AESD Independent Study Packet Weeks 10 & 11 (5/25-29 & 6/1-3)

Grade Span 4-5

Time Frame	Monday-Memorial Day	Tuesday	Wednesday	Thursday	Friday	Monday-Wednesday
8:00am-8:45am **ELA**	**Extra/Daily Activities:** ● ***Read for at least 30 minutes.*** Choose an A.R. book, a magazine, or log in to **myOn** to access a digital library and news articles. Use this district link: https://www.myon.com/school/adelantoreads, **Student Username** for Grade 4: ***myon4***; for Grade 5: ***myon5*** and Student Password for All Grades: ***123*. *If you don't have access to these, read the passages in this packet.** ● ***Take an A.R. quiz*** through your Renaissance Clever Log in on the AESD website https://www.aesd.net/Content2/4 ● Do ***Lexia lessons/units*** through your Clever Log in on the AESD website https://www.aesd.net/Content2/4 ● ***Read & Respond***. See your copy of the *Read & Respond Choice Board* and pick your choice of activity. ● ***Vocabulary Journal***. Circle/Highlight the unfamiliar vocabulary words you find in the reading passages in this packet. Create or complete your vocabulary journal on the words you identified. ● ***Week in Review.*** Write about what you learned this week. ○ You may start with: *This week I…* ○ Add pictures to illustrate what you learned. ○ Present your work to a member of your family.					
		Grade 4: Vocabulary- (Grade 4 p. 291); Work on your Vocabulary Journal.	Grade 4: Read the poem "Me, As a Mountain". Pay attention to details that help you understand the author's message. Answer the comprehension questions. (Grade 4 pp. 293-294)	Grade 4: Reread the poem "Me, As a Mountain" and review your answers on p. 294. Complete the theme graphic organizer on p. 292. Then, do the fluency assessment at the bottom of p. 294.	Grade 4: Genre/Literary Element; Literary Elements: Imagery and Personification (Grade 4 pp. 295-296)	Grade 4: Monday: Vocabulary Strategy: Figurative Language; Prefixes and Suffixes/Words from Around the World (Grade 4 pp. 297-298) Tuesday: Write About Reading: Write an Analysis; Writing Traits:

		Grade 5: Vocabulary- (Grade 5 p. 291) Work on your Vocabulary Journal.	Grade 5: Read the poem "Running". Check your understanding as you read by asking yourself how the speaker thinks and feels. Answer the comprehension questions. (Grade 5 pp. 293-294)	Grade 5: Reread the poem "Running" and review your answers on p. 294. Complete the point of view graphic organizer on p. 292. Then, do the fluency assessment at the bottom of p. 294.	Grade 5: Genre/Literary Element; Literary Elements: Assonance and Consonance (Grade 5 pp. 295-296)	Ideas (Grade 4 pp. 299-300) Wednesday: Refer to the above daily activities. Do your *Week in Review.* Follow the directions above. Grade 5: Monday: Vocabulary Strategy: Personification;Word Study: Suffixes *-ible* and *-able* (Grade 5 pp. 297-298) Tuesday: Write About Reading: Write an Analysis; Writing Traits: Word Choice (Grade 5 pp. 299-300) Wednesday: Refer to the above daily activities. Do your *Week in Review.* Follow the directions above.
Break						
9:00am-9:45am **Math**	This i-Ready "At-Home-Activity" includes sets of practice problems that align to important math concepts your student has worked with so far this year. We recommend that your student completes one page of practice problems each day. Encourage your student to do the best they can with this content—the most important thing is that they continue developing their mathematical fluency and skills!					

		Grade 4: Math packet pg 30-31 Grade 5: Math Packet pg 28	Grade 4: Math packet pg 32 Grade 5: Math Packet pg 29	Grade 4: Math packet pg 33 Grade 5: Math Packet pg 30	Grade 4: Math packet Pg 34 Grade 5: Math Packet pg 31	**4th Grade** **Monday**: Math packet pg 35 **Tuesday**: Math packet pg 36 **Wednesday**: Math packet pg 37 **5th Grade** **Monday**: Math packet pg 32 **Tuesday**: Math packet pg 33 **Wednesday**: Math packet pg 34
Break						
10:00-10:45am **History**		Use your Marking the Text Strategies as you read the article "Overview of Native American and Colonial Relations." See the "Overview" document in this packet for help with Marking the Text Strategies. Write a 1 paragraph summary of the article. See the "Overview" document in this packet for help with writing a paragraph summary. Use the paper	Fill in the attached T-Chart to show the positive interactions Native Americans had with Europeans and the negative interactions they had. **UPGRADE ACTIVITY:** Why do you think some interactions between Native Americans and Europeans were positive while others were negative? What were the key events that led to the fallout between Native	In the article, "Overview of Native American and Colonial Relations" you read about how the relationship between Native Americans and Europeans changed over time. Use the A.C.E Strategy (refer to the "Overview" document for help with the A.C.E Strategy) to answer the following DBQ. Write your responses on the blank paper provided. Be sure to write in your own	What were the positive consequences of European and Native American interactions? What were the negative consequences of this interaction? Fill in the T-Chart to record your findings. **UPGRADE ACTIVITY:** Are the interactions that Europeans had with Native Americans justified? Who benefited and who suffered? Is it okay to	**Monday**: Relationships among Native Americans and European colonizers varied from region to region. Which group of Native Americans seems to have had the best relationship with Europeans? Which had the worst? Write at least a paragraph to answer these questions and justify your opinions. Use the blank paper provided to write your responses. **UPGRADE ACTIVITY:** Do you think Native Americans and Europeans could have gotten along?

		provided to write your summary. **UPGRADE ACTIVITY:** Instead of writing a one paragraph summary of the entire article, write a two paragraph summary. Use the paper provided to write your summary.	Americans and Europeans? Write your responses to the above on the blank paper provided.	words. 1) How did the relationships between Native Americans and Europeans evolve, or change, over time? 2) Why do you think these relationships evolved/changed over time? **UPGRADE ACTIVITY:** Answer the additional questions below: 1) How are Native Americans portrayed in this article? Justify your response. 2) How are Europeans portrayed in this article? Justify your response.	have progress for some and injustice for others? Was this the case with Europeans and Native Americans or no? Explain your reasoning in a paragraph. You can write your paragraph on the blank paper provided.	Explain your reasoning in at least a paragraph. **<u>TUESDAY</u>**: Use your Marking the Text Strategies as you read the article "Before Columbus: Native American Cultures." See the "Overview" document in this packet for help with Marking the Text Strategies. Write a 1 paragraph summary of the article. See the "Overview" document in this packet for help with writing a paragraph summary. **UPGRADE ACTIVITY:** On the blank paper provided, make a list of all the different Native American tribes you read about when you read "Before Columbus: Native American Cultures." Does this seem like a lot? Does this number of tribes surprise you? Why or why not? Jot your ideas down under your list. **<u>Wednesday</u>**: Re-read Before Columbus: Native American Cultures" and

						review your markings and summary. Use the A.C.E Strategy (refer to the “Overview” document for help with the A.C.E Strategy) to answer the following DBQs. Write your responses on the blank paper provided. Be sure to write in your own words. 1) What was life like for the people of the Americas like before Europeans arrived? 2) What European commonality do each of the 10 groups of Native Americans share? **UPGRADE ACTIVITY:** Divide the blank paper provided into 4 squares. Choose four of the Native American groups that you read about. Draw a picture of the important information from that section of your reading in each of the appropriate squares then title each square as the name of the location you drew about.
Lunch						

