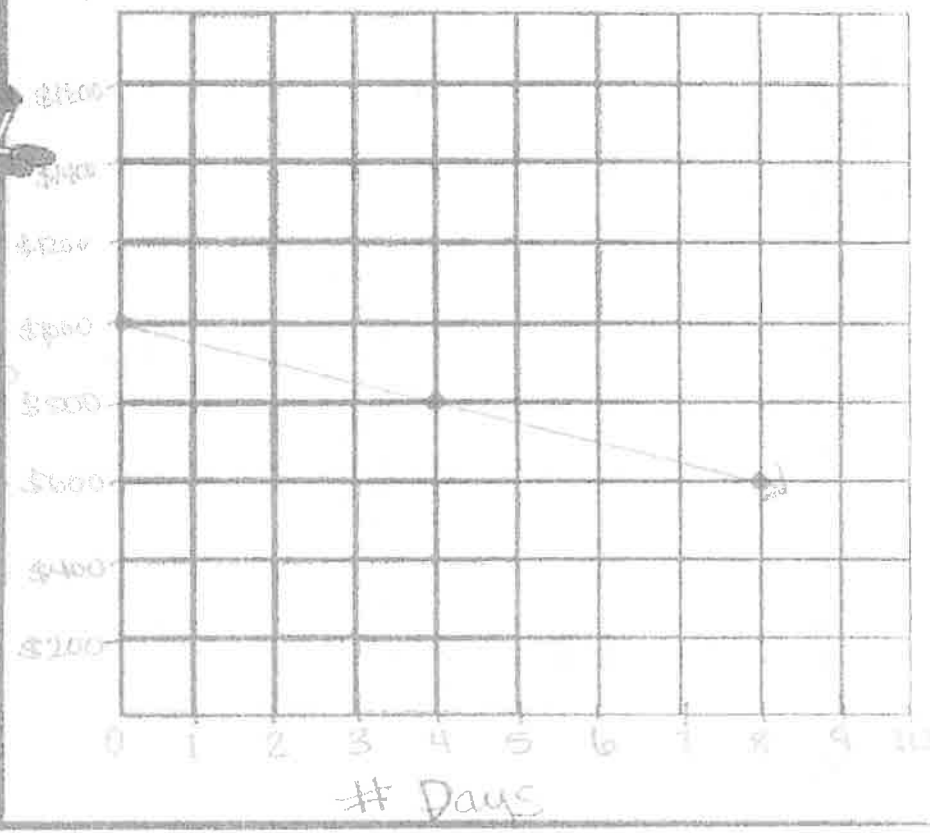
$y = -50x + 1000$

Table

x: # Days	y: Money
0	$1,000
2	$ 900
4	$ 800
6	$ 700
8	$ 600

Graph

*Note: I counted by $200 because there wasn't enough space to count by $100.



Day 24 April 16

Task 4 — Airplane

per each every an a > PEAN > (m) slope words

Description

An airplane 20,000 feet above the ground begins to descend for its landing at a rate of 2000 feet per minute.

m = b =

Equation

$y = mx + b$

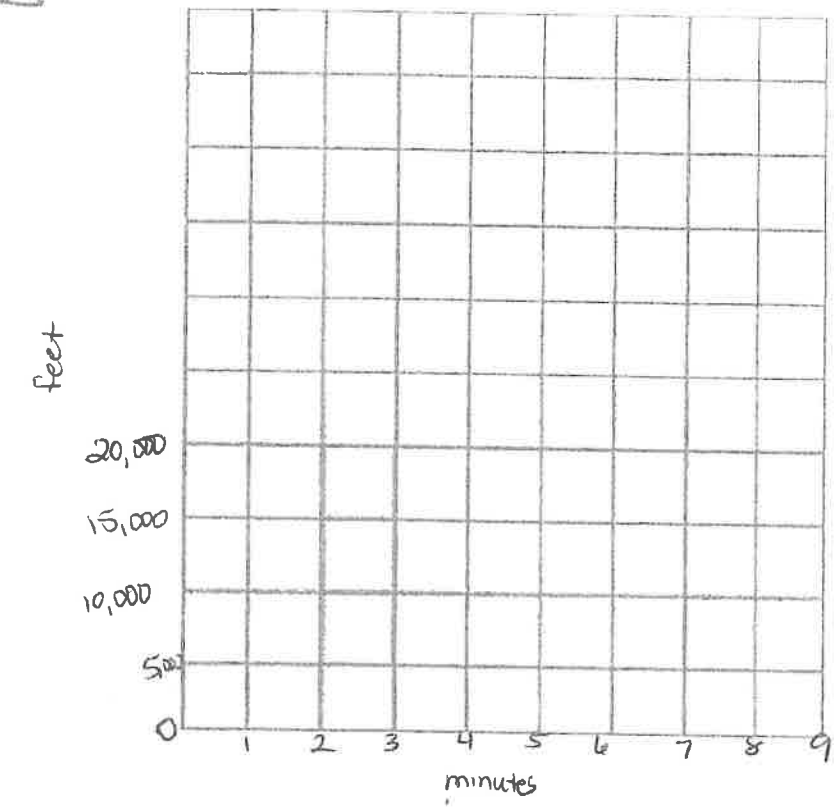
___ = ___ x ___ ___
(+ -)

Table

x: Minutes	y: Feet
0	
1	
2	
3	
4	

y-int (b)

Graph



Day 24

April 16

Page 7

Task 9 Swimming Pool

per each every ap (m) slope words

a

Description

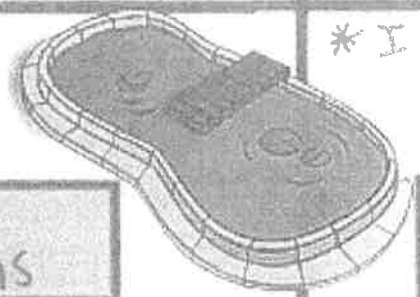
A swimming pool already contains 55 gallons of water when Baxter begins to fill it. Water flows into the pool at a rate of 8 gallons per minute.

Equation

$y = mx + b$

___ = ___ x + ___

Table



x y

Minutes	Gallons
0	
1	
2	
3	
4	

Graph

* I would suggest intervals of 10 for y-axis

Gallons

0

Minutes

Day 24

April 16

Page 8

Day 25
April 17

FIGURING SALES TAX

Some states charge **sales tax**. Sales tax is an amount you pay when you buy certain items. When you buy food in a restaurant, sales tax is added to your total bill. On a receipt, sales tax is shown as a percentage. The amount of sales tax you pay depends on how much you spend. This book uses a 7% sales tax. To find the total price of the item you buy, the **sales tax** must be added to the **subtotal**.

Step 1: Change the **percent** to a **decimal**.

a. Drop the percent symbol.

b. Place a decimal point after the last number on the right.

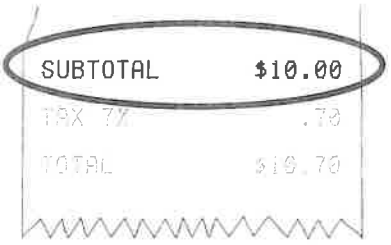
c. Move the decimal point two places to the left. Add a zero if necessary.

7% = 7

7.

.07

Step 2: Multiply the **subtotal** by the **decimal**.



$10.00
x .07
7000
+ 00000
.7000

Step 3: Round to the nearest hundredths place if necessary.

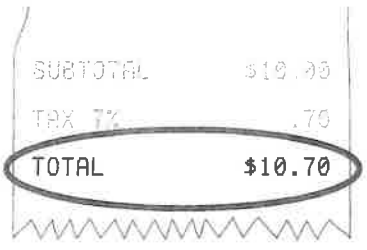
.70

The answer is the amount of **sales tax**.

$.70 = sales tax

Step 4: Add the amount of **sales tax** to the **subtotal** to find the **total**.

$10.00
+ .70
$10.70 = total



Name _____

Day 25 April 17

2menus Page 10

Multiplication & Addition
- Figuring Sales Tax
- Multi-Step Problems

ORDER HERE

Use the *On the Go Burgers* and *Quickie Chicken* drive-thru menus to find each subtotal. Figure the tax on the subtotal, then add to find the total. Round to the nearest hundredths place.

can do on seperate sheet of paper located in folder

	MENU ITEMS	SUBTOTAL	7% TAX	TOTAL
			23.22 x .07 =	23.22 + 1.62 =
1.	3 Chicken Strip Meals	7.74 x 3 = $23.22	1.62	24.84
2.	4 Cheeseburgers			
3.	5 Baked Beans			
4.	3 Biscuits & Gravy			
5.	2 Lg. Caesar Salads			
6.	4 Sm. Milk Shakes			
7.	8 Slices of Pecan Pie			
8.	6 Coleslaws			
9.	5 Chicken Pot Pies			
10.	9 Jr. Burgers			
11.	7 Potato Salads			
12.	8 Lg. French Fries			

8th Grade Days 21-25 Social Studies
NTI Assignments

This week will cover Abolitionists, and the Civil War.

If you have any questions please contact
Mr. Case: james.case@harrison.kyschools.us or by phone at 859-771-3945
Mr. McEwan john.mcewan@harrison.kyschools.us or by phone at 859-338-8438

Day 21: Is a Frederick Douglas Crossword Puzzle. Read the background information to help you solve the puzzle.

Day 22: Dred Scott Reading: You will want to answer the 2 questions following the reading under the heading "What did you Learn."

Day 23: Is a Fighting the Civil War Crossword Puzzle. Read the background information to help you solve the puzzle.

Day 24-25 How did the North and South view the Start of the Civil War: Read over the Background then you will read two newspaper accounts on the firing on Ft. Sumpter. Answer the questions following the readings. Document A has 7 questions. Document B has 8 questions.

FREDERICK DOUGLASS

Frederick Douglass was a great African American speaker. He was a leader in the abolition movement to end slavery in the United States. Douglass was born a slave with the name Frederick Bailey on a plantation in Maryland. As a boy he was sent to serve in a city house in Baltimore. There, his master's wife began to teach him to read and write—until her husband stopped her. Douglass kept learning on his own. He blacked, or polished, boots to earn money, then paid a white boy to get his first book. Soon he was writing out passes, allowing runaway slaves to claim they were free.

As a young man, Douglass was sent to learn ship caulking. He managed to escape his place of work, taking a train to New York. For safety, he changed his name from Bailey to Douglass and moved farther north into Massachusetts. There he worked as a day laborer. One day, he spoke up at an abolition meeting. He spoke so well that he was hired by the Massachusetts Anti-Slavery Society to lecture in other towns. Douglass told about the evils of slavery, especially the breaking up of slave family members. He had in mind the master who had split him from his own mother at birth, then separated him from a loving grandmother when he was a child.

Douglass wrote a book telling the story of his life and started his own paper, the *North Star*. He believed African Americans should lead in the struggle for their own freedom. He used his house in Rochester, New York, as a station in the Underground Railroad to hide escaping slaves.

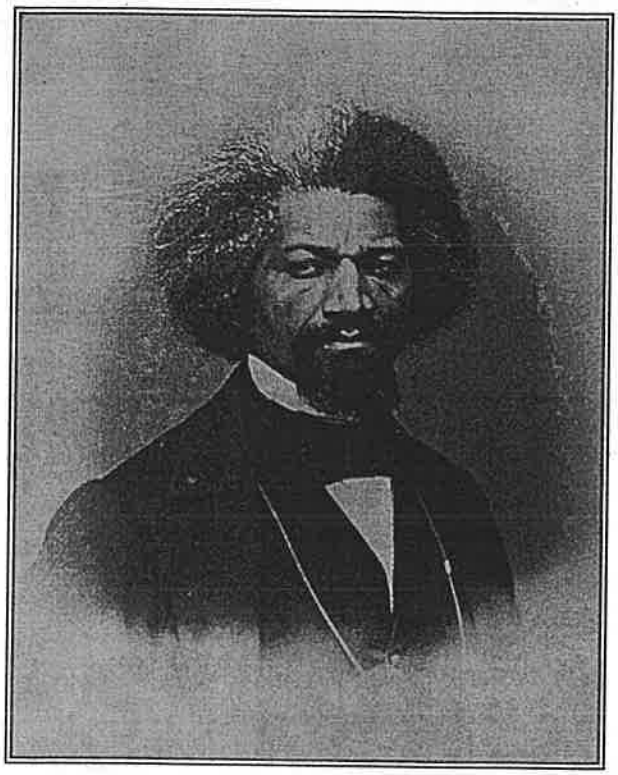
When the Civil War began, Douglass was one of the first to urge that African Americans be allowed to serve in the Union army. He was too old to fight himself, but his two sons joined the army. In old age, he lived an honored life in Washington, D.C., where he held various offices, including U.S. minister to Haiti.

Across

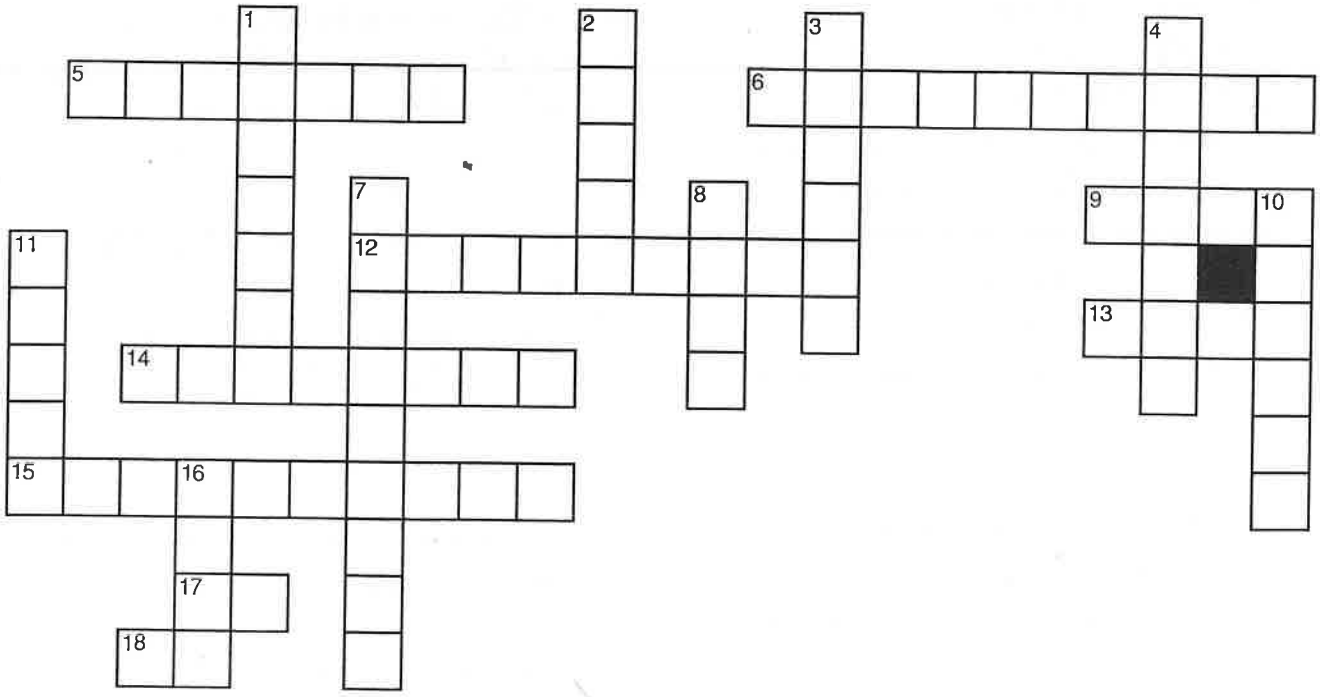
5. Douglass was most famous as a _____ for the abolition of slavery.
6. City where Douglass lived in old age
9. When the master found out, his wife had to ____ teaching Douglass.
12. City where Douglass grew up and learned to read
13. Relatives of Douglass who fought in the Civil War
14. State where Douglass was born on a plantation
15. Douglass especially hated the _____ of slave family members.
17. Two-letter abbreviation of the state where Douglass began his speaking career
18. Two-letter abbreviation of the state to which Douglass went to escape slavery

Down

Frederick Douglass



1. Douglass's job when he first escaped slavery
2. Country where Douglass served as U.S. minister
3. Douglass's last name when he was a slave
4. In Rochester, Douglass used his home as an Underground Railroad _____.
7. Term used for the idea of ending slavery
8. Douglass wrote one of these about his own life.
10. Young Douglass wrote free _____ for runaway slaves.
11. Douglass blacked these to earn money for a book.
16. Douglass urged that African Americans be allowed to join this.



Word List				
abolition	Baltimore	laborer	passes	station
army	book	MA	separation	stop
Bailey	boots	Maryland	sons	Washington
	Haiti	NY	speaker	

Dred Scott

c. 1795–1858

WHY HE MADE HISTORY Dred Scott was a slave who sued for his freedom. The outcome of his trial widened the divide between the North and South over the issue of slavery. Scott became a powerful figure in the abolitionist movement.

State Historical Society of Missouri

As you read the biography below, *think about how Dred Scott's persistence brought his case to the U.S Supreme Court.*

VOCABULARY
emancipated freed

In 1846 Dred Scott began the fight for his freedom, as well as the freedom of his family. His trial came at a time when the United States was being torn between abolitionists and supporters of slavery. The outcome of the trial, known as the Dred Scott decision, angered abolitionists and many people in the North.

Scott was born around 1795 in Virginia, which was then a slave state. His owner was Peter Blow, who eventually moved his family and Scott to St. Louis, Missouri. Scott was then sold to Dr. John Emerson. Emerson was a military doctor and moved around frequently.

Sometime around 1833, Emerson moved to Illinois with Scott. Illinois was a free state. After living there for more than two years, Emerson and Scott moved to the Wisconsin Territory, where the Missouri Compromise prohibited slavery. But Scott remained a slave with Emerson.

In 1846 Emerson died and Scott sued Emerson's widow for freedom for himself and his family. Scott argued that since he had spent an extended amount of time in the free state of Illinois and the free

territory of Wisconsin, he was owed his freedom. Scott was granted his freedom by a court in St. Louis. The good news was short-lived.

The Missouri State Supreme Court reversed the lower court's decision. Scott took his case to the federal courts, and it eventually landed before the U.S. Supreme Court. Scott's trial was not a fair one. Most of the justices were from southern states and had been appointed by pro-slavery presidents. In 1857 the court ruled against Scott, stating that the Missouri Compromise was unconstitutional. As a further insult, the court ruled that slaves were not citizens and, therefore, had no right to sue.

The decision fueled the fire between the North and the South. Slaveholders applauded the decision. Abolitionists were angry. The decision played a large role in Abraham Lincoln's election.

For Scott and his wife, the decision was disappointing. In a twist of fate, the sons of Scott's former owner, Peter Blow, purchased Scott and his wife and **emancipated** them.

WHAT DID YOU LEARN?

1. **Draw Conclusions** Why do you think the U.S. Supreme Court ruled that slaves were not citizens?

_____

_____

2. **Expressing and Supporting a Point of View** What do you think was the most important outcome of the Dred Scott decision? Provide reasons or examples to support your point of view.

_____

_____

ACTIVITY

3. Imagine that you are Dred Scott. Write a letter to the court explaining why you want your freedom and why you believe that the laws of the United States provide you with that freedom.

FIGHTING THE CIVIL WAR

When Abraham Lincoln was elected president in 1860, South Carolina decided to leave, or secede from, the Union. However, Fort Sumter, on the Carolina coast, remained in the hands of the U.S. Army. Angry state officials had the fort bombarded, and the Civil War began.

Eleven states in the South united to form the Confederacy, headed by Jefferson Davis. Robert E. Lee, once a U.S. Army officer, agreed to lead the Confederate army. Lincoln named several generals to lead the Union army, but finally he came to depend most on Ulysses S. Grant.

Lincoln decided to weaken the South by cutting off its oceangoing trade with a naval blockade. Meanwhile, the North, with lots more factories and people, was well supplied.

Many soldiers were killed in the war, partly because improved rifles and cannons killed more efficiently than the older models. Even more men died, however, because of infected wounds and diseases that swept the camps and military prisons.

Midway through the war, Lincoln freed slaves in the rebelling states with the Emancipation Proclamation. Since slaves in the rebelling states were under the power of the Confederacy, the Proclamation did not set slaves free immediately. However, it paved the way for a complete end to slavery after the war.

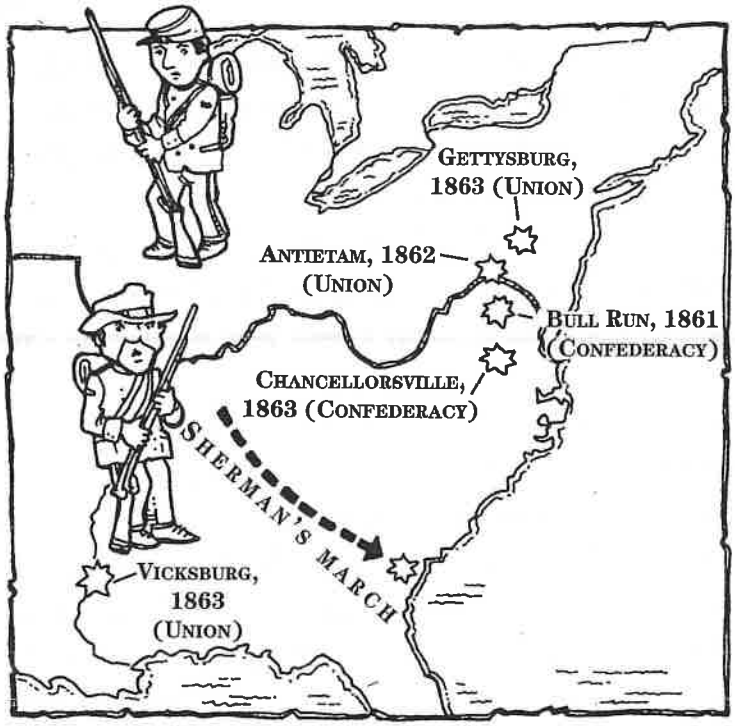
Although the South won major battles early in the war, the tide turned at Gettysburg, Pennsylvania. There, the Union turned back General Lee's attempt to invade the northern states. In battles at Vicksburg and Chattanooga, the Union gained control of western Confederate states. Then, while Grant pushed southward, Union General William Sherman's men made a long march through Georgia to the sea. His troops burned crops and houses, destroying anything that could help the Confederate army stay alive. Finally, Lee surrendered to Grant at the Appomattox Courthouse in Virginia, on April 9, 1865.

Across

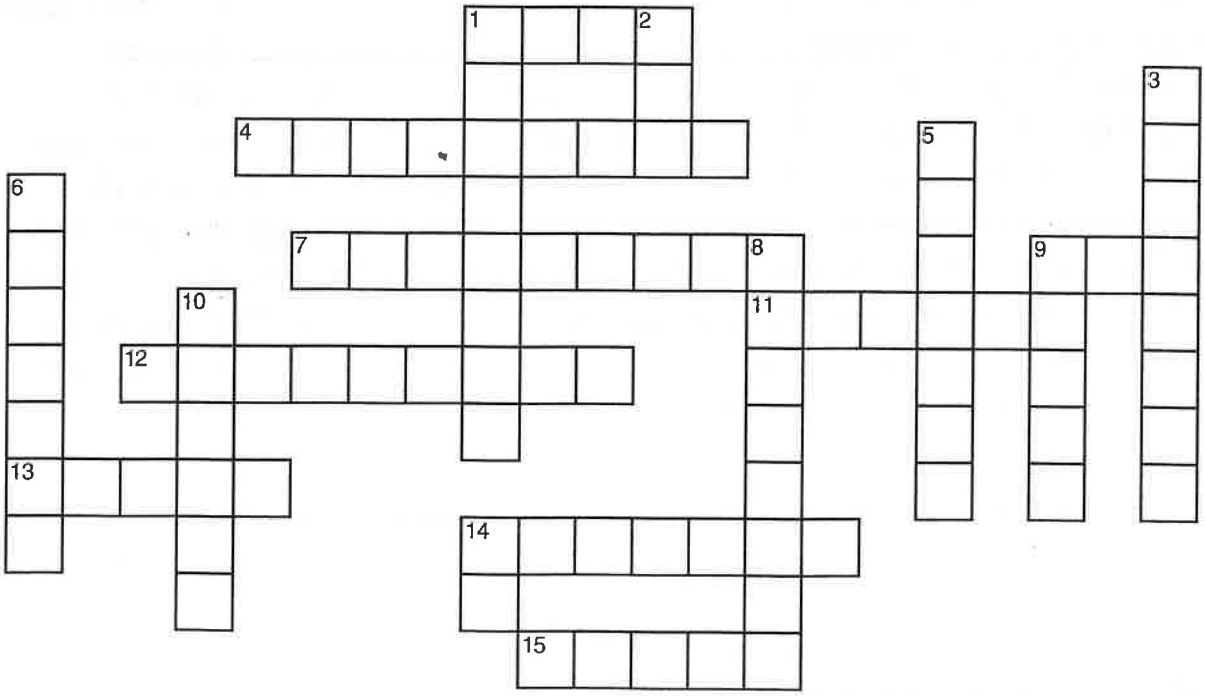
1. The first full battle of the Civil War was at ____ Run, near Washington, D.C.
4. The North had more of these to make arms and supplies.
7. Location of an important battle in Mississippi
9. Initials of the most important Union general
11. Number of states in the Confederacy
12. Lee did this at Appomattox Courthouse.
13. The Civil War was mostly fought in this area, rather than in the North.
14. Last name of the Union general who destroyed property across the South
15. Last name of the leader of the Confederacy

Down

Important Civil War Battles and Who Won Them



1. Line of ships used to stop trade with the South
2. Last name of the general who led the Confederate army
3. State where the Confederates surrendered
5. The Emancipation Proclamation ended this in the Confederacy.
6. Cause of more soldiers' deaths than gunfire
8. Lincoln had several of these but depended most on Grant.
9. The side that won the battle at Gettysburg
10. Name of the fort where the Civil War started
14. Initials of the state that was first to secede



Word List				
blockade	disease	Lee	South	USG
Bull	eleven	SC	Sumter	Vicksburg
Davis	factories	Sherman	surrender	Virginia
	generals	slavery	Union	

How did the North and South View the Start of the Civil War?

Background: In November, 1860, Abraham Lincoln was elected as the 16th president of the United States. His platform opposed the expansion of slavery into new territory, but committed to not interfering with slavery in the Southern states.

Despite his pledge to not interfere with slavery, Lincoln's election led eleven Southern states to eventually secede, or leave the United States and start their own country, the Confederate States of America. South Carolina was the first to secede in December 1860.

Fort Sumter, located in Charleston Harbor in South Carolina was the last United States army outpost to not be turned over to the Confederate states. Desperate for supplies, Lincoln tried to send ships with supplies to Fort Sumter. However, the Confederates would not allow this to happen and demanded that Fort Sumter surrender.

At 4:30 a.m. on April 12, 1861, the Confederates opened fire on Fort Sumter. Edmund Ruffin from Virginia fired the first cannon shot. The bombardment lasted until 2:30 p.m. on April 13, when the U.S. army finally surrendered. There were no casualties on both sides, but one Confederate horse was killed. Thus, the Civil War began.

Assignment: You will be reading two newspaper accounts of the firing on Fort Sumter and answer questions to understand how each side looked at this event from two different viewpoints.

Document A: *Fremont Journal* (Modified)

EXTRA
Saturday Morning, April 13, 1861
THE WAR COMMENCED!

We are indebted to Mr. Brown, the gentlemanly telegraph operator at this place, for the following **dispatches** which were received last night, up to 12 o'clock.

By these dispatches it will be seen that the **treason** which has so long been **rife** at Charleston, has at last **culminated** in WAR! The rebels will now be treated in a different manner than they anticipated. They have brought down **vengeance** on their heads. The country waits with breathless anxiety to know the results of this attack. We believe the Government is sufficient for the emergency. — Without further remarks we give the dispatches:

Charleston, April 12.— The ball has opened. War is **inaugurated**. The batteries of Sullivan's Island, Morris Island, and other points were opened on Fort Sumter at 4 o'clock this morning. Fort Sumter has returned the fire, and a brisk **cannonading** has been kept up. No information has been received from the seaboard yet. The military are under arms, and the whole of our population are on the streets and every available space facing the harbor is filled with anxious spectators. . . .