11:45am-12:30pm **SEL**	● Recall a time when you helped someone. What did you do? How did that make you feel? What is another way you can help others? ● Write a few sentences about someone you admire. Why do you appreciate or admire this person?					
Break						
12:45pm - 1:30pm **Science**		**4th Grade** - Read Slow and Steady." Underline words that you don't know how to read. Practice sounding them out. Read the article again. Focus on correctly saying the words that are unfamiliar to you. Get help learning the meaning of those words. Answer Comprehension questions 1 and 2. Read about vocabulary word "plate." Write a sentence using the vocabulary word "plate." Draw a picture to illustrate your sentence **5th Grade** - Read "Preparing for a Disaster." Underline words that you don't know how to read. Practice sounding them out. Read the	**4th Grade** - Read "Slow and Steady" Try reading it faster today than you did yesterday. Do you know how to say all of the words that you did not know yesterday? Have you learned the meaning of those words? Answer questions 3, 4 and 5. Read about the vocabulary word "tectonic." Write your own sentence using the word "tectonic" as it is used in the story. Draw a picture to illustrate your sentence. **5th Grade**-- Read "Preparing for a Disaster." Try reading it faster today than you did yesterday. Do you know how to say all of the words that you did not know	**4th Grade** - Read "Slow and Steady." Try reading it faster today than you did yesterday. Answer questions 6, 7 and 8. **5th Grade**-- Read "Preparing for a Disaster.." Try reading it faster today than you did yesterday. Answer Comprehension questions 7 and 8.. Read about the vocabulary word "impact." Write a sentence using "impact" as it is used in this article. Draw a picture to illustrate your sentence.	**4th Grade** - Read "Slow and Steady." Try to read it faster than you have been doing. Answer Comprehension questions 9 and 10.. Remember to use complete sentences in your answer. **5th Grade** - Read "Preparing for a Disaster." Try to read it faster than you have been doing. Write 3 facts that you have learned. Answer questions 9 and 10.. Remember to answer in complete sentences	**4th Grade** Mon- Read "What Happens When It Rains?" Read about the vocabulary word "erosion." Write and illustrate a sentence using the word erosion. Answer questions 1, 2 and 3 Tues - Answer questions 4, 5 and 6. Read about vocabulary word "landscape." Write and illustrate a sentence using "landscape." Wed - Answer question 7. Read about vocabulary word "rely." Write and illustrate a sentence using the word "rely." Have a wonderful summer vacation! Continue to learn about science. **5th Grade** Mon -Read "Stargazing." Read about the vocabulary word "generate." Write and illustrate a sentence using the word "generate." Answer questions 1, 2 and 3.

		article again. Focus on correctly saying the words that are unfamiliar to you. Get help learning the meaning of those words. Answer comprehension questions 1, 2 and 3. Read about the vocabulary word “damage.” Write a sentence using the word “damage,” Draw a picture to illustrate your sentence.	yesterday? Have you learned the meaning of those words? Answer Comprehension questions 4, 5 and 6. Read about the vocabulary word “destroy..” Write your own sentence using the word “destroy” as it applies to the story. Draw a picture to illustrate your sentence.			Tues- Answer questions 4, 5 and 6. Read about the vocabulary word “mass.” Write and illustrate a sentence using the vocabulary word. Wed - Answer question 7. Read about the vocabulary word “visible.” Write and illustrate a sentence. Have a wonderful summer! Continue to explore science!

Name:

Choose two of the vocabulary words you are learning. Answer the parts needed below. Copy the format on the back page to work on other vocabulary words.

_____ Date: _____

Vocabulary Journal

Word:

Part of Speech:

Meaning: _____

_____

Picture:

Synonyms/Examples

Antonyms/Non-Examples:

Sentence:

Word:

Part of Speech:

Meaning: _____

_____

Picture:

Synonyms/Examples

Antonyms/Non-Examples:

Sentence:

Name:

Choose two of the vocabulary words you are learning. Answer the parts needed below. Copy the format on the back page to work on other vocabulary words.

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Antonyms/Non-Examples:

Sentence:

Word:

Part of Speech:

Meaning: _____

_____

Picture:

Synonyms/Examples

Antonyms/Non-Examples:

Sentence:

Name _____

gobble	mist	individuality	roots

A. Read each clue. Then write the vocabulary word that best fits the clue.

1. gulp down _____

2. quality of being unlike others _____

3. where you come from _____

4. fog _____

B. Read the sentences below. Then edit them by crossing out the words that can be substituted with a vocabulary word. Write that word on the line.

5. The girl wanted to show that she was different from everyone else, so she bought a pot-bellied pig.

_____

6. We enjoyed the man's speech about his family members that lived before him.

_____

Name _____

Read the selection. Complete the theme graphic organizer.

Detail

↓

Detail

↓

Detail

↓

Theme

Name _____

Read the poem. Pay attention to details that help you understand the author's message.

Me, As a Mountain

I am not an island.
On my worst day, I am

Florida, the ocean tempting me away from the mainland
states that are my parents.

On the days I feel best,
I am the Rocky Mountains,

broad as the landscape, filling a window.
I command any attention to the horizon.

I rise into the air, my hair a
mist against the blue of the sky.

I rest on the Great Plains.
Plateaus and pine forests lift me.

They are my parents'
broad shoulders I stand on.

I try to use them wisely to build
myself
into a tower of rock, strong and
impossibly tall.

Name _____

A. Reread the passage and answer the questions.

1. What do you think this poem is about?

_____

_____

_____

2. What is the theme, or lesson, that the writer wants you to get out of this poem?

_____

_____

_____

3. Why do you think that is the theme?

_____

_____

B. Work with a partner. Read the passage aloud. Pay attention to phrasing. Stop after one minute. Fill out the chart.

	Words Read	–	Number of Errors	=	Words Correct Score
First Read		–		=	
Second Read		–		=	

Name _____

Quiet Room

I love the quiet of my room,
silent but for the slightest sound of a breeze that stirs the curtains.

Some friends I have would scoff and say,
"Come on, this place is boring!
Where's the music? Where's the fun?"

But me, I like a place to think—
a place where I can share my thoughts with only me
and let my mind wander out the window to the wide, wide world beyond.

Answer the questions about the text.

1. **This text is a free verse poem. Does the text have a rhyme scheme? Does it have a metrical pattern?**

_____

2. **Are the lines in this text regular or irregular?**

_____

3. **What is the subject of the text?**

_____

4. **How are the feelings of the speaker of the poem different from the friends' feelings?**

_____

Name _____

Imagery is the use of specific language to create a picture in a reader's mind. Example: the tree's branches grew high into the air like an explosion of green.

Personification is giving human qualities to a non-human thing such as an animal or object. Example: The warm grass asked me to lie down and take a nap.

Read the lines of the free verse poem below. Then answer the questions.

Me, As a Mountain

I am not an island.
On my worst day, I am

Florida, the ocean tempting me away from the mainland
states that are my parents.

On the days I feel best,
I am the Rocky Mountains,

broad as the landscape, filling a window.
I command any attention to the horizon.

1. **What imagery do you see in this poem?**

_____

_____

2. **Where is there personification in the second stanza?**

_____

_____

3. **Does the imagery affect the poem? How?**

_____

_____

Name _____

A **metaphor** is a comparison of two unlike things without using *like* or *as*. For example:

It was so cold out that my feet were blocks of ice.

Read each passage below. Circle the metaphor in each passage. Then rewrite it as a simile (using *like* or *as*).

1. On my worst day, I am Florida, the ocean tempting me away from the mainland

_____

_____

2. On the days I feel best, I am the Rocky Mountains,

_____

_____

3. I rise into the air, my hair a mist against the blue of the sky.

_____

_____

Name _____

A prefix is a group of letters added to the beginning of a word. A suffix is a group of letters added to the end of a word. Prefixes and suffixes change the word's meaning.

A. Read each word. Divide the word into its prefix or suffix and its base word. Write the parts on the lines. The first one has been done for you.

1. prepaid	**pre**	**paid**
2. agreeable	_____	_____
3. exploration	_____	_____
4. improve	_____	_____
5. semicolon	_____	_____

The English language includes words from around the world. Sometimes the words are used exactly as they are in other languages, and sometimes they are changed from their original forms.

B. Draw a line to match each English word to the word it most likely came from. The first one has been done for you.

1. dock	pudel (German)
2. ranch	ahoi (Dutch)
3. ahoy	rancho (Spanish)
4. violin	docke (Dutch)
5. poodle	violino (Italian)

Name _____

Evidence is details and examples from a text that support a writer's ideas. The student who wrote the paragraph below cited evidence to support his or her opinion about how well two poets used precise language.