The troops are pouring into the city by the thousands. . . .

Not a casualty has yet happened to any of the forces of the nineteen batteries in position. Only seven have opened fire on Ft. Sumter; the remainder are held in reserve for the expected fleet.

Source: *Fremont Journal*, Fremont, Ohio, April 13, 1861.

Vocabulary

dispatches: news reports
treason: working to overthrow one's own government
rife: something undesirable that happens a lot
culminated: to reach a decisive point
vengeance: punishment in retaliation
inaugurated: to begin
cannonading: heavy cannon or artillery fire

Document B: *The Daily Dispatch* (Modified)

The War Begun

It will be seen that, under the military **compulsion** of the immense fleet and army which the Black Republican President has sent to **subjugate** Charleston, the Carolina forces have been forced, in self-defense, to attempt the reduction of that fort which so long has **menaced** their homes and firesides, and which Lincoln had formally notified them he was about to supply, —"peaceably if he can, *forcibly if he must,*"—a notification which, backed up by an immense naval and military force, was of course a declaration of war. . . .

The people of Charleston have been actually supplying Major ANDERSON and his officers with **provisions**, exhibiting a spirit of generosity unprecedented in the history of war. In the midst of the negotiations a fleet larger than England keeps up in the Channel, an army of three thousand soldiers . . . has been suddenly sent by the Government to attack Morris' Island, and force provisions, and probably men, into Fort Sumter. . . .

The "**irrepressible** conflict" which has been forced upon the peaceful home and the unoffending citizens of the South, will be met by a people who will drench their native soil with the blood of their invaders, or perish, to the last man, in **vindication** of all that man holds dear.

Source: *The Daily Dispatch,* Richmond, Virginia, April 13, 1861.

Vocabulary

compulsion: being forced to do something
subjugate: to conquer or bring under control
menaced: threatened
provisions: needed supplies
irrepressible: impossible to restrain or control
vindication: proof that something is correct or justifiable

Guiding Questions

Document A
Answer questions 1-3 before reading the document.

1) (Sourcing) When was this article published?

2) (Sourcing) Where was the article published?

3) (Contextualization) How might where the article was published influence its content?

Answer questions 4-7 after reading the document

4) (Close reading) How does the article describe the decision to attack and the troops firing on Fort Sumter?

5) (Close reading) According to the article, how should the troops firing on Fort Sumter be treated?

6) (Close reading) Does the newspaper seem to support the Union or the Confederacy? Cite specific words or passages from the article to support your answer.

7) (Contextualization) Review your answer to Question 3. How accurate was your prediction? Explain.

Document B
Answer questions 1-3 before reading the document.

1) (Sourcing) When was this article published?

2) (Sourcing) Where was the article published?

3) (Contextualization) How might where the article was published influence its content?

Answer questions 4-7 after reading the document

4) (Close reading) How does the article describe Abraham Lincoln?

   Why might the newspaper have described him this way?

5) (Close reading) According to this article, why did the troops in Charleston fire on Fort Sumter?

6) (Corroboration) How does this article's description of the troops firing on Fort Sumter compare to the description in Document A? Cite specific examples from the article.

7) (Close reading) According to this article, what is the Confederacy fighting for?

8) (Corroboration) How does the tone of Document B compare to the tone of Document A?

8) (Contextualization) How might the locations where these newspapers were published have influenced the content of the articles?

Ms Hanrahan and Mrs Klausman's Days 21-25

8 th grade Science NTI Assignments Modified

This week we will begin talking about the history of the Earth or geologic time This is a scientific theory about when and how our planet was created and how it has changed over time

Day 21

1. Read section 1 "Early Earth" on pages 618-622.
2. Answer questions **2 and 4** in the "section 1 review" on page 622.

Day 22

1. Read section 2 "Formation of the Crust and Continents on pages 623 627.
2. Answer questions **1 and 2** in the "section 2 review" on page 627.

Day 23

1. Read section 3 "Formation of the Atmosphere and Oceans" on pages 628-632.
2. Answer questions **2 and 4** in the "section 3 review" on page 632.

Day 24

1. Read section 4 " Early Life on Earth" on pages 633-637.
2. Answer question **2** in the "section 4 review" on page 637.
3. Define the 4 new vocabulary words listed on page 633.

Day 25

1. Review page 640. Complete questions 2, 3,8,10,13,14,18,19 on page 641 for Chapter 22 Assessment.

OR

2. Go to Youtube: search "The History of Earth" and watch the first video It is published by Wisdom Land and is little over and hour and a half long This video is about how scientists think the Earth was created and how it changed over time. In your NTI packet there's a video guide. Watch the video and complete **odd or even questions** on guide https://www youtube.com/watch?v pN7VQas40gQ

Monday - Day 21

CHAPTER 22

The Precambrian Earth

BIG IDEA The oceans and atmosphere formed and life began during the three eons of the Precambrian, which spans nearly 90 percent of Earth's history.

SECTIONS

1 Early Earth

2 Formation of the Crust and Continents

3 Formation of the Atmosphere and Oceans

4 Early Life on Earth

LaunchLAB

iLab Station

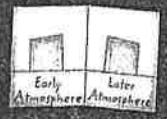
How do liquids of different densities model early Earth?

Earth's core, mantle, and crust have different average densities. The core is the densest, the crust is the least dense, and the mantle lies between. Scientists think that early in Earth's history, temperatures were hot enough for the materials that make up Earth to act like liquids. Model how Earth's layers formed in this activity.

FOLDABLES Study Organizer

Formation of Earth's Atmosphere

Make a pocket book using the labels shown. Use it to organize your notes on the formation of the atmosphere.



page 618

Go online!

Stromatolites are tabular-, mound-, or column-shaped structures made by tiny organisms called cyanobacteria. Found only in some areas on Earth today, stromatolites dominated Precambrian oceans for billions of years.

page 619

SECTION 1

Essential Questions

- What evidence exists that indicates Earth is 4.6 billion years old?
- What were the heat sources of early Earth?

Review Vocabulary

metamorphism: changes in the mineral composition or structure of rocks caused by pressure and temperature over time

New Vocabulary

zircon
meteorite
asteroid

Early Earth

MAIN IDEA Several lines of evidence indicate that Earth is about 4.56 billion years old.

EARTH SCIENCE 4 YOU

Imagine that you are putting together a jigsaw puzzle but you do not have the picture on the box. You do not know what the puzzle looks like, and you have only about 10 percent of the pieces. This is similar to the challenge that scientists face when they study the early Precambrian.

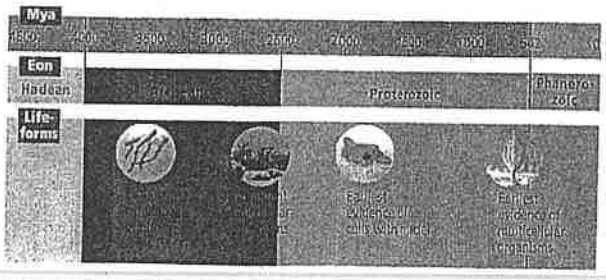
The Age of Earth

The Precambrian, which includes the Hadean, Archean, and Proterozoic Eons, is an informal time unit that spans nearly 90 percent of Earth's history. When Earth first formed it was hot, volcanically active, and no continents existed on its surface. Rocks of Earth's earliest eon—the Hadean—are extremely rare, so scientists know very little about Earth's first 600 million years. The earliest signs of life are from the Archean. As illustrated in **Figure 1**, the earliest life-forms were simple, unicellular organisms.

Crustal rock evidence Absolute-age dating has revealed that the oldest known rocks are 4.28 billion years in age. Evidence that Earth is older than 4.28 billion years exists in small grains of the mineral zircon ($ZrSiO_4$) found in certain metamorphosed Precambrian rocks in Australia. Because **zircon** is a stable and common mineral that can survive erosion and metamorphism, scientists often use it to age-date ancient rocks. Geologists theorize that the zircon in the Australian rocks is residue from crustal rocks that no longer exist. Based on radiometric dating, which shows that the zircon is at least 4.4 billion years old, Earth must also be at least this old.

#4 Sec. 1 Review

Figure 1 The Precambrian lasted for nearly 4 billion years. Multicellular organisms did not appear until the end of the Proterozoic.



Solar system evidence Evidence from meteorites (MEE tee uh rites) and other bodies in the solar system suggests that Earth is more than 4.4 billion years old. **Meteorites** are small fragments of orbiting bodies that have fallen on Earth's surface. They have fallen to Earth throughout Earth's history, but most have been dated at between 4.5 and 4.7 billion years old. Many scientists agree that all parts of the solar system formed at the same time, so they assume that Earth and meteorites are approximately the same age.

Sec. 1 Review #2

In addition, the oldest rock samples from the Moon, collected during the *Apollo* missions in the 1970s, have been dated at 4.4 to 4.5 billion years old. Scientists think that the Moon formed very early in Earth's history when a massive solar system body the size of Mars collided with Earth. Considering all the evidence, scientists agree that Earth is about 4.6 billion years old.

Assessment #18 pg. 641

READING CHECK **Explain** why scientists think that Earth is older than the oldest rocks in the crust.

Assessment #14 pg 641

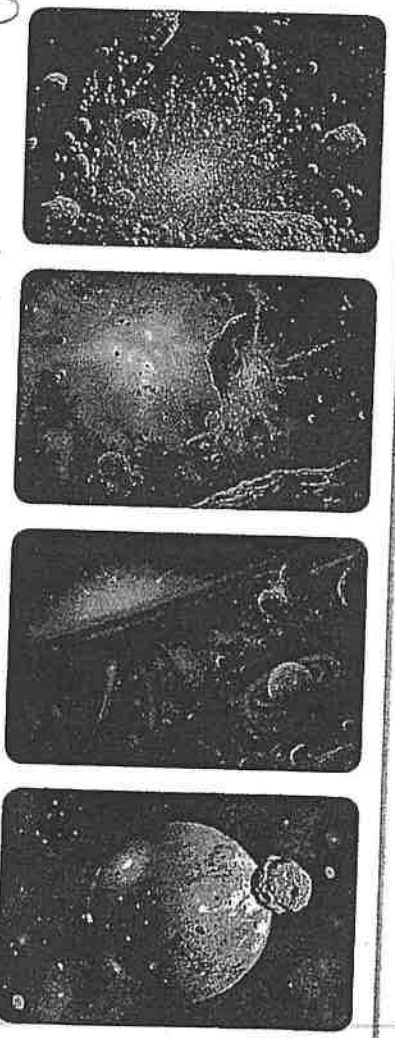
Early Earth's Heat Sources

Earth was extremely hot after it formed. There were three likely sources of this heat: Earth's gravitational contraction, radioactivity, and bombardment by asteroids, meteorites, and other solar system bodies.

Gravitational contraction Scientists think that Earth formed by the gradual accumulation of small, rocky bodies in orbit around the Sun, as illustrated in **Figure 2.** As Earth accumulated these small bodies, it grew in size and mass. With increased mass came increased gravity. Gravity caused Earth's center to squeeze together with so much force that the pressure raised Earth's internal temperature.

Radioactivity A second source of Earth's heat was the decay of radioactive isotopes. Scientists know that certain radioactive isotopes were more abundant in Earth's past than they are today. While some of these isotopes, such as uranium-238, are long-lasting and continue to decay today, others were short-lived and have nearly disappeared. Radioactive decay releases energy in the form of heat. Because there were more radioactive isotopes in early Earth, more heat was generated, making early Earth hotter than it is today.

Figure 2 The accumulation of small orbiting bodies gradually formed Earth. As Earth grew in mass, gravity caused Earth to contract, generating heat.



page 620

page 621

Asteroid and meteorite bombardment A third source of heat in early Earth came from the impacts of meteors, asteroids (AS tuh roydz), and other objects in the solar system. **Asteroids** are carbon or mineral-rich objects between 1 m and 950 km in diameter. Today, most asteroids orbit the Sun between the orbits of Mars and Jupiter. Large asteroids seldom collide with Earth. Planetary geologists estimate that only about 60 objects with diameters of 5 km or more have struck Earth during the last 600 million years. Most objects that hit Earth today are meteorites—fragments of asteroids.

However, evidence from the surfaces of the Moon and other planets suggests that for the first 500 to 700 million years of Earth's history, many more asteroids were distributed throughout the solar system than there are today and that collisions were much more frequent. The impacts of these bodies on Earth's surface generated a tremendous amount of thermal energy. For example, scientists think that the massive collision that likely formed the Moon generated so much heat that parts of Earth melted. The debris (duh BREE) from these impacts also caused a blanketing effect around Earth, which prevented the newly generated heat from escaping to space.

Cooling The combined effects of gravitational contraction, radioactivity, and bombardment by other objects in the solar system made Earth's beginning very hot. Eventually, Earth's surface cooled enough for an atmosphere and oceans to form. Scientists do not know exactly how long it took for this to happen, but evidence suggests that Earth cooled enough for liquid water to form within its first 200 million years. The cooling process continues even today. As much as half of Earth's internal heat remains from Earth's formation.

CAREERS IN EARTH SCIENCE

Planetary Geologist Planetary geologists, or astrogeologists, study the planets and their places in the solar system and universe. Some planetary geologists study conditions under which extraterrestrial life might exist.

WebQuest

Assessment #19 pg. 641

Monday

SECTION 1 REVIEW

Do Questions 2 and 4

Section Self-Check

Section Summary

- Scientists use Earth rocks, zircon crystals, moon rocks, and meteorites to determine Earth's age.
- Likely heat sources of early Earth were gravitational contraction, radioactivity, and asteroid and meteorite bombardment.
- Cooling of Earth led to the formation of liquid water.

Understand Main Ideas

1. MAINIDEA **Summarize** the data that scientists use to determine Earth's age.
2. **Explain** why scientists think that moon rocks and meteorites are about the same age as Earth.
3. **Explain** how gravitational contraction, radioactivity, and asteroid and meteorite bombardment heated early Earth.
4. **Describe** the importance of zircon as an age-dating tool.

Think Critically

5. **Evaluate** Which of Earth's early sources of heat are not major contributors to Earth's present-day internal heat?

MATH IN Earth Science

6. If an average of 5000 asteroids bombarded Earth every million years during the Hadean, calculate the total number of asteroid impacts that occurred during this eon. Refer to Figure 1 for information on geologic time scales.

page 622

Tuesday - Day 22

SECTION 2

Essential Questions

- How is the process by which Earth differentiated summarized?
- How did Earth's crust and continents form?
- How did the continents grow during the Precambrian?

Review Vocabulary

magma: molten, liquid rock material found underground

New Vocabulary

differentiation
microcontinent
craton
Precambrian shield
Canadian Shield
Laurentia

Formation of the Crust and Continents

MAINIDEA The molten rock of Earth's early surface formed into crust and then continents.

EARTH SCIENCE 4 YOU

Have you ever cooked pudding? If so, you might have noticed that when the pudding cooled, a crust formed on the top. Scientists think that Earth's crust formed in a similar way.

Formation of the Crust

Because of the intense heat in early Earth, many scientists think that much of the planet consisted of hot, molten magma. As Earth cooled, the minerals and elements in this molten magma became concentrated in specific density zones.

Differentiation Scientists know that less-dense materials float on top of more-dense materials. As you observed in the Launch Lab, oil floats on water because oil is less dense than water. This same general principle operated on early molten Earth. The element with the highest density—iron—sank toward the center. In contrast, the light elements, such as silicon and oxygen, remained closer to the surface. The process by which a planet becomes internally zoned when heavy materials sink toward its center and lighter materials accumulate near its surface is called **differentiation** (dih fuh ren shee AY shun). The differentiated zones of Earth are illustrated in **Figure 3.**

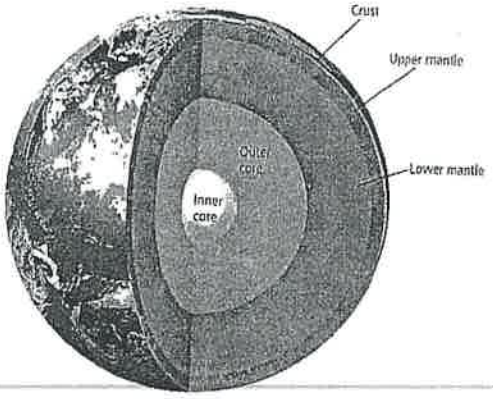
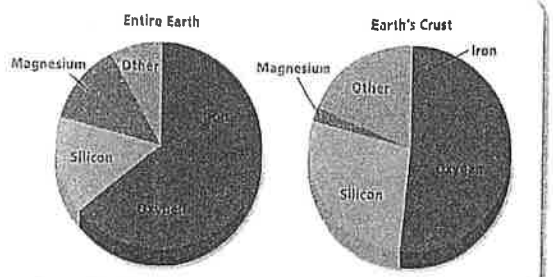


Figure 3 Earth differentiated into layers shortly after it formed.
Analyze *What is the densest part of Earth?*

page 623

■ **Figure 4** Larger amounts of dense elements are found in Earth as a whole than are found in Earth's crust.
Estimate *the percentage of iron in Earth's crust and in the entire Earth.*



Relative densities The process of differentiation explains the relative densities of parts of Earth today. **Figure 4** compares the proportions of elements in Earth's crust and in Earth as a whole. Notice that iron, a dense element, is much less abundant in the crust than it is in the entire Earth, while the crust has a higher proportion of less-dense elements, such as silicon and oxygen. This also explains why granite occurs on Earth's surface. Granite is composed mainly of feldspar, mica, and quartz, which, as you have learned, are minerals with low densities.

☑ READING CHECK **Explain** why there is more iron in Earth's core than there is in the crust.

VOCABULARY
SCIENCE USAGE V. COMMON USAGE
Differentiate
Science usage: to layer into distinct zones
Common usage: to distinguish; to mark as different

Sec. 2 #2 Review

Earliest crust Some type of early crust formed as soon as Earth's upper layer began to cool. This crust was probably similar to the basaltic crust that underlies Earth's oceans today. Recall that present-day oceanic crust is recycled at subduction zones. Pieces of Earth's early crust were also recycled, though scientists do not know how the recycling occurred. Some suggest that it occurred by a process that does not occur on Earth today. Most agree that the recycling was vigorous—so vigorous that none of Earth's earliest crust exists today.

Continental crust As the early crustal pieces were returned to the mantle, they carried water. The introduction of water into the mantle was essential for the formation of the first continental crust. The water reacted with the mantle material to produce new material that was less dense than the original crustal pieces. As this material crystallized and reemerged on Earth's surface, small fragments of granite-containing crust were formed. Granite makes up much of the crust that forms Earth's continents today. As volcanic activity continued during the Archean, small fragments of granite-rich crust continued to form. These crustal fragments are called **microcontinents.** They are called this because they were not large enough to be considered continents.

Page 624

■ **Figure 5** Archean cratons make up about 10 percent of Earth's continents. These granite-rich cores extend into the mantle as deep as 200 km.

Cratons Most of the microcontinents that formed during the Archean and early Proterozoic still exist as the cores of today's continents. A **craton** (KRAY tahn) is the oldest and most stable part of a continent. It is made up of the crust and a part of the upper mantle and can extend to a depth of 200 km. Cratons are composed of granitic rocks, such as granite and gneiss, with alternating bands of metamorphosed basaltic rocks, which represent ancient continental collisions. As shown in **Figure 5,** the Archean cratons represent about 10 percent of Earth's total landmass.

Precambrian shields Most of the cratons are buried beneath sedimentary rocks. However, in some places deep erosion has exposed the rocks of the craton. This exposed area is called a **Precambrian shield.**

In North America, the Precambrian shield is called the **Canadian Shield** because much of it is exposed in Canada. The Canadian Shield also occupies a large part of Greenland, as well as the northern parts of Minnesota, Wisconsin, and Michigan. Valuable minerals such as nickel, silver, and gold are found in the rocks of the Canadian Shield. The oldest known crustal rocks on Earth that date back to 4.28 billion years are from the Canadian Shield. In contrast, North America's platform rocks are generally younger than about 600 million years.

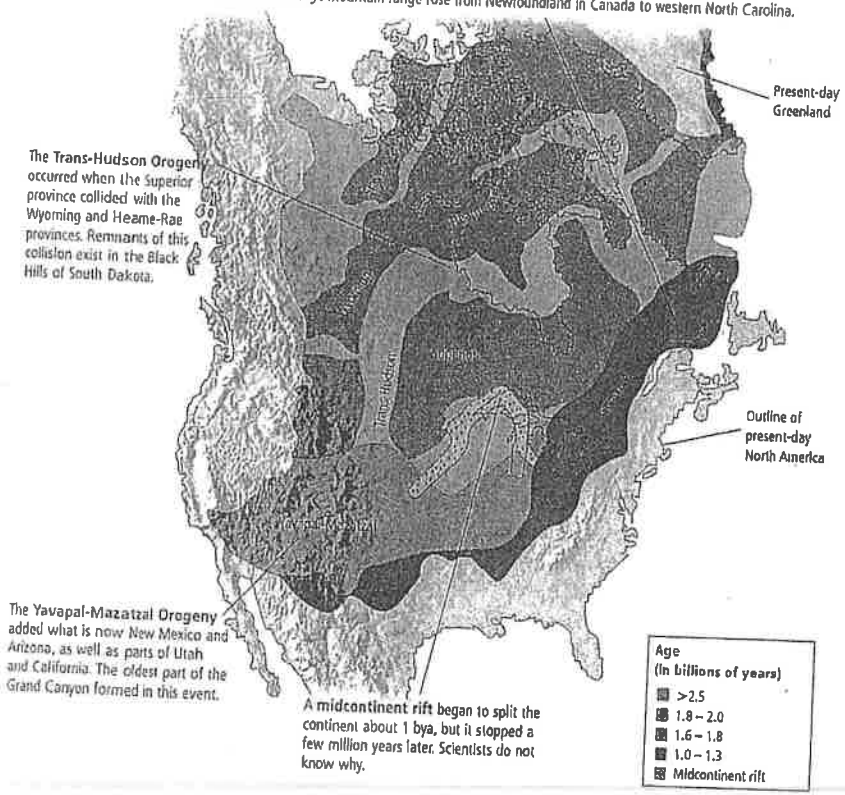
Growth of the Continents

Recall that all of Earth's continents were once consolidated into a single landmass called Pangaea. Pangaea formed relatively recently in Earth's history—only about 250 mya. The plate tectonic forces that formed Pangaea have been at work at least since the end of the Archean.

Page 625

VISUALIZING Continent Formation

Figure 6 North America was formed by a succession of mountain-building episodes over billions of years. This map shows mountain-building events that occurred during the Precambrian. By the end of the Precambrian, about 75 percent of North America had formed.



View an animation of orogenies. Concepts in Motion

Mountain building During the Proterozoic, the microcontinents that formed during the Archean collided with each other, becoming larger but fewer in number. As they collided, they formed massive mountains. Recall that mountain-building episodes are called orogenies. Orogenies form long belts of deformed rocks called orogens, or orogenic belts. The mountain-building events that formed North America are illustrated in **Figure 6.**

Laurentia One of Earth's largest Proterozoic landmasses was **Laurentia** (law REN shuh). Laurentia was the ancient continent of North America. As shown in **Figure 6,** the growth of Laurentia involved many different mountain-building events. For example, near the end of the early Proterozoic, between 1.8 and 1.6 bya, thousands of square kilometers were added to Laurentia when Laurentia collided with a volcanic island arc. This collision is called the Yavapai-Mazatzal Orogeny.

The first supercontinent The collision of Laurentia with Amazonia, the ancestral continent of South America, occurred during the mid–Proterozoic, about 1.2 bya. This collision coincided with the formation of Earth's first supercontinent, called Rodinia (ruh DIN ee ah), shown in **Figure 7.** Rodinia was positioned on the equator with Laurentia near its center. By the time Rodinia formed, nearly 75 percent of Earth's continental crust was in place. The remaining 25 percent was added during the three eras of the Phanerozoic eon. The breakup of this supercontinent began about 750 mya.

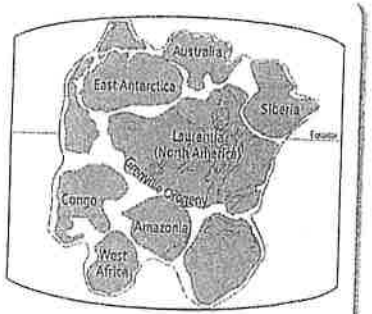


Figure 7 Earth's first supercontinent—Rodinia—formed when Laurentia collided with Amazonia during the Grenville Orogeny.

SECTION 2 REVIEW

Section Summary

- Earth differentiated into specific density zones early in its formation.
- Plate tectonics caused microcontinents to collide and fuse throughout the Proterozoic.
- The ancient continent of Laurentia formed as a result of many mountain-building episodes.
- The formation and breakup of Earth's first supercontinent occurred during the Proterozoic.

Understand Main Ideas

1. MAINIDEA **Describe** how Earth's continents formed.
2. **Explain** why pieces of Earth's earliest crust do not exist today.
3. **Deduce** how a craton is like a continent's root.
4. **Discuss** how the concept of uniformitarianism helps explain why Earth formed different density zones.

Think Critically

5. **Evaluate** whether it is reasonable to call the Proterozoic the age of continent building.
6. **Infer** why little evidence of Proterozoic orogenies exists today.

WRITING IN Earth Science

7. Suppose you are the North American craton. Write a short story about how Laurentia formed around you.

Section Self-Check

Sec 2 #1 Review #1

Tuesday Do Questions 1 and 2

Page 626

Page 627

Wednesday – Day 23

SECTION 3

Formation of the Atmosphere and Oceans

MAIN IDEA The formation of Earth's oceans and atmosphere provided a hospitable environment for life to begin.

Essential Questions

- How did Earth's atmosphere and oceans form?
- What was the cause for the increase in oxygen gas in the atmosphere?
- How do scientists know that atmospheric oxygen existed during the Proterozoic?
- What was the importance of oxygen and water on early Earth?

Review Vocabulary

ultraviolet radiation: high-energy rays from the Sun that can damage living organisms

New Vocabulary

cyanobacteria
stromatolite
banded-iron formation
red bed

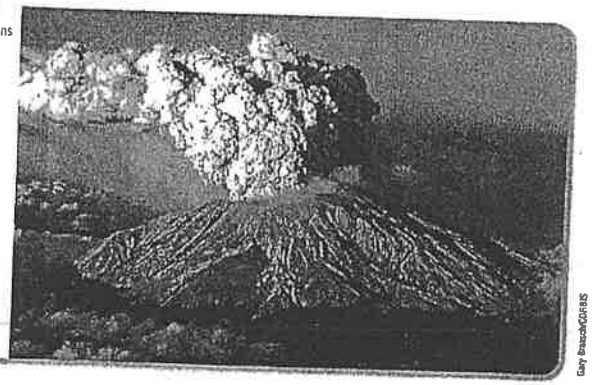
EARTH SCIENCE 4 YOU

Have you thanked a plant lately? Plants and other organisms that produce oxygen provide nearly all the oxygen that you breathe. Had oxygen-producing organisms not existed on early Earth, it is likely that you would not be here today!

Formation of the Atmosphere

Scientists think that an atmosphere began to form on Earth during Earth's formation process. Asteroids, meteorites, and other objects that collided with Earth during this time probably contained water. The water would have vaporized on impact, forming a haze around the planet. Hydrogen and helium probably were also present, with lesser amounts of ammonia and methane. However, hydrogen and helium have small atomic masses, and many scientists think that neither gas stayed near Earth for long. Earth's gravity was, and still is, too weak to keep them from escaping to space. Some scientists also think that much of the ammonia and methane surrounding Earth might have been broken apart by the Sun's intense ultraviolet radiation, releasing more hydrogen into space.