Topic sentence →

Evidence →

Concluding statement →

I think the poet of "Quiet Room" did a better job of using precise language than the poet of "Me, As a Mountain." In "Quiet Room," the poet writes, "silent but for the slightest sound of a breeze that stirs the curtains." These sensory details create a picture in my mind. In "Me, As a Mountain," the poet writes, "I command any attention to the horizon." I find the meaning of these words confusing. The poet's use of precise language in "Quiet Room" creates a clearer picture in my mind than the words the poet used in "Me, As a Mountain."

Write a paragraph about two poems. Compare how well the poets use precise language. Tell which poet did a better job. Cite details that created a picture in your mind. Remember to use prepositions correctly.

Write a topic sentence: _____

_____

Cite evidence from the text: _____

_____

_____

_____

_____

End with a concluding statement: _____

_____

Name _____

A. Read the draft model. Use the questions that follow the draft to help you think about what concrete and descriptive details you can add.

Draft Model

I'm not very TALL at all
My hair is a MESS when I get out of bed
I like to display my collections
I always SING in the back seat of our car
My family is the BEST

1. What descriptive detail would tell how tall the speaker is?

2. What descriptive details would show how the speaker's hair is messy?

3. What concrete details would tell what the speaker collects?

4. What concrete details would tell what kinds of songs the speaker sings?

B. Now revise the draft by adding concrete supporting details that help build a clearer picture for readers.

_____

_____

_____

_____

_____

_____

_____

Name _____

blares	errand	exchange	connection

A. Write each word next to its definition.

1. relationship or bond _____

2. short trip to do or get something _____

3. act of giving one thing for another _____

4. makes a loud, harsh sound _____

B. Write four sentences. Use one vocabulary word in each sentence.

5. _____

_____

6. _____

_____

7. _____

_____

8. _____

_____

Name _____

Read the selection. Complete the point of view graphic organizer.

Details	Point of View

Name _____

Read the poem. Check your understanding as you read by asking yourself how the speaker thinks and feels.

Running

Feet pound the pavement,
Arms pump up and down,
Sun's up and smiling,
As I jog through the town.

Neighbors out raking,
Look up, holler, "Hi!"
Trees all wave to me,
As I dash on by.

Wind kicks up its heels,
And gives playful chase.
Whooshing and whirling,
"Come, let's have a race."

I round the corner,
Delighted to meet,
Two other runners,
Who sprint down the street.

What is it we share?
Well, I think I know—
All the world's moving,
With places to go.

An inch or a mile, jet-fast or snail-slow,
We share the journey, together we go.

Name _____

A. Reread the passage and answer the questions.

1. Is this poem a lyric or a narrative poem? How do you know?

_____

_____

2. Who is the speaker in the poem?

_____

3. Is the point of view in the poem first-person or third-person? Write a line that shows which point of view is used.

_____

_____

4. What thoughts does the speaker have about running? Write a line that tells how the speaker thinks.

_____

_____

B. Work with a partner. Read the passage aloud. Pay attention to expression and phrasing. Stop after one minute. Fill out the chart.

	Words Read	–	Number of Errors	=	Words Correct Score
First Read		–		=	
Second Read		–		=	

Name _____

Big Sky

Standing on a small rise in the road
I saw the big sky.
I had not thought about the name
Big Sky Country
Until that moment,
And I was overwhelmed.
I thought I might explode
At the splendor.
The sun rising from the east
Bounced off soaring clouds
In the west
And shot the sky with coral.
I could turn in circles
And see the sky everywhere I looked.
Nothing blocked my view.
No trees. No mountains. No skyscrapers.
Just sky. Big sky.

Answer the questions about the text.

1. **What is this text about?**

_____

_____

2. **How does the speaker in the text feel and how do you know?**

_____

_____

3. **Is this lyric poetry or narrative poetry and how do you know?**

_____

_____

Name _____

Assonance is the repetition of the same vowel sound in two or more words. Example: *gl**i**ding* over the *sh**i**ning **i**ce*

Consonance is the repetition of a consonant sound in the *middle* or at the *end* of words. Example: *Sto**p** ho**pp**ing* and *hel**p***!

Read the lines of the lyric poem below. Then answer the questions.

Running

Feet pound the pavement,
Arms pump up and down,
Sun's up and smiling,
As I jog through the town.

Neighbors out raking,
Look up, holler, "Hi!"
Trees all wave to me,
As I dash on by.

Wind kicks up its heels,
And gives playful chase.
Whooshing and whirling,
"Come, let's have a race."

1. **Find two examples of assonance, or repeating vowel sounds, in the poem. Write them below.**

_____

_____

2. **Find two examples of consonance, or repeating middle or ending consonant sounds, in the poem. Write them below.**

_____

_____

3. **How do the assonance and consonance affect the poem?**

_____

_____

_____

Name _____

Personification is a type of figurative language. The writer describes a nonhuman, such as an animal, object, or force of nature, as though it were human.

Example: Snow **danced** around my face.

Snow cannot dance. The writer uses personification to create a vivid picture of the snow falling.

Read each sentence. Circle the examples of personification. Then explain the author's meaning in your own words. Use clues to help you understand the figurative language.

1. "Sun's up and smiling, / As I jog through the town."

_____

_____

2. "Trees all wave to me, / As I dash on by."

_____

_____

3. "Wind kicks up its heels, / And gives playful chase"

_____

_____

Name _____

The suffixes *-ible* and *-able* both mean "can be done."

wash + *able* = *washable*: can be washed

When *-ible* or *-able* is added to a word that ends in *e*, the *e* is usually dropped before the suffix is added.

use + *able* = *usable:* can be used

A. Write the base word on the line next to each word with the suffix *-able* or *-ible*. The first one has been done for you.

1. respectable **respect**

2. likable _____

3. forcible _____

4. reasonable _____

5. erasable _____

B. Add the suffix in parentheses to the word in bold. Write the meaning of the new word. The first one has been done for you.

	New Word	Meaning
6. (able) **fix**	**fixable**	**can be fixed**
7. (ible) **convert**		
8. (ible) **sense**		
9. (able) **enjoy**		
10. (able) **read**		

Name _____

Evidence is details and examples from a text that support a writer's ideas. The student who wrote the paragraph below cited evidence to support his or her opinion about imagery in a poem.

Topic sentence →
Evidence →
Concluding statement →

I think the poet who wrote "Running" created strong imagery. The words "Feet pound the pavement" and "Arms pump up and down" help me picture how hard the speaker is running. The words "trees all wave to me" and "As I dash on by" help me picture the wind blowing through the trees as the speaker runs quickly. All of these words create a strong image of the speaker running down the street.

Write a paragraph about the poem you have chosen. Give your opinion about how well the poet created strong imagery. Cite words in the poem that created a clear picture in your mind.

Write a topic sentence: _____

_____

Cite evidence from the text: _____

_____

_____

_____

_____

End with a concluding statement: _____

_____

Name _____

A. Read the draft model. Use the questions that follow the draft to help you think about what strong adverbs you can add.

Draft Model

One arm stroke following another, I keep pace.
Then buoyed by my team, I move forward and win.

1. What strong adverbs can you add to the first line to describe how the speaker keeps pace?
2. What strong adverbs can you add to the second line to describe the way the speaker moves forward and wins?
3. What strong adverbs could show how the speaker is buoyed by the team?

B. Now revise the draft by adding adverbs to help readers form a better picture of what the speaker in the poem is doing. Then add two more lines to the poem.

_____

_____

_____

_____

_____

_____

_____

_____

_____

Subtracting Fractions *continued*

Name: _____

5 On Monday, Adam walks $\frac{3}{10}$ of a mile to the store and then $\frac{4}{10}$ of a mile to the park. How far does he walk in all?

6 Javier has $\frac{7}{8}$ of a cup of flour. He uses $\frac{3}{8}$ of a cup in a recipe. How much flour does Javier have left?

7 Shawna practices piano for $\frac{4}{6}$ of an hour and takes a break. Shawna then practices for $\frac{2}{6}$ of an hour more. How long does Shawna practice in all?

8 Kailee has finished $\frac{4}{5}$ of her math homework so far. What fraction of her math homework does she have left to finish?

9 Explain one way to check your work to problem 2.

Decomposing Fractions

Name: _____

Find three ways to decompose each fraction into a sum of other fractions with the same denominator.