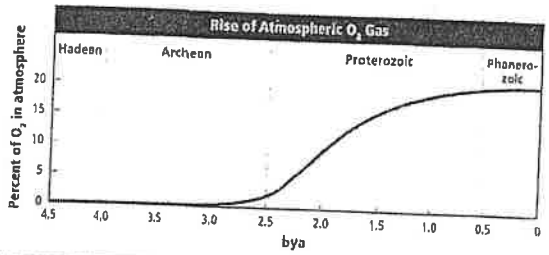
Outgassing Once Earth was formed, its atmosphere changed with the addition of volcanic gases. Volcanic eruptions release large quantities of gases, and there was considerable volcanic activity during the Precambrian. A modern example of the volume of gases released during eruptions is shown in **Figure 8.**



Gary Braasch/CORBIS

▪ **Figure 8** The eruption of Mount St. Helens in 1980 released a large amount of carbon dioxide, water vapor, and other gases.

page 628



▪ **Figure 9** There were only negligible amounts of free oxygen in Earth's atmosphere until the early Proterozoic. **Analyze** *How old was Earth when oxygen began to accumulate in its atmosphere?*

Recall that present-day volcanoes release large amounts of water vapor, carbon dioxide, and trace amounts of nitrogen and other gases in a process called outgassing. While scientists do not know the exact concentration of gases in Earth's early atmosphere, it probably contained the same gases that vent from volcanoes today.

Oxygen in the Atmosphere

One gas that volcanoes do not generally produce is oxygen. There was little oxygen in the Hadean and Archean atmospheres that was not bonded with carbon or other elements. As illustrated in **Figure 9,** atmospheric oxygen did not begin to accumulate until the early Proterozoic. Where did the oxygen gas come from?

First oxygen producers The oldest known fossils that help answer this question are preserved in rocks in Australia and South Africa that are about 3.5 billion years old. These fossils appear to be traces of tiny, threadlike organisms called **cyanobacteria.** Like their present-day counterparts, ancient cyanobacteria used photosynthesis to produce the nutrients they needed to survive. In the process of photosynthesis, organisms use light energy and convert carbon dioxide and water into sugar. Oxygen gas is given off as a waste product. Today, some bacteria and protists, and most plants produce oxygen using this same process.

READING CHECK **Explain** how plants produce oxygen gas.

Stromatolites Most scientists think that microscopic cyanobacteria could have slowly produced enough oxygen to change the composition of the atmosphere that existed on Earth during the Archean. By the early Proterozoic, large, coral reef-like mounds of cyanobacteria called **stromatolites** (stroh MA tuh lites) dominated the shallow seas that at that time covered most of Earth's continents. Stromatolites are made by billions of cyanobacteria colonies that trap and bind sediments together. The photo on the opening page of this chapter shows present-day stromatolites. These structures are similar in size and shape to Precambrian fossil stromatolites found in Glacier National Park, shown in **Figure 10.**

Mark Newman/Visuals Unlimited

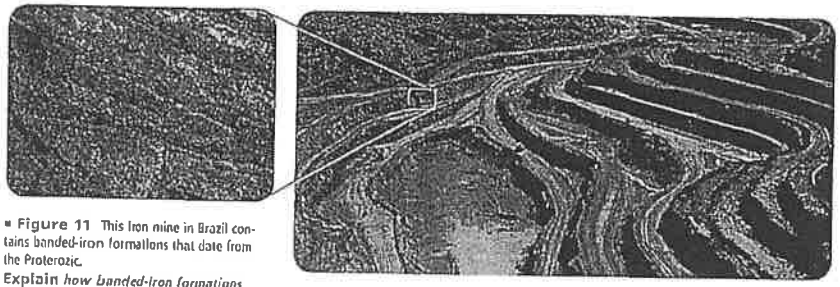
FOLDABLES

Incorporate information from this section into your Foldable.

▪ **Figure 10** These well-preserved fossil stromatolites in Glacier National Park are evidence that cyanobacteria existed during the Precambrian.

page 629

Assessment #13 pg. 641 #2 Sec. 3 Review



▪ Figure 11 This iron mine in Brazil contains banded-iron formations that date from the Proterozoic.
Explain *how banded-iron formations are evidence of atmospheric oxygen gas.*

Evidence in rocks Scientists can determine whether there was oxygen in Earth's Archean atmosphere by looking for oxidized iron in Archean rocks. Scientists know that iron reacts with oxygen in the atmosphere to form iron oxides, more commonly called rust. Iron oxides are identified by their red color and provide evidence of oxygen in the atmosphere. The absence of iron oxides in rocks of the late Archean indicates that there was no oxygen gas in the atmosphere at that time. Had atmospheric oxygen gas been present, it would have reacted with the iron ions in the water or with the iron contained in sediments.

Banded iron By the beginning of the Proterozoic, however, cyanobacteria had increased oxygen gas levels enough so that iron oxides began to form in localized areas. These locally high concentrations of iron oxides are called **banded-iron formations.** Banded-iron formations consist of alternating bands of iron oxide and chert, an iron-poor sedimentary rock. The iron oxides appear to have been deposited cyclically, perhaps in response to seasonal variations. Today, these formations are mined for iron ore. An iron mine and a banded-iron rock are shown in **Figure 11.**

Problem-Solving LAB

Calculate Profits

How do you calculate mining profits? Precambrian rocks contain many important mineral deposits, such as uranium oxide, which is used in nuclear reactors. In uranium oxide deposits in southern Ontario in Canada, the ore-containing rocks cover an area 750 m long and 15,000 m wide with an average thickness of 3 m. Analysis of the deposit indicates that there are, on average, 0.9 kg of uranium oxide per metric ton of rock. Additionally, 0.3 m^3 of the uranium-bearing rock has a mass of 1 metric ton.

Analysis

1. **Solve** How many kilograms of uranium-oxide ore does this deposit contain?
2. **Compute** It will cost \$45/m^3 and 10 years to mine and extract the ore. How much will this cost?

Think Critically

3. **Assess** Assume that the current market price of uranium oxide is \$26.00/kg. Based on your answer to Question 2, can the ore be mined for a profit?

page 630

Red beds Many sedimentary rocks that date from the mid-Proterozoic, beginning about 1.8 bya, are rusty red in color. These rocks are called **red beds** because they contain so much iron oxide. The presence of red beds in mid-Proterozoic and younger rocks is strong evidence that the atmosphere by the mid-Proterozoic contained oxygen gas.

Importance of oxygen Oxygen is important not only because most animals require it for respiration, but also because it provides protection from harmful ultraviolet radiation (UV) from the Sun. Today, only a small fraction of the Sun's UV radiation reaches Earth's surface. This is because Earth is protected by ozone in Earth's upper atmosphere.

Recall that an ozone molecule consists of three oxygen atoms bonded together. As oxygen accumulated in Earth's atmosphere, an ozone layer began to develop. Ozone filtered out much of the UV radiation, providing an environment where new life-forms could develop.

READING CHECK **Describe** the importance of oxygen for the evolution of life.

Section 3 Review #4

Formation of the Oceans

As you have learned, some scientists think that the oceans reached their current size very early in Earth's history. The water that filled the oceans probably originated from the two major sources that provided water in Earth's atmosphere: volcanic outgassing, and asteroids, meteorites, and other objects that bombarded Earth's surface. Earth's early Precambrian atmosphere was rich with water vapor from these sources. As Earth cooled, the water vapor condensed to form liquid water. Recall that condensation occurs when matter changes state from a gas to a liquid.

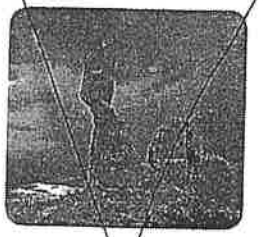
Rain As liquid water formed, a tremendous amount of rain fell. The rain filled the low-lying basins and eventually formed the oceans. Rainwater dissolved the soluble minerals exposed at Earth's surface and—just as they do today—rivers, runoff, and groundwater transported these minerals to the oceans. The dissolved minerals made the oceans of the Precambrian salty, just as dissolved minerals make today's oceans salty.

MiniLAB

iLab Station

Model Red Bed Formation

Why are red beds red? Red beds contain so much iron oxide that they appear rusty red in color. Red beds that date from the mid-Proterozoic provide evidence that oxygen gas existed in the Proterozoic atmosphere.



Procedure

1. Read and complete the lab safety form.
2. Place 40 mL of white sand in a 150-mL beaker.
3. Add water so that the total volume is 120 mL.
4. Add 15 mL of bleach.
   WARNING: *Use bleach in a well-ventilated area.*
5. Place a piece of steel wool about the size of your thumbnail in the beaker.
6. Cover the beaker with a petri dish, and allow it to sit undisturbed for one day.
7. Remove the steel wool, and stir the contents of the beaker. Allow the mixture to settle for 5 min after stirring.
8. Slowly pour off the water so that the iron-oxide sediment is left behind.
9. Stir the mixture again; then spoon some of the sand onto a watch glass, and allow it to dry.

Analysis

1. **Describe** how the color of the sediment changed.
2. **Explain** where the iron in the experiment came from.
3. **Conclude** where, in nature, the red in rocks comes from.
4. **Assess** the function of the bleach in the experiment.

page 631

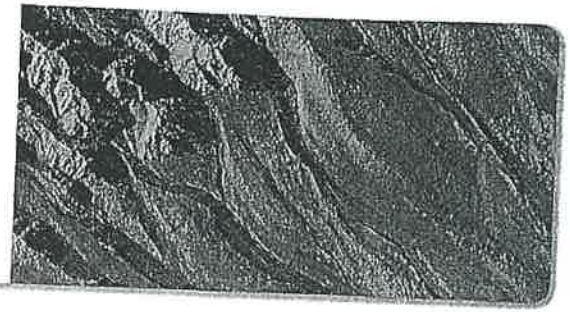


Figure 12 This photograph taken by the *Mars Reconnaissance Orbiter* reveals evidence that suggests liquid water once flowed on the Martian surface.

NASA/JPL/University of Arizona

Water and life The Precambrian began with an environment inhospitable to life. When it ended, much of Earth was covered with oceans that were teeming with tiny cyanobacteria and other life-forms. Life as it exists on Earth today cannot survive without liquid water.

Scientists think that Earth is not the only object in the solar system that contains or has contained water. Some scientists estimate that the asteroid Ceres contains more freshwater than Earth. Scientists also think that some surface features on Mars, such as the gullies shown in **Figure 12**, were carved by liquid water, and that water might still flow in brief spurts on Mars. Some moons of Saturn and Jupiter might also contain water in their interiors.

The search for life elsewhere in the solar system and universe today is typically centered on the search for water. Life on Earth has been found in almost every environment that contains water, from antarctic ice to hot, deep-water ocean vents. Scientists think that simple life-forms might exist in similar environments on other objects in the solar system.

Wednesday

SECTION 3 REVIEW

Do Questions 2 and 4

Section Self-Check

Section Summary

- Earth's atmosphere and oceans began forming early in Earth's history.
- Oxygen gas began to accumulate in the Proterozoic by photosynthesizing cyanobacteria.
- Evidence for atmospheric oxygen can be found in rocks.
- The water that filled Earth's oceans most likely came from two major sources.

Understand Main Ideas

1. MAINIDEA **Explain** why an atmosphere rich in oxygen was important for the evolution of life.
2. **Explain** how scientists conclude that ancient cyanobacteria produced oxygen.
3. **Describe** the relationship between banded-iron formations and oxygen gas.
4. **Describe** where the water in Earth's oceans originated.

Think Critically

5. **Conclude** What would Earth be like if oxygen gas had not formed in the atmosphere?

MATH IN ▶ Earth Science

6. If asteroids brought 1 cm of water to Earth every 50,000 years, and the average depth of Earth's oceans is 3700 m, how many years would it take to fill the ocean basins from this source?

page 632

Thursday — Day 24

SECTION 4

Essential Questions

- How is the experimental evidence showing how life might have begun on Earth summarized?
- What is the difference between prokaryotes and eukaryotes?
- How are Earth's early multicellular organisms described?

Review Vocabulary

hydrothermal vent: a hole in the seafloor through which water erupts

New Vocabulary

amino acid
prokaryote
eukaryote
Ediacaran biota

(3)

Define these 4 vocab words.

sec. 4 Review #2

Early Life on Earth

MAINIDEA Life began on Earth fewer than a billion years after Earth formed.

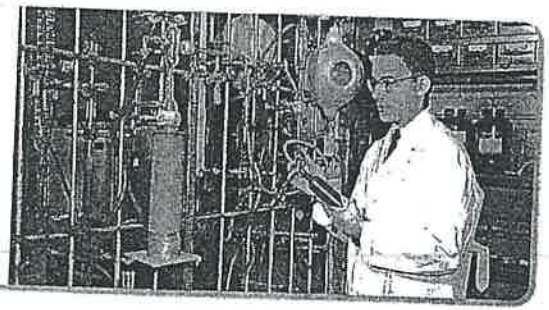
EARTH SCIENCE 4 YOU If you have ever smelled ammonia, which is often used in household cleaners, you know that its pungent scent can make your nose sting. Some scientists think, however, that the presence of ammonia was necessary for life to form on Earth.

Origin of Life

You have learned that fossil evidence suggests that cyanobacteria existed on Earth as early as 3.5 bya. Though cyanobacteria are simple organisms, photosynthesis—the process by which they produce oxygen—is complex, and it is likely that cyanobacteria evolved from simpler life-forms. Most scientists think that intense asteroid and meteorite bombardment prevented life from developing on Earth until at least 3.9 bya. Where and how the first life-form developed, however, remains an active area of research.

Primordial soup During the first half of the twentieth century, scientists thought that Earth's earliest atmosphere contained hydrogen, methane, and ammonia. Some biologists suggested that such an atmosphere, with energy supplied by lightning, would give rise to an organic "primordial soup" in Earth's shallow oceans. Primordial (pry MOR dee al) means *earliest* or *original*.

In 1953, Stanley Miller and Harold Urey devised an apparatus, shown in **Figure 13**, to test this hypothesis. They connected an upper chamber containing hydrogen, methane, and ammonia to a lower chamber designed to catch any particles that condensed in the upper chamber. They added sparks from tungsten electrodes as a substitute for lightning. Within a week, organic molecules had formed in the lower chamber—the primordial soup!



Erdmann/CORBIS

Figure 13 In 1953, Stanley Miller, shown here, and Harold Urey performed experiments to test whether organic molecules could form on early Earth.

View an animation of the Miller-Urey experiment.

Concepts in Motion

page 633

Vocab

Uncertainties The organic molecules that formed in Miller and Urey's experiment included **amino acids**, the building blocks of proteins. Miller and Urey were the first to show experimentally that amino acids and other molecules necessary for the origin of life could have formed in conditions thought present on early Earth. However, Earth's early atmosphere contained gases like those that vent from volcanoes—carbon dioxide, water vapor, and traces of ammonia, methane, and hydrogen. When combinations of these gases are used in simulations, amino acids do not form in high quantities, leading scientists to question whether those processes were sufficient for the origin of life. Some scientists continue to explore the possibility that amino acids, and therefore life, arose in Earth's oceans under localized conditions similar to those in the Miller-Urey experiment.

> VOCABULARY
> ACADEMIC VOCABULARY
> Simulate
> to create a representation or model of something
> *The video game simulated the airplane's flight with impressive realism.*

Other scenarios Because of uncertainties with the conditions in the Miller-Urey experiment, scientists propose different scenarios and conduct new research into sources and conditions for the origin of life. Some of these are shown in **Table 1.** Some scientists think that amino acids organized elsewhere in the universe and were transported to Earth in asteroids or comets. Their experiments show that chemical synthesis of organic molecules is possible in interstellar clouds, and amino acids have been found in meteorites. Other scientists hypothesize that amino acids originated deep in Earth or its oceans. Experiments show that conditions there are favorable for chemical synthesis, and organisms have been found at depths exceeding 3 km.

Explore the origins of life on Earth with an interactive table. Concepts In Motion

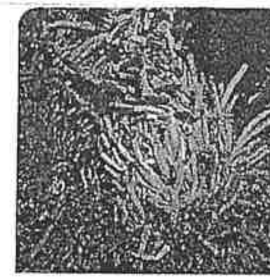
Table 1 How Life Might Have Begun on Earth: Three Hypotheses

	Earth's Surface	Deep Earth	Space
			
Hypothesis	Life originated on Earth's surface in warm, shallow oceans.	Life originated in hydrothermal vents deep in the oceans.	Organic molecules were brought to Earth in asteroids or comets.
Requirement	Hydrogen, methane, and ammonia must be present in the atmosphere.	Life must survive at high temperatures and pressures.	Organic molecules must be present in extraterrestrial bodies.
Evidence	Simulations produce amino acids.	Simulations of deep-sea vents produce amino acids.	Some meteorites contain amino acids that survived impact.
Drawback	The composition of the early atmosphere likely did not have large amounts of the required gasses.	It might have been too hot for organic molecules to survive.	It is difficult to test at this time due to technical limitations.

Pg. 634

One current area of research explores the possibility that life emerged deep in the ocean at hydrothermal vents. The energy and nutrients necessary for the origin of life are present in this environment. As shown in **Figure 14**, a variety of unique organisms called extremophiles (from the Latin *extremus* meaning "extreme" and Greek *philia* meaning "love"), live near hydrothermal vents.

No single theory needs to be exclusive; it is possible that all of these contributed to the origin of life. Regardless of how life arose, it is known that conditions during that time were not hospitable, and life probably had many starts and restarts on early Earth. Asteroid impacts were probably still common between 3.9 and 3.5 bya when life arose. Large impacts during this time could have vaporized many early life forms.



■ **Figure 14** These tubeworms tolerate extreme pressures and temperatures near hydrothermal vents 2 km below the ocean's surface.
Deduce *why pressure is high in a hydrothermal-vent environment.*

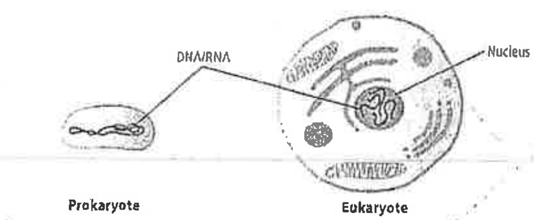
An RNA world While experiments have shown the likelihood that amino acids existed on early Earth, scientists are still learning how the amino acids were organized into complex proteins and other molecules of life. One essential characteristic of life is the ability to reproduce. All cells require RNA and DNA to reproduce. In modern organisms, RNA carries and translates the instructions necessary for cells to function. Both RNA and DNA use proteins called enzymes to replicate.

Recent experiments have shown that RNA molecules called ribozymes can act as enzymes. They can replicate without the aid of enzymes. This suggests that RNA molecules might have been the first replicating molecules on Earth. An RNA-based world might have been intermediate between an inorganic world and today's DNA-based organic world.

Proterozoic Life

Fossil evidence indicates that unicellular organisms dominated Earth until the end of the Precambrian. These organisms are **prokaryotes** (proh KE ree ohts)—organisms that do not contain nuclei. Nuclei are separate compartments in cells that contain DNA and RNA. Organisms whose cells contain RNA and DNA in nuclei are called **eukaryotes** (yew KE ree ohts). **Figure 15** illustrates how prokaryotes and eukaryotes differ in the packaging of their DNA and RNA.

Vocab.



■ **Figure 15** Unlike prokaryotes, eukaryotes store DNA in cellular compartments called nuclei.

Pg. 635

▪ **Figure 16** Sunbeams streaming through ice might have provided a refuge for some life-forms 750 mya, when ice covered Earth.

Simple eukaryotes Eukaryotes can be unicellular or multicellular, but because they contain nuclei and other internal structures, they tend to be larger than prokaryotes. This general observation is useful in determining whether a fossil represents a prokaryote or a eukaryote because it is rare for a fossil to be preserved in enough detail to determine whether its cells had nuclei. The oldest-known eukaryote fossil is unicellular. It was found in a banded-iron formation, about 2.1 billion years old, in Michigan.

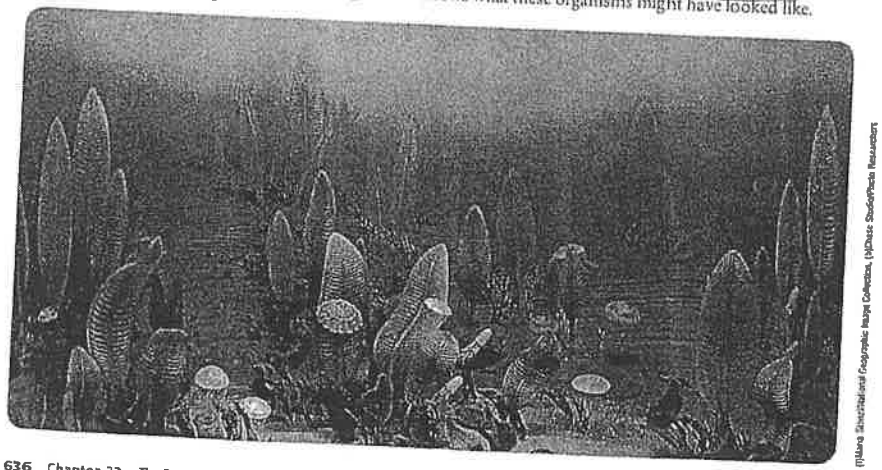
☑ READING CHECK **Explain** how the relative sizes of eukaryotes and prokaryotes are useful to paleontologists.

Snowball Earth Some scientists think that glaciation events 850–550 mya played a critical role in the extinction of many early unicellular eukaryotes. These glaciation events were so widespread that some geologists compare Earth at that time to a giant snowball. Evidence from ancient glacial deposits around the world suggests that glaciers might have advanced as far as the equator and that even the oceans might have been frozen. Though many organisms went extinct during this time, some life-forms survived, perhaps near hydrothermal vents or in pockets of sunlight streaming through openings in ice, as illustrated in **Figure 16.**

Multicellular organisms Although probably not Earth's first multicellular life, shortly after the ice retreated toward the poles, the climate warmed dramatically and many marine multicellular organisms appear in the rock record. Certain fossils of this time period were discovered in 1947 in Australia's Ediacara Hills. Collectively called the **Ediacaran biota** (ee dee A kuh ruhn by OH tuh), these fossils show the impressions of large, soft-bodied eukaryotes. **Figure 17** shows what these organisms might have looked like.

vocab

▪ **Figure 17** This reconstruction of an ocean during the Ediacaran Period shows how Earth's early multicellular organisms might have looked. They ranged from several centimeters to two meters in length.

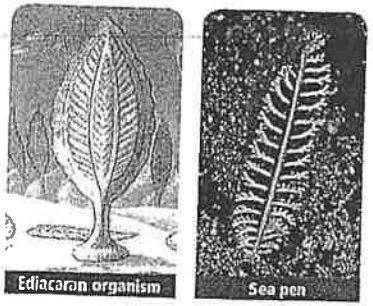


(t)Mary Schuchat and Cryptomic Image Collection, (b)Chase Studio/Photo Researchers

page 636

Ediacaran biota The discovery of the Ediacaran biota at first seemed to solve one of the great mysteries in geology: why there are no fossils of the ancestors of the complex and diverse animals that existed during the Cambrian Period—the first period of the Paleozoic Era. The Ediacaran biota seemed to provide fossil evidence of an ancestral stock of complex organisms. As shown in **Figure 18**, one type of Ediacaran organism appeared similar in overall body shape to sea pens. Others appeared similar to jellyfish, segmented worms, arthropods, and echinoderms—just the type of ancestral stock that geologists had been hoping to find.

However, upon closer examination, some scientists have questioned that conclusion and suggest that Ediacaran organisms are not relatives of present-day animal groups but, instead, represent unique organisms. These scientists point out that none of the Ediacaran organisms shows evidence of a mouth, anus, or gut, and there is little evidence that they could move. As a result, there is an ongoing debate in the scientific community about the precise nature of many of these fossils.



▪ **Figure 18** One type of Ediacaran organism resembles a present-day sea pen. Some scientists think that the two are related.

Mass extinction In recent years, geologists have found Ediacaran fossils in all parts of the world. This suggests that these organisms were widely distributed throughout the shallow seas of the late Proterozoic. They seem to have flourished between 600 mya and 540 mya. Then, in an apparent mass extinction, most of them disappeared, and organisms more likely related to present-day organisms began to inhabit the oceans.

Thursday

SECTION 4 REVIEW

(1) Define the 4 new vocab words on Page 633

Section Self-Check

Section Summary

- Scientists think that life on Earth began between 3.9 and 3.5 bya.
- Stanley Miller and Harold Urey were the first to show experimentally that organic molecules could have formed on early Earth.
- Scientists have developed several hypotheses to explain how and where life formed.
- Eukaryotes appeared after prokaryotes.
- Earth's multicellular organisms evolved at the end of the Precambrian.

Understand Main Ideas

1. MAIN IDEA **List** three hypotheses about the origin of life, and describe the evidence for each.
2. **Explain** why scientists think that life on Earth began after 3.9 bya.
3. **Identify** the ingredients that Miller and Urey thought made up Earth's early atmosphere.
4. **Compare and contrast** eukaryotes and prokaryotes.
5. **Discuss** why some scientists think that Ediacaran organisms do not represent present-day animal groups.

Think Critically

6. **Hypothesize** one reason that the Ediacaran organisms became extinct.

WRITING IN ▶ Earth Science

7. Write a newspaper article about the discovery of a new fossil outcrop that dates to the end of the Precambrian. Describe the fossil organisms found in this outcrop.

page 637

Friday

Day 25 = Review = READ

CHAPTER 22 STUDY GUIDE

Vocabulary Practice

BIG IDEA The oceans and atmosphere formed and life began during the three eons of the Precambrian, which spans nearly 90 percent of Earth's history.

VOCABULARY
- zircon
- meteorite
- asteroid

Zircon

SECTION 1 Early Earth

MAIN IDEA Several lines of evidence indicate that Earth is about 4.56 billion years old.

- Scientists use Earth rocks, zircon crystals, moon rocks, and meteorites to determine Earth's age.
- Likely heat sources of early Earth were gravitational contraction, radioactivity, and asteroid and meteorite bombardment.
- Cooling of Earth led to the formation of liquid water.

VOCABULARY
- differentiation
- microcontinent
- craton
- Precambrian shield
- Canadian Shield
- Laurentia

Laurentia

SECTION 2 Formation of the Crust and Continents

MAIN IDEA The molten rock of Earth's early surface formed into crust and then continents.

- Earth differentiated into specific density zones early in its formation.
- Plate tectonics caused microcontinents to collide and fuse throughout the Proterozoic.
- The ancient continent of Laurentia formed as a result of many mountain-building episodes.
- The formation and breakup of Earth's first supercontinent occurred during the Proterozoic.

VOCABULARY
- cyanobacteria
- stromatolite
- banded-iron formation
- red bed

Cyanobacteria

SECTION 3 Formation of the Atmosphere and Oceans

MAIN IDEA The formation of Earth's oceans and atmosphere provided a hospitable environment for life to begin.

- Earth's atmosphere and oceans began forming early in Earth's history.
- Oxygen gas began to accumulate in the Proterozoic by photosynthesizing cyanobacteria.
- Evidence for atmospheric oxygen can be found in rocks.
- The water that filled Earth's oceans most likely came from two major sources.

VOCABULARY
- amino acid
- prokaryote
- eukaryote
- Ediacaran biota

Eukaryote

SECTION 4 Early Life on Earth

MAIN IDEA Life began on Earth fewer than a billion years after Earth formed.

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Page 640

Friday

* Complete the circled questions for the Assessment OR Watch video "The History of Earth" and do odd OR even guide Questions

CHAPTER 22 ASSESSMENT

Chapter Self-Check

VOCABULARY REVIEW Pg. 640

Identify the vocabulary term from the Study Guide described by each phrase.

1. bodies that orbit the Sun between Mars and Jupiter
2. the name of the ancient continent that makes up most of North America L
3. the first photosynthetic, oxygen-producing organisms on Earth C
4. the process by which a planet becomes zoned with heavy materials near its center and lighter materials near its surface

Use the vocabulary term from the Study Guide to answer the following questions.

5. What are the building-blocks of protein?
6. What is the name of the Precambrian Shield in North America?
7. What are rocks called that consist of alternating bands of iron and chert?
8. What type of organism packages its DNA in nuclei? E

Complete each sentence by providing the missing vocabulary term from the Study Guide.

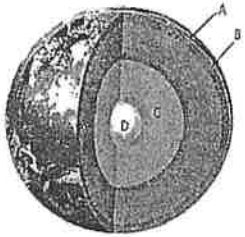
9. The [redacted] were multicellular eukaryotes that evolved during the Proterozoic.
10. Z is a very stable mineral often used to date Precambrian rocks.
11. A _____ is a mound made by microorganisms in shallow seas.
12. An old, stable part of a continent is called a _____.