1 $\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \_\_\_\_\_$

$\frac{3}{4} = \frac{2}{4} + \_\_\_\_\_$

$\frac{3}{4} = \frac{1}{4} + \_\_\_\_\_$

2 $\frac{7}{8} = \frac{6}{8} + \_\_\_\_\_$

$\frac{7}{8} = \frac{5}{8} + \_\_\_\_\_$

$\frac{7}{8} = \frac{4}{8} + \_\_\_\_\_$

3 $\frac{6}{5} = \_\_\_\_\_ + \frac{3}{5}$

$\frac{6}{5} = \frac{2}{5} + \_\_\_\_\_ + \_\_\_\_\_$

$\frac{6}{5} = \frac{2}{5} + \frac{2}{5} + \_\_\_\_\_ + \_\_\_\_\_$

4 $\frac{5}{6} = \_\_\_\_\_ + \frac{3}{6}$

$\frac{5}{6} = \frac{1}{6} + \_\_\_\_\_ + \_\_\_\_\_$

$\frac{5}{6} = \frac{1}{6} + \frac{1}{6} + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_$

5 $\frac{9}{12} = \_\_\_\_\_ + \frac{5}{12}$

$\frac{9}{12} = \frac{3}{12} + \frac{3}{12} + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_$

$\frac{9}{12} = \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_$

6 $\frac{8}{10} = \_\_\_\_\_ + \frac{4}{10}$

$\frac{8}{10} = \frac{2}{10} + \frac{3}{10} + \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_$

$\frac{8}{10} = \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_$

7 Describe your strategy for finding the missing numbers.

Multiplication - commutative property

Grade 4 Multiplication Worksheet

Example: 2 x 4 x 6 = 8 x 6 = 48 or 2 x 4 x 6 = 2 x 24 = 48

Rewrite the equation so it only has 2 factors, then solve.

1. $5 \times 10 \times 6 =$ _____
2. $6 \times 6 \times 4 =$ _____
3. $3 \times 5 \times 4 =$ _____
4. $5 \times 7 \times 2 =$ _____
5. $4 \times 4 \times 4 =$ _____
6. $3 \times 3 \times 4 =$ _____
7. $9 \times 8 \times 6 =$ _____
8. $3 \times 7 \times 10 =$ _____
9. $5 \times 5 \times 6 =$ _____
10. $2 \times 1 \times 2 =$ _____

Writing and comparing fractions

Grade 4 Word Problems Worksheets

Read and answer each question:

There are 482 students in the school and there are two Grade 4 classes: Ms. Ashley's and Mr. Ben's classes. Ms. Ashley's class has 15 boys and 6 girls. Mr. Ben's class has 14 girls and 10 boys.

In Ms. Ashley's class, $\frac{2}{3}$ of the students wear glasses.
In Mr. Ben's class, $\frac{1}{4}$ of the kids have other siblings in the school.

1. What fraction of the students in the school are in grade 4?
2. What fraction of the grade 4 students are boys?
3. What fraction of the grade 4 students are in Ms. Ashley's class?
4. What fraction of the students in Mr. Ben's class that do not have siblings in the same school?
5. In Ms. Ashley's class, are there more students that wear glasses or do not wear glasses?
6. There are $\frac{1}{35}$ of the students in the school that are allergic to seafood. There are $\frac{1}{15}$ of the students in the school that are allergic to peanuts. Are there more students allergic to seafood or peanuts?

Multiply in columns - 1 digit by 4 digit

Grade 4 Multiplication Worksheet

Find the product.

1.	2,586 × 7	2.	3,556 × 6	3.	5,453 × 7
4.	3,237 × 7	5.	1,343 × 5	6.	5,647 × 7
7.	1,199 × 2	8.	7,675 × 2	9.	4,109 × 7
10.	9,479 × 1	11.	8,460 × 4	12.	1,201 × 5
13.	4,783 × 7	14.	7,195 × 4	15.	3,310 × 9

Convert decimals to fractions.

Grade 4 Fractions Worksheet

Convert.

1.	0.4 = _____	2.	0.82 = _____	3.	0.2 = _____
4.	0.27 = _____	5.	0.37 = _____	6.	0.8 = _____
7.	0.67 = _____	8.	0.3 = _____	9.	0.11 = _____
10.	0.7 = _____	11.	0.98 = _____	12.	0.91 = _____
13.	0.26 = _____	14.	0.1 = _____	15.	0.96 = _____
16.	0.13 = _____	17.	0.6 = _____	18.	0.21 = _____

Adding mixed numbers (like denominators)

Grade 4 Fractions Worksheet

Find the sum.

1. $5\frac{5}{12} + 4\frac{11}{12} =$ _____
2. $1\frac{1}{2} + 7\frac{1}{2} =$ _____
3. $7\frac{2}{3} + 7\frac{2}{3} =$ _____
4. $8\frac{7}{11} + 3\frac{2}{11} =$ _____
5. $10\frac{4}{5} + 8\frac{3}{5} =$ _____
6. $7\frac{3}{6} + 8\frac{2}{6} =$ _____
7. $3\frac{2}{11} + 4\frac{1}{11} =$ _____
8. $9\frac{8}{12} + 6\frac{7}{12} =$ _____
9. $3\frac{4}{8} + 9\frac{6}{8} =$ _____
10. $10\frac{3}{5} + 2\frac{3}{5} =$ _____
11. $6\frac{1}{2} + 3\frac{1}{2} =$ _____
12. $4\frac{1}{4} + 7\frac{2}{4} =$ _____
13. $10\frac{1}{3} + 7\frac{1}{3} =$ _____
14. $1\frac{3}{9} + 4\frac{5}{9} =$ _____
15. $10\frac{5}{7} + 2\frac{4}{7} =$ _____
16. $7\frac{8}{10} + 7\frac{9}{10} =$ _____

Long Division with remainders within 1-1,000

Grade 4 Division Worksheet

Find the quotient with remainder.

1. $9\overline{)207}$
2. $8\overline{)575}$
3. $4\overline{)313}$
4. $4\overline{)647}$
5. $6\overline{)791}$
6. $6\overline{)237}$
7. $7\overline{)780}$
8. $5\overline{)588}$
9. $5\overline{)388}$

Estimating in Word Problems with Fractions *continued*

Name: _____

4 Lin spent $\frac{5}{6}$ hour on math homework and $1\frac{3}{4}$ hours on science homework. How many hours in all did she spend on homework for both subjects?

5 Sandra rode her bike $9\frac{1}{3}$ miles on Monday and $6\frac{4}{5}$ miles on Tuesday. How many more miles did she ride on Monday than on Tuesday?

6 How can you make a high estimate for the sum of two fractions in a word problem?

Fractions as Division

Name: _____

Solve each problem.

1 Roger has 4 gallons of orange juice. He puts the same amount of juice into each of 5 pitchers. How many gallons of orange juice are in 1 pitcher?

2 Marta has 8 cubic feet of potting soil and 3 flower pots. She wants to put the same amount of soil in each pot. How many cubic feet of soil will she put in each flower pot?

3 Greg made 27 ounces of potato salad to serve to 10 guests at a picnic. If each serving is the same size, how much potato salad will each guest receive?

4 Chandra spends 15 minutes doing 4 math problems. She spends the same amount of time on each problem. How many minutes does she spend on each problem?

5 Taylor has 5 yards of gold ribbon to decorate 8 costumes for the school play. She plans to use the same amount of ribbon for each costume. How many yards of ribbon will she use for each costume?

6 DeShawn is using 7 yards of wire fencing to make a play area for his puppy. He wants to cut the fencing into 6 pieces of equal length. How long will each piece of fencing be?

7 What is a division word problem that can be represented by $\frac{4}{3}$?

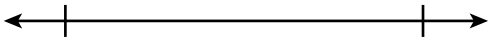
Understanding of Multiplying by a Fraction

Name: _____

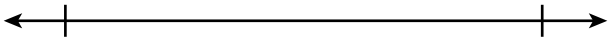
1 Draw a number line model to represent each multiplication problem. Then solve the problem.

$\frac{2}{3} \times \frac{1}{2}$

$\frac{2}{3} \times \frac{1}{2} =$



$\frac{5}{6} \times \frac{3}{4}$



$\frac{5}{6} \times \frac{3}{4} =$

2 Draw an area model to represent each multiplication problem. Then solve the problem.

$\frac{4}{5} \times \frac{2}{3}$

$\frac{4}{5} \times \frac{2}{3} =$

$\frac{3}{4} \times \frac{1}{6}$

$\frac{3}{4} \times \frac{1}{6} =$

3 What type of model do you like best? Explain why.

Multiplying Unit Fractions to Find Area

Name: _____

Each multiplication problem is used to find the area of a rectangle. Write the missing digits in the boxes to make each multiplication problem true.

1 length: $\frac{1}{2}$ unit
width: $\frac{1}{8}$ unit
$\frac{1}{2} \times \frac{1}{8} = \frac{\square}{\square}$ square unit

2 length: $\frac{1}{3}$ unit
width: $\frac{1}{4}$ unit
$\frac{1}{3} \times \frac{1}{4} = \frac{\square}{\square}$ square unit

3 length: $\frac{1}{2}$ unit
width: $\frac{1}{3}$ unit
$\frac{1}{2} \times \frac{1}{3} = \frac{\square}{\square}$ square unit

4 length: $\frac{1}{2}$ unit
width: $\frac{1}{5}$ unit
$\frac{1}{2} \times \frac{1}{5} = \frac{\square}{\square}$ square unit

5 length: $\frac{1}{4}$ unit
width: $\frac{1}{4}$ unit
$\frac{1}{4} \times \frac{1}{4} = \frac{\square}{\square}$

6 length: $\frac{1}{3}$ unit
width: $\frac{1}{8}$ unit
$\frac{1}{3} \times \frac{1}{8} = \frac{\square}{\square}$

7 length: $\frac{1}{2}$ unit
width: $\frac{1}{7}$ unit
$\frac{1}{2} \times \frac{1}{7} = \frac{\square}{\square}$

8 length: $\frac{1}{3}$ unit
width: $\frac{1}{10}$ unit
$\frac{1}{3} \times \frac{1}{10} = \frac{\square}{\square}$ square unit

9 length: $\frac{1}{5}$ unit
width: $\frac{1}{6}$ unit
$\frac{1}{6} \times \frac{1}{5} = \frac{\square}{\square}$ square unit

10 Write missing digits in the boxes to make two different multiplication problems that are both true.

$\frac{1}{\square} \times \frac{1}{4} = \frac{1}{\square}$

$\frac{1}{\square} \times \frac{1}{4} = \frac{1}{\square}$

Tiling a Rectangle to Find Area

Name: _____

Each multiplication problem is used to find the area of a rectangle. Write each product.

1 length: $\frac{1}{2}$ unit
width: $\frac{1}{3}$ unit

$\frac{1}{2} \times \frac{1}{3}$

_____ square unit

2 length: $\frac{2}{3}$ unit
width: $\frac{1}{2}$ unit

$\frac{2}{3} \times \frac{1}{2}$

_____ square unit

3 length: $\frac{3}{2}$ unit
width: $\frac{2}{3}$ unit

$\frac{3}{2} \times \frac{2}{3}$

_____ square unit

4 length: $\frac{1}{3}$ unit
width: $\frac{1}{4}$ unit

$\frac{1}{3} \times \frac{1}{4}$

_____ square unit

5 length: $\frac{3}{4}$ unit
width: $\frac{1}{3}$ unit

$\frac{3}{4} \times \frac{1}{3}$

_____ square unit

6 length: $\frac{5}{3}$ unit
width: $\frac{3}{4}$ unit

$\frac{5}{3} \times \frac{3}{4}$

_____ square unit

7 length: $\frac{3}{5}$ unit
width: $\frac{1}{2}$ unit

$\frac{3}{5} \times \frac{1}{2}$

_____ square unit

8 length: $\frac{3}{2}$ unit
width: $\frac{3}{5}$ unit

$\frac{3}{2} \times \frac{3}{5}$

_____ square unit

9 length: $\frac{3}{2}$ unit
width: $\frac{6}{5}$ unit

$\frac{3}{2} \times \frac{6}{5}$

_____ square unit

10 Describe how you could modify one tiling diagram to solve problems 1 through 3.

Completing a whole number (mixed numbers)

Grade 5 Fractions Worksheet

Find the missing fraction or mixed number:

1) $2\frac{2}{4} + \_\_\_\_ = 5$

2) $5\frac{1}{5} + \_\_\_\_ = 7$

3) $5\frac{2}{7} + \_\_\_\_ = 7$

4) $5\frac{2}{11} + \_\_\_\_ = 6$

5) $3\frac{1}{3} + \_\_\_\_ = 5$

6) $8\frac{1}{3} + \_\_\_\_ = 10$

7) $7\frac{1}{2} + \_\_\_\_ = 8$

8) $3\frac{3}{9} + \_\_\_\_ = 4$

9) $4\frac{3}{5} + \_\_\_\_ = 6$

10) $5\frac{1}{5} + \_\_\_\_ = 7$

11) $5\frac{2}{11} + \_\_\_\_ = 6$

12) $4\frac{4}{5} + \_\_\_\_ = 6$

13) $1\frac{5}{8} + \_\_\_\_ = 2$

14) $4\frac{2}{6} + \_\_\_\_ = 6$

15) $2\frac{3}{7} + \_\_\_\_ = 3$

16) $7\frac{1}{3} + \_\_\_\_ = 11$

Fraction multiplied by a fraction

Grade 5 Fractions Worksheet

Fill in the blanks.

1) $\frac{1}{6} \times \frac{1}{5} = \square$

2) $\frac{2}{5} \times \frac{2}{9} = \square$

3) $\frac{10}{3} \times \frac{1}{20} = \square$

4) $\square \times \frac{15}{7} = \frac{5}{14}$

5) $\square \times \frac{1}{6} = \frac{8}{9}$

6) $\square \times \frac{25}{24} = \frac{5}{6}$

7) $\frac{1}{6} \times \square = \frac{5}{12}$

8) $\frac{2}{9} \times \square = \frac{3}{15}$

9) $\frac{2}{5} \times \square = \frac{7}{12}$

10) $\square \times \frac{7}{6} = \frac{2}{3}$

11) $\square \times \frac{7}{5} = \frac{4}{15}$

12) $\square \times \frac{3}{4} = \frac{1}{6}$

Multiplying fractions (denominators 2-12)

Grade 5 Fractions Worksheet

Find the product.

1. $\frac{7}{10} \times \frac{4}{6} =$ _____

2. $\frac{2}{3} \times \frac{4}{5} =$ _____

3. $\frac{2}{8} \times \frac{1}{3} =$ _____

4. $\frac{3}{6} \times \frac{8}{9} =$ _____

5. $\frac{8}{9} \times \frac{1}{2} =$ _____

6. $\frac{1}{3} \times \frac{5}{7} =$ _____

7. $\frac{6}{7} \times \frac{9}{10} =$ _____

8. $\frac{9}{10} \times \frac{3}{6} =$ _____

9. $\frac{5}{12} \times \frac{3}{11} =$ _____

10. $\frac{3}{4} \times \frac{3}{12} =$ _____

11. $\frac{7}{9} \times \frac{2}{10} =$ _____

12. $\frac{4}{5} \times \frac{4}{7} =$ _____

13. $\frac{2}{6} \times \frac{2}{3} =$ _____

14. $\frac{6}{10} \times \frac{4}{8} =$ _____

Before Columbus: Native American Cultures

By History.com, adapted by Newsela staff on 11.21.16
Word Count **622**
Level **600L**

A Native American of the Hopi tribe performs traditional ceremonial dances at the south rim of the Grand Canyon in Grand Canyon National Park near Flagstaff, Arizona, June 9, 2009. Dave Etheridge-Barnes, Getty Images.

Christopher Columbus gets a lot of credit for discovering America. But people were already living in America when Columbus arrived.

They were related to today's Native Americans. These people came from Asia. They arrived in America more than 12,000 years ago.

Historians think of them as several different groups. This is based on how they lived. For example, they may have spoken the same language. Or, they may have hunted the same animals. Most were also moved off their lands by the government.