UNDERSTAND KEY CONCEPTS

13. What process contributed to the formation of Earth's early atmosphere? Pg. 639
   - ~~A. outgassing~~
   - B. differentiation
   - C. crystallization
   - D. photosynthesis

14. Which was NOT a source of heat for early Earth? Pg. 621
   - A. asteroid and meteorite bombardment
   - B. hydrothermal energy
   - C. gravitational contraction
   - D. radioactivity

Use the figure below to answer Questions 15 and 16.



15. Which part of Earth is the most dense?
   - A. A
   - B. B
   - C. C
   - D. D

16. In which part of Earth would you find granite?
   - A. A
   - B. B
   - C. C
   - D. D

17. Why is oxygen gas important to life on Earth?
   - A. It is used by plants to undergo photosynthesis.
   - B. It is required by cyanobacteria and stromatolites to survive.
   - C. It is a source of heat at Earth's surface.
   - D. It provides protection from harmful ultraviolet radiation from the Sun.

18. Upon what age of Earth do most scientists agree? Pg. 621
   - A. 4.6 thousand years old
   - ~~B. 4.6 million years old~~
   - C. 4.6 billion years old
   - D. 456 billion years old

19. A meteorite is a fragment of which object? Pg. 622
   - A. the Sun
   - B. asteroid
   - ~~C. comet~~
   - D. the Moon

Page 641

8 Gold

1. Call the middle school at 859-234-7123
2. Email emma.hanrahan@harrison.kyschools.us
3. Message Ms. Hanrahan on the Remind App. Remind info: text: @7g6c8k to 81010
4. Ms. Hanrahan is on Zoom at 1pm on Monday, Wednesday, and Friday. This program allows students and parents to video conference with me. This can be used on either computers, tablets, or smartphones. All you have to do is click on or type this link into the search bar if you are using a computer. https://us04web.zoom.us/j/5825812645 You will want to run the extension. If you are using a tablet or smartphone, download the free Zoom app, click join a meeting, enter this code 5825812645, and click join.
5. Text or call 859-229-2394

8th Maroon

1. Call the middle school at 859-234-7123
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3. Text or call 606-298-9174

Video Guide – Option for Friday

Directions: Watch the National Geographic episode, The Story of Earth. If you miss something the video is linked on my website for you to go back and answer.

* Complete either the odd OR even Questions.

Minutes 0:00-20:00

1. What pulls the rocks together to make a planet?

2. What were the conditions of our Earth 4.54 billion (4540 million) years ago? (Temperature? what gases are available? Solid surfaces?)

3. What happens when the planet crashes into Earth?

4. How long does a day last when Earth is first formed? Why?

5. What is inside the meteors that were striking Earth 3.9 billion (3900 million) years ago?

6. Why is the ocean's tides so high and strong 3.9 bay (billion years ago)?

7. Where do the small islands come from 3.8 bya?

8. What are the "chemical soup" chemicals responsible for?

9. What is are the underwater bacterial colonies called?

10. What organisms are the first to photosynthesize?

11. What is the single most important element on Earth for life?

Minutes 20:00-40:20

1. 1.5 bya, what was the name of the super continent?

2. What is the driving force that splits the super continent?

3. Why isn't the Sun's heat trapped inside the planet's atmosphere?

4. What is the nickname of Earth during this ice age?

5. What releases the Earth from this very long frozen period?

What oxygen-rich chemical does the chemical reaction between ultraviolet light and ice make?

7. What did primitive bacteria evolve into?

8. What is the Cambrian explosion?

9. What are some examples of living organisms around during the Cambrian explosion?

10. What is so special about Pikaia?

11. When did the first land plants arise?

12. Why is Tiktaliik special?

Minutes 40:20-60:00

1. What organism do all 4-legged vertebrates come from?

2. What type of organisms do Meganeura represent?

3. Millipeds, spiders and bugs are called _____.

4. Why is the egg an evolutionary breakthrough?

5. The coal and fossil fuels that we burn today comes from plants that dies _____ years ago.

6. What happened in the Siberian mountains that changed Earth?

7. What is the name of the first extinction?

8. What gas does the ash from the volcanic eruption go into the atmosphere and create acid rain?

9. What is left in the oceans after the Siberian explosion/eruption?

10. What is the name of the supercontinent?

11. Where did the dinosaurs come from?

12. At what rate do the continents move?

Extra credit: 60:00-90:00

Write 10 facts that you learned the last 30 minutes of film.

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Google Classroom Code: liscslg ** If this code does not work, try 4xlysbp
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Firstname.lastname@stu.harrison.kyschools.us

Welcome to 6th, 7th, and 8th grade

Explore

Fine dining restaurant for a well-rounded mind.

NTI 21-25

Choose 1 of the following activities to complete during the week of April 13th through the 17th.

Each student in the school must complete this assignment!

Appetizer

Health

Explore the ins and outs of infectious disease and discover how to prevent the spread of diseases!

Main Course

Art

Explore the 5 purposes for art while incorporating your experiences with COVID-19!

Dessert

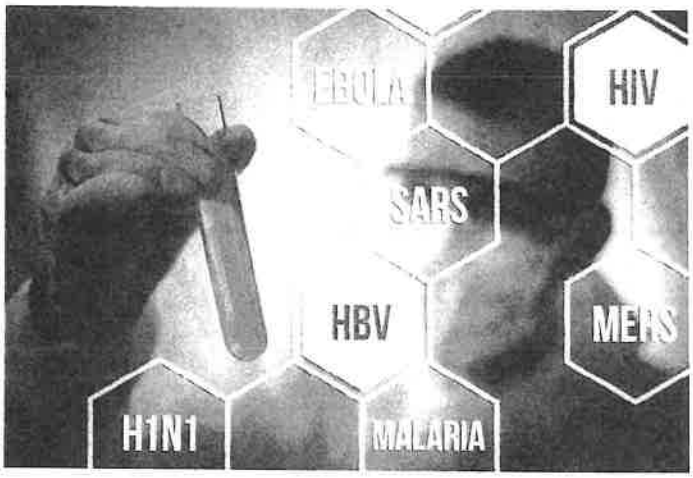
Music

Explore the excitement of product creation while making your own instrument using recycled items!

Contact information for each teacher found on the next page!

NTI Days 21-25
HEALTH

INFECTIOUS DISEASE



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Infectious vs. Noninfectious Disease

Infectious diseases are diseases caused by pathogenic microbes (pathogens) such as bacteria, viruses, protists (protozoa), and fungi. As such, they have the ability to spread from one host to another in a variety of ways. It is important to note, however, that not all microbes are pathogenic. The human body contains thousands of species of bacteria, fungi, and protozoa that are beneficial and important for the proper operation of biological processes such as digestion and immune system function. On the other hand, truly pathogenic microbes have a single goal - survive and multiply at all cost, typically resulting in illness for the host organism.

Noninfectious diseases, by contrast, are diseases that do not involve pathogens. These diseases do not spread from one host to another due to the lack of pathogenic involvement. Noninfectious diseases are typically the result of genetic mutation, environmental conditions (e.g. exposure to the sun's ultraviolet rays), accidents, or lifestyle habits (e.g. smoking, poor dietary choices, lack of exercise).

Types of Pathogens

As stated earlier, pathogens - also sometimes referred to as germs - are microscopic, living organisms that have the ability to cause illness and spread the illness from one host to another. All living organisms fall into one of two categories depending on the fundamental structure of their cells: prokaryotes and eukaryotes. Prokaryotic organisms are made up of cells that lack a cell nucleus or any membrane-encased organelles. Most prokaryotes are unicellular (made up of one cell) but a few are multicellular. Bacteria belong to the prokaryotic group. Eukaryotic organisms are made up of cells that possess a membrane-bound nucleus containing genetic material (DNA). All animals are eukaryotes. Pathogenic eukaryotes include fungi and protozoa. There are four major types of pathogens: bacteria, viruses, protozoa, and fungi.

Bacteria are single-celled organisms that cause disease by producing toxins. They are responsible for diseases such as strep throat, pneumonia, tuberculosis, and cholera to name a few. Endotoxins are components of the bacterial cell wall that are released as a result of the deterioration or death of the bacteria. These toxins can cause symptoms such as fever, changes in blood pressure, septic shock, organ damage, and death. Exotoxins are produced and released into the environment by the bacteria. There are three types of exotoxins - cytotoxins, neurotoxins, and enterotoxins. Cytotoxins damage and destroy certain types of body cells. *Streptococcus pyogenes* (bacteria that causes strep throat) produces a cytotoxin capable of destroying blood cells, damaging capillaries, and producing symptoms associated with flesh-eating disease. Neurotoxins are poisonous substances that affect the nervous system and brain. *Clostridium botulinum* (botulism) releases a neurotoxin that causes muscle paralysis. Enterotoxins affect cells of the intestines and are capable of causing severe vomiting and diarrhea. *Escherichia* (E. coli) is a typical enterotoxin-producing bacteria.

Viruses are the smallest of all pathogens and can cause a multitude of diseases ranging from the common cold, the flu, the recently discovered novel coronavirus (COVID-19), Ebola, and AIDS. Viruses are unique in the sense that they are not living cells but are, instead, segments of DNA or RNA encased within a protein envelope. They infect certain body cells, high-jacking the cell and causing it to produce more viruses at a rapid rate. The influenza virus, for example, infiltrates the respiratory system's tissues resulting in symptoms that make breathing difficult. The rabies virus attacks central nervous system tissues (brain) and the hepatitis viruses have an affinity for the liver. HIV, which leads to the disease known as AIDS, attacks the $CD4^+$ lymphocytes of the immune system.

Fungi are eukaryotic organisms such as yeasts and molds. Fungal infections tend to be rare in humans and are typically the result of a breakdown of a physical barrier (skin, mucus membrane) or a compromised immune system. Skin diseases such as athlete's foot and ringworm are caused by fungi. Some fungi, such as Histoplasma, can cause lung disease while others, such as Stachybotrys (black mold) and Aspergillus, can release neurotoxins that may lead to serious central nervous system disease.

Protozoa are tiny multicellular organisms of the animal Kingdom Protista that cause disease in humans by parasitically feeding off of their host. Protozoa are commonly transmitted to humans through contaminated soil, food, or water. They can also be transmitted by animals as well as insect vectors. Malaria is a common disease caused by the protozoa *plasmodium* which is transmitted by a mosquito bite. The amoeba *Naegleria fowleri* is a protozoa commonly found in freshwater habitats that has been referred to as the brain-eating amoeba due to causing the disease called primary amebic meningoencephalitis.

Infectious Disease Modes of Transmission

Pathogens can be spread in a variety of ways. **Direct contact** involves the spread of pathogens by direct body-to-body contact. This can happen when a person with an infectious disease touches, kisses,coughs, or sneezes on someone who isn't infected. Pathogens can also be spread directly through the exchange of body fluids from sexual contact.

Indirect contact involves contact with a surface or substance that is contaminated with pathogens. Many germs can linger on an inanimate object, such as a tabletop, doorknob, or faucet handle.

Other forms of pathogen transmission include:

- **Animal to person (zoonotic)**. Being bitten or scratched by an infected animal can lead to disease. Handling animal waste can also potentially lead to disease transmission. For example, you could potentially get a toxoplasmosis infection by scooping your cat's litter box if not done properly.
- **Mother to unborn child**. A pregnant woman may potentially spread infectious diseases to her unborn baby. Some germs are capable of passing through the placenta. Others can be spread through breastfeeding. Some examples of diseases that can be transmitted this way are AIDS, Zika, and syphilis.
- **Insect bites**. Some pathogens rely on insect vectors - such as mosquitoes, fleas, or ticks - to move from host to host. Mosquitoes can carry diseases such as malaria, the Zika virus, and West Nile Virus. Fleas played a major role in the Black Death (bubonic plague) pandemic of the mid 14th century that wiped out nearly a third of Europe's population. Deer ticks may carry the bacteria responsible for Lyme disease.
- **Airborne**. Highly contagious diseases such as the common cold, influenza, and tuberculosis can be spread as the pathogen is expelled from an infected person (coughing, sneezing, laughing, breathing). The pathogen can remain suspended in the air and then be inhaled by another person.
- **Foodborne**. Infectious disease can be transmitted through contaminated food. Diseases such as E. coli can be spread by eating undercooked food or through improper cleaning habits before or after handling contaminated foods.
- **Waterborne**. Some infectious diseases can be spread through consumption or contact with contaminated water.

****YouTube Video****

Dr. Anthony Fauci says "everything is on the table" to fight spread of coronavirus; Face the Nation 3/15/20 (11:09)

youtube.com/watch?v=NKwwh2lai2w

Treatment

- **Viral Infections** are typically treated with a **vaccination**. A vaccine is a preparation containing killed or weakened pathogens (such as bacteria or viruses) that is given usually by injection. This injection stimulates the immune system's production of antibodies in order to increase protection against a particular disease.
- **Bacterial Infections** are typically treated with **antibiotics**. An antibiotic is a medicine that is made from substances produced by one microorganism that selectively inhibits the growth of another (penicillin produced by a certain fungi). Some antibiotics are also created synthetically. Antibiotics have no effect on viral infections.

- **Fungal Infections** are typically treated using topical antifungal drugs. Topical antifungal drugs may include gels, creams, lotions, powders, sprays, or shampoos. Antifungal drugs can also be taken orally.
- Treatment for **protozoan infections** tends to vary depending on the type of infection. Oral medications, vaccination (as is the case for malaria), and supportive therapy (to combat the loss of body fluids and possible dehydration consistent with many protozoan infections) are the typical forms of treatment.

Prevention Measures

- **Wash your hands**. This is especially important to do before and after preparing food, before eating, after coming into contact with potentially ill people, etc. A common way that germs can enter the body is when a person touches their eyes, nose, or mouth with unclean hands.
- **Prepare food safely**. To prevent cross-contamination, you should keep counters and other kitchen surfaces clean when preparing food. Foods, especially meat, should be cooked to the proper temperature. Leftovers should also be promptly refrigerated to reduce the risk of bacteria development.
- **Stay home when ill**. This will help prevent the spread of illness to uninfected people.
- **Get vaccinated**. Vaccination can drastically reduce the chances of contracting many diseases such as influenza, measles, chickenpox, etc.
- **Don't share personal items**. You should always use your own toothbrush, comb/brush, and razor. Also, avoid sharing drinking glasses and eating utensils.
- **Practice safe sex or choose abstinence.** It has been estimated that approximately 1 out of 5 Americans may have an STI (some unknowingly). Choosing abstinence virtually eliminates the risk of contracting an STI while practicing safe sex greatly reduces the chances.
- **Travel wisely**. If you plan to travel out of the country, talk to your doctor about any special vaccinations you may need.