Native Americans have lived in many different areas. They lived in 10 areas of Canada and the U.S. Here are each of those areas:

The Arctic

The Arctic group lived in today's Alaska, Canada and Greenland. Most were related to Eskimos and Aleuts today.

The United States purchased Alaska in 1867 from Russia. Many of the native people had died by then. The European settlers brought diseases with them. Eskimos and Aleuts were not used to those diseases.

The Subarctic

The Subarctic group is much of inland Alaska and Canada. The native people lived in tents and underground dugouts in the winter.

The native people there hunted animals. Then they sold the furs to European traders. They did this instead of hunting for food for their tribes. This changed their way of life. It led to many of the native communities there losing their land.

The Northeast

The Northeast group lived from Canada's Atlantic coast down to North Carolina. They lived as far inland as the Mississippi River valley. Its inhabitants were members of two main groups: the Iroquois and Algonquian.

White settlers eventually pushed Indians from their lands.

The Southeast

The Southeast group is north of the Gulf of Mexico and south of the Northeast. The Cherokee, Chickasaw, Choctaw, Creek and Seminole lived here.

The government forced nearly 100,000 Native Americans off their land here. This was called the Trail of Tears.

The Plains

The Plains group was between the Mississippi River and the Rocky Mountains. It stretched from present-day Canada to the Gulf of Mexico. Tribes like the Crow, Blackfeet, Cheyenne, Comanche and Arapaho lived here.

These Native Americans were known for teepees and feather headdresses.

White hunters killed almost all the buffalo here.

The Southwest

The Southwest group is present-day Arizona and New Mexico. It also had parts of Colorado, Utah, Texas and Mexico. Many lived in permanent settlements. They were known as pueblos. The pueblos were built of stone and adobe. The Hopi, the Zuni, the Yaqui and the Yuma lived here.

Some of the Southwestern people, such as the Navajo and the Apache, were nomadic. They survived by hunting and gathering.

Later, the government moved many of them onto reservations.

The Great Basin

The Great Basin group lived between large mountains and flat lands in the West. The Bannock, Paiute and Ute tribes lived here. White settlers found gold and silver here in the 1800s. They forced the Native Americans to move away.

California

The California group had about 100 different tribes in its beginning.

The Native Americans lived in peaceful groups of hunter-gatherers. Life was disrupted when the Europeans arrived.

The Northwest Coast

The Northwest Coast group lived along part of the Pacific coast. The ocean and rivers offered almost everything the native communities needed.

They built villages that housed hundreds of people.

The Plateau

This group was in present-day Idaho, Montana, Oregon and Washington. The Yakima and Spokane were some of the tribes here.

In 1805, the explorers Lewis and Clark passed through this land. More settlers came. They brought new diseases with them. Many Native Americans died. Later, the government moved most of the rest of them to other lands.

Marking the Text Overview: As you read through your text, complete the following steps:

1. Number the paragraphs
2. Underline the main ideas
3. Highlight the key points that support the main ideas
4. Put a star by anything that is important
    a. For example: evidence
5. Circle important vocabulary words AND words that you don't know
6. Put an exclamation mark next to anything that surprises you
7. Put a question mark next to anything that confuses you
8. Write comments or draw pictures in the margins on anything that helps you connect information you are reading to information you already know or have experienced

A.C.E Writing Strategies Overview

A	**Answer the question**	Take the question you are being asked and make it a statement while you answer it Example: Question: What is your favorite free time activity? Answer: My favorite free time activity is watching movies.
C	**Cite Evidence**	• Use your previous experience, prior knowledge, or information from what you read to support your answer • Try to use transitional words and phrases such as 'in fact,' 'especially,' 'such as,' and for instance' Example: In fact, I like all genres of movies and watch them as often as possible.
E	**Elaborate**	• Add more information to your evidence by explaining, comparing & contrasting, showing cause & effect, etc. Example: In my opinion, watching movies is a great way to take a break from reality and enter a new world.

PUT IT ALL TOGETHER:

Question: What is your favorite free time activity?
Answer:

My favorite free time activity is watching movies. In fact, I like all genres of movies and watch them as often as possible. In my opinion, watching movies is a great way to take a break from reality and enter a new world.

Complete Summary Overview:

Topic Sentence: Use your own words to tell the reader the main idea of the reading.

Body Sentences: Use your own words to tell the reader about the most important details that support your topic sentence.

Conclusion: Use your own words to restate the topic sentence.

Example:
In the article, "The Greatness of Electricity," author Michael Johnson explains the benefits of electricity. First, electricity allows us to use entertainment such as phones and televisions because it powers them. Second, electricity keeps us safe by enabling us to keep our food cold so it does not spoil. Last, electricity makes life comfortable by powering machines such as the dishwasher and heater. People benefit immensely from power electricity and we would have much different lives if we did not have electricity in our lives.

Persuasive Essay Overview:

Topic Paragraph: Include a 'hook' sentence to grab the reader's attention. Include background information on the topic so the reader understands why it is important. Include a thesis statement where you take a position. List the 3 reasons why you support that position.

3 Body Paragraphs: Include ONE reason in each paragraph (these are the reasons you stated in your topic paragraph). Include evidence/details to support your reason and relate to the first sentence of this paragraph.

Conclusion Paragraph: Restate your thesis in different words. Summarize your three reasons for supporting your opinion.

T-Chart: Positive & Negative Consequences Between Native Americans & Europeans

Positive Consequences	Negative Consequences

T-Chart: Positive & Negative Interactions Between Native Americans & Europeans

Positive Interactions	Negative Interactions

Overview of Native American and colonial relations

By Encyclopaedia Britannica, adapted by Newsela staff on 05.25.17
Word Count **813**
Level **590L**

"An Oasis in the Badlands, South Dakota." This photograph was taken in 1905 by Edward Curtis, whose work has recently been criticized for portraying unrealistic and romanticized Native American subjects. Curtis requested that any sign of modernity be hidden, and introduced clothing that belonged to thousand-year-old traditions. Despite its controversial setting, Curtis' work is an invaluable record which testifies to the complicated relationship between real and imagined portrayals of Native American culture.

Many European countries invaded North America in the 1500s and 1600s. In particular, Spain, France and England fought each other for control. Each country tried to take land for itself. The Europeans who came to take land were called colonists.

There were already people living in North America at the time. These groups were Native Americans. Many groups existed, and each had their own culture. The colonists had a large effect on Native Americans.

Spain and Native Americans in the Southwest and Southeast

Francisco Vázquez de Coronado was a Spanish conquistador. In 1540, he began fighting the Pueblo natives of the Southwest. The Spanish troops forced the Pueblos to give them food and slave workers. Slaves were forced to work for free. They were bought and sold like animals.

The Spanish brought Christian missionaries too. The Pueblo people had their own religion. The missionaries tried to turn the natives into Christians. Some natives resisted and wanted to keep their religion. The missionaries beat them.

Some Pueblo families ran away. Others decided to stay. They secretly kept their religion. Sometimes, they mixed native and Christian rituals.

Meanwhile, the Spanish also explored the Southeast. During 1539 to 1542, Hernando de Soto led an expedition. At first, the Southeast tribes treated the Spanish like any group of visitors. They gave gifts to the leaders. They also gave food to the troops. In response, Spanish often made them slaves.

France and the Iroquoians of Huronia

The French conquered most of the American Northeast and Southeast. Many other groups fought over the same lands. The English, for example, wanted more trade in the area. Two major groups of Native Americans were also important players.

One was the Huron alliance. This group lived in what is now Canada. The other was the Five Tribes of the Iroquois Confederacy. They lived in what is now New York State.

Everyone was fighting over the land around Hudson Bay. This area was rich with animals and trade routes. Beavers were especially valuable. Their fur was sold for money and other goods.

The French and the English were at war with each other. The Huron joined with the French and the Iroquois with the English. Between 1634 and 1638, a disease killed many Hurons. The diseases were brought by the French themselves.

At the same time, beavers began dying out. Too many people had been hunting them. The Hurons especially relied on the beaver trade. They grew very poor and lost the war.

In the north, the Cree native peoples were trading with the Huron. When the Huron lost the war, the Cree started trading with the English. In 1670, the English founded the Hudson's Bay Company. This became one of the most important companies in North America at the time.

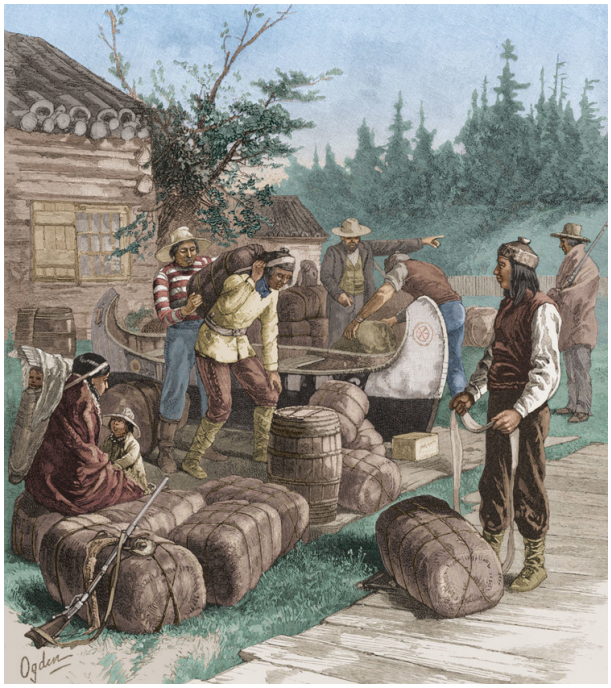
England and the mid-Atlantic Algonquians

The first fixed English settlement was the Jamestown Colony, in Virginia. The English settlers started on good terms with the native peoples who lived there.

The Powhatan were a group of native communities. The group was named after its leader, Powhatan. At first, the Powhatan were friendly to the people of Jamestown. They gave Jamestown food and some land to grow crops.

By 1609, the friendship ended. There had been little rain for three years. The English were starving and stole food from the natives. Powhatan did not let his people give food to them anymore.

Eventually, war broke out between the English and the Powhatan. It only ended in 1644, when disease killed most of the natives.



The Plains and Plateau culture areas

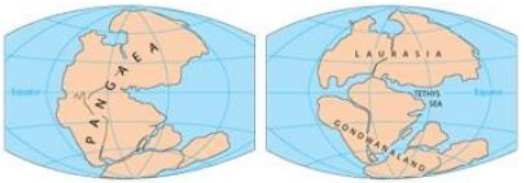
All the wars in the rest of the country pushed native groups toward the center. Here, they met with the Plains and Plateau natives. By the 1700s, Europeans changed the way of life of these native groups as well.

The Spanish brought horses to the Americas. As horses spread, the Plains peoples used them to hunt bison. Europeans also brought guns. The Spanish were not allowed to sell guns to native groups. Yet, the English and Dutch traded them freely. The Northeastern Plains peoples started using guns in battle and to hunt.

Horses and guns brought the Plains and Plateau nations much wealth. Still, most interactions with Europeans hurt the way of life of Native Americans.

Slow and Steady

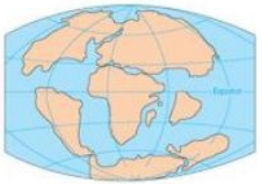
by ReadWorks



PERMIAN
250 million years ago

TRIASSIC
200 million years ago

JURASSIC
145 million years ago



CRETACEOUS
65 million years ago

PRESENT DAY

How did all the amazing things on our planet form? How did magnificent mountain ranges rise up in one place and beautiful beaches form elsewhere? Why do some places experience earthquakes and volcanic eruptions, while other places don't? How did our continents end up where they are now? All of these questions can be answered with an understanding of tectonic plates.

The outer shell of our planet is the earth's crust. Below the crust is the mantle. The uppermost mantle is solid and rigid, and the lower mantle is fluid molten rock. Tectonic plates are made up of the earth's crust and the solid section of the mantle below it. Some tectonic plates are huge, even larger than continents, and some are much smaller. Tectonic plates rest on a layer of hot magma. Imagine some large tiles, like those on a kitchen floor, but with a layer of thick

honey underneath. The thick honey won't allow the tiles to move too fast, but the tiles will move nonetheless. In a similar way, tectonic plates move slowly but steadily.

The locations where these tectonic plates meet are called plate boundaries. Wherever you find plate boundaries, events like earthquakes can occur, and features like mountains, volcanoes, and ocean trenches are common.

A convergent plate boundary is where two plates collide. When plates collide, there are a couple of things that can happen. One plate may go underneath the other during the collision, or one or both plates may be pushed up. Mountain ranges like the Rocky Mountains in North America may form along convergent plate boundaries. Other possible formations along these boundaries are deep trenches in the ocean and volcanic islands. The island chain of Hawaii is an example of volcanic islands.

Plate boundaries also exist where plates pull away from each other. These are called divergent plate boundaries. At these boundaries, magma from beneath the earth's crust rises to the surface and pushes apart the tectonic plates. Ocean basins are created where these plates separate. Eighty-five percent of volcanic eruptions occur along these boundaries, as do many small earthquakes.

When tectonic plates move, they move very slowly. Some plates move as fast as fingernails grow, while others move a little slower. These speeds may seem very slow, but our planet is over 4 billion years old. The gradual movement of continents over billions of years has caused large changes in the earth's geography.

One scientific theory states that Earth looked very different just millions of years ago. This theory states that continents used to make up a supercontinent called Pangaea. This supercontinent formed about 300 million years ago and was basically one giant piece of land. Then about 220 million years ago, the pieces that formed Pangaea started to break apart. When this happened, the gaps that opened between continents slowly formed the oceans we know today.

One of these gaps contains the Mid-Atlantic Ridge. The ridge is a volcanic mountain range located on a plate boundary in the middle of the Atlantic Ocean. Forming the current Atlantic Ocean, the plates on either side of the Mid-Atlantic Ridge have been moving apart slowly. At the same time, magma has been flowing out of the volcanoes to create new seafloor. This means the Atlantic Ocean has been getting larger by 2 to 5 centimeters per year. That's an average of about 2 inches a year. This adds up to millions of inches over the course of millions of years!

While the Atlantic Ocean is getting larger every year, the Pacific Ocean is actually getting smaller. There is a massive plate called the Pacific Plate that makes up most of the Pacific Ocean. The plate stretches from Asia on part of its western side to North America on part of its eastern side. Scientists have figured out that this plate grows on its eastern side, but it is destroyed when it goes under the plates on its western side. Calculations show that the plate is destroyed faster than it can grow, thereby reducing the size of the Pacific Ocean.

You can think of Pangaea as a big, completed jigsaw puzzle. Now imagine the puzzle breaking apart and spreading out. These puzzle pieces are the continents we now know, and they are part of different tectonic plates. As the plates moved, they carried the continents to the places we find them today. Take a look at South America and Africa. Don't they look like two puzzle pieces that used to fit together? The theory of Pangaea also suggests that present-day Canada, Spain, and the Sahara Desert were all once very close to each other and not separated by the Atlantic Ocean.

There is interesting evidence to support the theory of Pangaea. Scientists have found identical plants and animals on continents that are now very far apart; for example, fossils of a reptile that looked like a cross between a dog and snake, called Cynognathus, have been found in both South America and Africa.

Evidence is found in the rocks of these two continents too. Africa and South America are more than 1,500 miles apart today, but share very similar rock layers and patterns. These shared rock layers and patterns may indicate that the two continents (and their rocks) used to form a larger body of land.

Whether Pangaea existed or not, one thing is for sure: our planet is changing every day and it's because of the moving tectonic plates. The earth may be changing very slowly, but just imagine what it will look like in another 200 million years!

plate plate

Definition

noun

1. a flat, round dish for food.

I put a slice of cake on each plate.

Advanced Definition

noun

1. a flat, round dish from which food is served or eaten, or the food on such a dish.
2. objects made of gold, silver or other metals.
3. a thin sheet of metal.
4. an illustration or engraving in a book, often full-page and in color.
5. a flat piece of metal or other material that is engraved and used to make printed impressions, or the impression or picture made from this.
6. a support for artificial teeth; denture.

transitive verb

1. to cover (metal) with a thin layer of gold, silver, platinum, or the like, usu. by chemical methods.

Spanish cognate

plato: The Spanish word *plato* means plate.