****YouTube Video****

Why Dr. Fauci Never Misses a Flu Shot; NIAID 10/16/19 (8:19)

youtube.com/watch?v=nZj9eY5IC98

Answer the following questions using the infectious disease notes.

1. Which is **NOT** a way to reduce the risk of contracting an infectious disease?

   ○ A. choose abstinence
   ○ B. washing your hands often
   ○ C. inhaling pathogens from the air
   ○ D. avoiding contact with infected people

2. Unicellular microorganisms that may cause diseases such as strep throat and E. coli are:

   ○ A. viruses.
   ○ B. bacteria.
   ○ C. fungi.
   ○ D. protozoa.

3. The smallest pathogens which attack only certain body cells causing them to reproduce the pathogen and cause diseases such as the common cold, flu, and AIDS are:

○ A. viruses.
○ B. bacteria.
○ C. fungi.
○ D. protozoa.

4. A vaccine:

○ A. is used to treat fungal infections.
○ B. is used to treat protozoan infections.
○ C. is effective 100% of the time.
○ D. is used to treat viral infections.

5. About 1 out of every ____ Americans may have an STI.

○ A. two (50%)
○ B. five (20%)
○ C. ten (10%)
○ D. twenty (5%)

6. A medicine made from substances produced by another microorganism that slows the growth of bacteria is called a(n):

○ A. antibiotic.
○ B. vaccine.
○ C. antibody.
○ D. ointment.

7. How are infectious diseases different from noninfectious diseases?

8. What are 2 strategies that you can use to protect yourself from infectious diseases?

9. According to Dr. Anthony Fauci, what are 2 proactive steps that can and should be taken to prevent the spread of COVID-19?

10. According to Dr. Anthony Fauci, is it possible to contract the flu virus from the flu vaccination? Why or why not?

Can a person still contract the flu virus after being vaccinated?

INFECTIOUS DISEASE RESEARCH

Directions: Choose **one** (1) of the infectious diseases from the following list. Answer the questions fully and completely with regards to the disease that you chose.

- AIDS
- Avian Influenza
- Chicken pox
- Dengue fever
- E. Coli
- Ebola
- Listeria
- Lyme disease
- Malaria
- Measles
- Mononucleosis
- MRSA
- Plague
- Pneumonia
- Polio
- Rabies
- Salmonella
- SARS
- Seasonal flu
- Smallpox
- Strep throat
- Swine flu
- West Nile virus
- Zika

Recommended websites to use include:

The Centers for Disease Control and Prevention www.cdc.gov

The World Health Organization www.who.int

The Mayo Clinic www.mayoclinic.com

The National Institute of Allergy & Infectious Disease www.niaid.nih.gov

Disease Name _____

1. What type of pathogen causes this disease?

   CIRCLE ONE: bacteria virus fungi protozoa

2. What is the name of the pathogen that causes this disease?

3. What are the symptoms associated with this disease?

4. How is this disease spread?

5. What is the treatment for this disease if a person were to catch it?

6. What are the prevention measures for this disease/how do you keep from getting it?

7. What is the estimated number of cases per year for this disease in the U.S.? Worldwide?

8. Where is this disease most likely to be found?

9. Based on your present environmental conditions & location, your lifestyle habits, and your potential risk factors, how likely are you to contract this disease? **WHY**?

10. List one other important fact about the disease you chose that you learned by doing this research assignment. (This answer must be different from anything that you mentioned in the previous nine questions.)

ART-NTI LESSON (EXPLORE TEAM)

In this lesson you will learn about the five purposes of art: Ceremonial, Artistic Expression, Narrative, Functional & Persuasive.

VOCABULARY

***PURPOSES OF ART*=========**

1. Purposes for creating art-rules or reasons that art is made. Four purposes: Ceremonial, Artistic Expression, Narrative, Functional & Persuasive).
2. Ceremonial art Purpose-artworks created to support worship ceremonies, rituals and celebrations. (examples: church altars, baptism gowns, totem poles, etc.)
3. Artistic Expression Purpose art-artworks created to express or communicate emotions, ideas and feelings. (these can be any art form and any subject matter).
4. Narrative art Purpose-artworks that tell stories, describe and illustrate experiences, communicate ideas or information and document important or historical events. (examples are historical paintings of events & children's illustrated books).
5. Functional art Purpose-artworks that are artistic objects that are used in everyday life. (examples are: furniture, clothing, jewelry, lamps, automobiles, etc.)
6. Persuasive art Purpose-artworks that promote ideas, philosophies, or products (examples: advertising, marketing and propaganda)

INTRODUCTION OF ART LESSON

Artists make art for many reasons as listed above. During times of historical significance, such as what we are experiencing presently with COVID-19 creative individuals express themselves in response using varied art forms and media.

- Their art might fall into the category above listed as **Narrative Art**-art that tells a story or documents a historical event. They may create a 3D mobile or sculpture reflective of many aspects of the event. They may create a graphic novel or a series of pictures or paintings narrating what took place.
- As well, the art might be categorized as **Artistic Expression**-where the artist is conveying their feelings toward the event and how it makes him/her feel. Maybe they create a portrait of themself or their family to show the emotion of how they expressed their feelings. This might be done with photography, drawings or paintings. The artist might take an approach much like that of artistic expressionist artist, Jackson Pollock, and use significance through the colors of paint and how he applies them to a canvas,
- The art could take on a **Ceremonial** purpose if it is created in some type of a ritual. For instance maybe the artist creates a piece of art that is a charm or piece of jewelry of some sort to be worn as a remembrance of the event & certain actions are performed in the wearing or using of the piece,
- The art could be **Persuasive** in the form of a poster that is promoting proper hand washing or outlines good practice in proper distancing.
- Lastly maybe the art fits into the category of **Functional** as it is a bench placed in a park to signify the historical context but is also useful.

THE ART PROJECT

WHAT YOU WILL DO: Create an artwork or series of artworks reflective of COVID-19 & its impact upon you, your family, our community, our country or our world.

PART ONE: You will create a piece of art or a series of artworks that fulfill one or more of the outlined art purposes (from the other side of this page). You may use any art form (painting, printmaking, drawing, sculpture, mobile, weaving, etc.), depending on what materials you have available to you. It is preferable that you use resources that you already have and not go out and purchase anything new. For instance, why not use toilet paper or paper towel rolls....not only is this a good, usually throw away resource; it also has a lot of significance to the COVID-19 event in that toilet paper and paper towels seem to be something of extremely great value at the moment. Use graphite (pencil), marker, paint, whatever you have if you decide to draw or paint. Remember, you can draw or paint on the backs of food boxes such as cereal boxes if you don't have paper. If you decide to do something using photography you can submit it using technology in the form of a google slide presentation or use google drawing as well-if you have access to technology and know how to use this resource. If you want to use these resources please contact me for help (if you have access to the internet from home).

As mentioned earlier, you could create a graphic novel and make this a narrative work of art. Remember, all of you were introduced to artist/author Nathan Hale (https://www.nathanhaleauthor.com/) earlier this year when we went to the highschool for his assembly. I have placed mini sketchbooks in the front foyer at HCMS for students to pick up. I plan to continue to replenish this as long as I have extra donated paper available.

PART TWO: After you have created your art you will need to submit a paragraph as a reflection about your art work. You can either do so on paper or you may submit it through my google classroom where you will find a goggle form to complete as your reflection. You are welcome to photograph your art and submit it to me through google classroom also and/or Artsonia.com. If you are unable to do so electronically, you will submit the actual art or a photo of your art upon returning to school.

I am very excited about this art project as I believe this will all become a part of history. You are living history right now, whether you realize it or not. And always remember, *"We will get through this, we will be o.k."*.

Best wishes to all of you during this abnormal time. Please connect with me through

- email at debbie.pulliam@harrison.kyschools.us
- google classroom http://classroom.google.com/ using the code vxv5b47
- my teacher website at https://sites.google.com/harrison.kyschools.us/hcmsart/home
- Sign up for Remind: www.remind.com My code is: bbkk38 (NTI-Pulliam-art updates)
- Zoom App: please visit my website & google classroom page, if at all possible, so that you will know when I have scheduled a Zoom meeting. (This allows us to video chat with each other so that I can answer questions & share art related materials)

I will be adding relevant resources to my google classroom & web page throughout, so please visit these and if possible, let me know you have done so.

Happy Art Making, Mrs. Pulliam

Creating a Musical Instrument for Week 21-25

Create your own music instrument from household items. **Ask your parents if the items are okay to use before you repurpose them. :)**

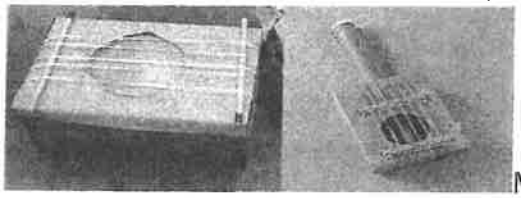
The Percussion Family may be the easiest. **YOU MUST MAKE 2 PERCUSSION INSTRUMENTS IF YOU CHOOSE THIS FAMILY!**

1. Put uncooked rice in a plastic easter egg. Attach a plastic spoon on each long side & tape the two handles of the spoon together then decorate.
2. Stretch a balloon over empty large vegetable cans to make a drum
3. Take 3 Pringles cans and tape them all together and add rice for a rainstick

Wind instruments are more of a challenge but can be done. Make a Brass or Woodwind Instrument (MAKE 1 ITEM ONLY)

1. Take straws and tape them together flat. Cut the bottom so that each is a little shorter than the one before. Play like a flute.
2. Use tubing and a funnel to make a recycled brass instrument.

String Instruments – (MAKE 1 ITEM ONLY)
Take a shoe box, cut a hole in the top and pull rubber bands across the hole.


Modify any way you like!!

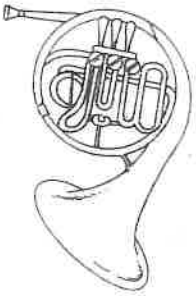
Feel free to look up other possibilities on the internet! I've even seen a clarinet made out of a carrot. Challenge yourself to make something original.

******PART 2 WRITING ASSIGNMENT**

What family is your instrument in & why is it from that family. Name your instrument as if you were creating something knew for that family. Explain how sound is made on your instrument.

Brass Family

The brass instruments, like the woodwinds, are played by blowing air through a tube. Unlike most of the woodwinds, brass instruments do not have reeds. The vibrations of the player's lips cause the air in the tube to vibrate, producing sounds.



Trumpet. The trumpet is the smallest and the highest-pitched of the brass instruments. It has three valves (buttons) that lower the pitch by opening an extra section of tubing. The pitch is lowered because the vibrating air must travel farther before it exits the bell — the end of the tube that flares out.

French Horn. The French horn has its tubing coiled into a circle. If the coil were unwound, the tube would stretch nearly 20 feet! The French horn's bell points backward, and players often put a hand into the bell to change the sound. The French horn is very good at playing both deep and high notes.

Trombone. Unlike the other brass instruments, the trombone does not have valves. Instead, the player moves a slide back and forth to change the pitch. The sound gets lower when the slide is pushed out because the tube gets longer. When the slide is pulled in, the tube becomes shorter and the sound goes higher. The trombone's voice is lower than the French horn's but higher than the tuba's.

Tuba. The tuba has the lowest voice of the brass instruments. Not surprisingly, it is also the largest of the brass instruments. Some tubas have four valves instead of the usual three.

Woodwind Family

All woodwinds are pipes with little holes in their sides. Called "woodwinds" because they all used to be made of wood, they produce sounds when players blow air ("wind") into them. By covering and uncovering the holes, a player changes the length of the column of air in the pipe. It is the length of this column of air that determines the pitch.

Flute and Piccolo. The flute and piccolo are the smallest and simplest woodwinds. They are different from other windwinds in that 1) they are made of metal instead of wood, and 2) they do not have reeds attached to the mouthpiece. In fact, they do not have mouthpieces. One end of a flute or piccolo is closed, and a player blows into a hole in the side of the pipe at the other end. The flute is larger and has a warmer tone than the piccolo. The tiny piccolo produces the highest notes in the orchestra.

Oboe and English Horn. The oboe is made of wood and has a double-reed mouthpiece. The two reeds are shaped so that only a narrow passage for air can get between them. As a result, the oboe produces a strong, piercing tone. The English horn — a little longer and a little wider than the oboe — produces a softer, less piercing tone.

Clarinet. The clarinet is a single-reed instrument that has a very wide range. It can produce sounds from very low to very high. The bass clarinet has a lower, richer tone.

Bassoon. Like the oboe, the bassoon is a double-reed instrument. It is much larger than an oboe and produces some of the lowest tones in the orchestra.

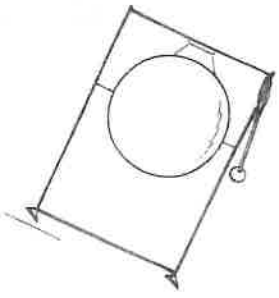
String Family

A string makes a sound when it moves back and forth very fast. This is string vibration. The longer a string is, the deeper the sound when it vibrates. You can make a string vibrate by "plucking" it. But the vibration will last longer if you rub the string with a bow.

The violin and cello are the two main stringed instruments played with a bow. Both instruments have four strings. The strings are of different thickness to make different sounds. The thicker the string, the lower the sound when it vibrates. The player stretches each string until it gives just the right sound.

The guitar, harp, and double bass are stringed instruments played by plucking the strings.

Percussion Family



Probably the oldest music makers are objects that make sounds when someone shakes them or hits them. Cave people, no doubt, struck a stretched animal skin with pieces of bone. They used small stones to make rattles. By striking or shaking these objects, prehistoric people created sound waves of a definite pitch or music.

Objects that make music when they are struck or shaken are call **percussion instruments**. They come in many shapes and sizes. They include all kinds of drums, cymbals, gong, triangle, tambourine, rattles, bell, chimes, and xylophone.