These are some examples of how the word or forms of the word are used:

1. "In school we learned that the Earth's surface moves," said David, as they started walking again. "Because the Earth is made up of **plates**."
2. But when everyone left, the food was still there. Turkey. Mashed potatoes. Stuffing. Gravy. Everywhere! The counters were covered. Food invaded the fridge. I sat on Caroline and Stewart's **plates** for days and days.
3. Alex could smell eggs and cheese being transformed into omelets downstairs. He let the smell carry him out of bed and down to the table, where his father plopped down a huge **plate** of food, just for him.
4. In most ballparks, the right field fence is about 310 feet from home **plate**. In Sulphur Dell, it was only 262 feet- which made it very easy to hit home runs, if you hit the ball to just the right spot.
5. Humpback whales don't have sharp teeth like sharks. Instead, their mouths are filled with large **plates** of baleen.

tectonic

tec · ton · ic

Advanced Definition

adjective

1. of or pertaining to changes in the earth's crust.

   Geologists are interested in the movement of tectonic plates.

2. of or pertaining to building or construction.

Spanish cognate

tectónico: The Spanish word *tectónico* means tectonic.

These are some examples of how the word or forms of the word are used:

1. A volcano is a vent (rupture/crack) in the Earth through which molten (melted) magma and ash come out. Volcanoes occur at places where **tectonic** plates (under the Earth's surface) come together or move apart.
2. The High Plains aquifer was born from the action of wind, water, and a really big crash. About 65 million years ago, two **tectonic** plates began to collide along the western edge of North America, slowly pushing the Rocky Mountains high into the sky. Tectonic plates are enormous sections of Earth's rigid shell.
3. Some scientists think that hundreds of millions of years ago, the earth used to be made up of one giant continent that scientists today call Pangaea. According to a few theories, this super-continent broke up into the seven continents we know today after a series of **tectonic** rifts caused it to break apart, which triggered earthquakes.
4. "Do you know what a continent is?" she asked. Hideki did know. "North America is a continent -a big mass of land connected together," he said. "Good! Then pretend these smaller chips on top are continents. The continents are on top of bigger plates of earth under the ocean called **tectonic** plates. These plates are made of the Earth's crust and uppermost mantle."
5. Earthquakes are set off by the movement of **tectonic** plates, the enormous slabs of Earth's shell that intersect like pieces of a jigsaw puzzle. Tectonic plates are always in motion; on average, they move between 2.5 and 15 centimeters (1 and 6 inches) per year.
6. The islands that make up Indonesia are located along the Ring of Fire. That is an area along the edge of the Pacific Ocean where Earth's **tectonic** plates push against each other, often causing earthquakes and volcanoes. In parts of Indonesia, an average of five earthquakes with a magnitude greater than 5 occur each year.

Name: _____ **Date:** _____

1. What are tectonic plates made up of?

A. magma and solid mantle

B. crust and magma

C. crust and solid mantle

D. solid rock and molten rock

2. What does the author compare tectonic plates to?

A. large kitchen tiles

B. a layer of hot magma

C. the Rocky Mountains

D. a very large collision

3. The Atlantic Ocean and Pacific Ocean are different sizes than they used to be. What evidence from the passage supports this conclusion?

A. Each year the Atlantic Ocean gets larger and the Pacific Ocean gets smaller.

B. The supercontinent Pangaea on Earth was formed about 300 million years ago.

C. The Mid-Atlantic ridge is a plate boundary that is a part of the Atlantic Ocean.

D. Scientists see that South America and Africa have similar rock layers and patterns.

4. Read the following sentences: "When tectonic plates move, they move very slowly. Some plates move as fast as fingernails grow, while others move a little slower."

Based on these sentences, what conclusion can be made about the movement of tectonic plates?

A. Tectonic plates always move at the exact same slow speed.

B. Tectonic plates move slowly at different speeds.

C. All tectonic plates always move at the same fast speed.

D. Scientists do not agree on the speed that tectonic plates move.

5. What is this passage mainly about?

A. the island chain of Hawaii

B. fossils of the Cynognathus

C. the size of the Rocky Mountains

D. how tectonic plates impact the earth

6. The author begins the passage by asking several questions. Why does the author begin the passage that way?

A. The author could not decide which question he should answer later in the passage.

B. The author wants the readers to give the answers to all of the questions he provides.

C. The author wants to ask questions that no one will be able to answer.

D. The author wants to introduce the questions that will be answered later in the passage.

7. Choose the answer below that best completes the sentence.

_____ South America and Africa are now more than 1,500 miles apart, scientists believe they were once much closer together.

A. Meanwhile

B. Although

C. Including

D. Especially

8. What are plate boundaries?

9. List the events that can occur and features that can format plate boundaries.

10. Describe different ways that tectonic plates may continue to change the earth. Use evidence from the passage to support your answer.

What Happens When It Rains?

by Vinnie Rotondaro

The next time you see storm clouds off in the distance, stop what you're doing if you're able, and take a look outside.

Try to spot some dirt. If you're in the city, look for a flower-bed along the sidewalk. If you're in the suburbs, look out onto your backyard. If you're in the countryside, just look out any-old-where.

You can see the flashes of lightning. You can hear the bursts of thunder. Pretty soon, it starts - the pitter-patter of the rain hitting the leaves, and the ground and the roof above your head. The storm cloud nears. The rain falls harder. Now look back at that dirt.

It's turning into mud. Maybe you can't see it so well if there's grass on top, but wait till the rain

stops, then go outside and stick your finger into it if you have any doubts. You'll see. It's wet, squishy, and it's moving all around. It's mud.

Before it rains, a flower bed or tree bed might be bumpy and craggy, with clumps of dry soil. But give it a few minutes in the rainstorm, let it turn into mud. It'll even out. Your backyard might have a hole in the ground. If it rains hard enough, that hole might not be there too long. It might fill up with water and soil. And out in the country, out where there's dirt everywhere, the whole landscape can change. Over a very long time, mountains can wear down and ravines can fill up with rocks and soil. And there's a name for this process.

It's called erosion. Erosion is when rocks and soil of the earth's surface are moved to other locations after having been broken into smaller and smaller pieces by wind or water flow.

It is a good thing that it rains, even though it means we can't play outside sometimes. Every living thing on the planet needs water to survive, and many animals rely on the rain for their drinking water.

Some birds rely on the rain to make puddles for their drinking water. But get this... Birds also rely on the rain for their food. Have you ever noticed that when it rains and the ground gets muddy, earthworms start to come out? Earthworms like being wet and stay deep down in the ground when it's not raining because there is more moisture down there. In fact, they wouldn't come up to the surface when it's not raining because the soil near the surface is too dry for them. But when it rains, earthworms wiggle their way up, through the mud and water. They move around on the surface to another location. And that's precisely when the birds swoop down to feast.

Rain benefits many animals, and it plays a role in changing the surface of the earth. Maybe during the next rainstorm, you can spot a bird swooping down to get some earthworms; or maybe after years of rainstorms, you can see a change in the landscape from the rain.

erosion e · ro · sion

Advanced Definition

noun

1. the process or condition of eroding.
2. the process by which material from the earth's surface is worn away by forces such as glaciers, wind, and water.

Spanish cognate

erosión: The Spanish word *erosión* means erosion.

landscape land · scape

Definition

noun

1. the land and sky that you can see from one point.

When you look out her window, you can see a beautiful landscape.

verb

1. to change a piece of land by doing such things as planting trees, bushes, or other plants and changing the shape of the surface.

They will landscape the yard by making it flat and planting trees.

Advanced Definition

noun

1. a stretch of scenery, usu. rural, that is visible from one viewpoint.
2. a pictorial representation of such a view.
3. the branch of art comprising such representations.

transitive verb

1. to alter the appearance of a piece of land by changing its contours, planting trees and shrubs, and the like.

intransitive verb

1. to design land alterations and plantings as a profession.

These are some examples of how the word or forms of the word are used:

1. Powell was an explorer and a scientist. He wanted to understand the natural conditions that formed the **landscape** of the American West.
2. The flag also symbolizes the lush **landscape** of Brazil. Brazil also has beautiful natural resources. The blue sphere around the stars in the flag resembles the bright blue sky over Brazil.
3. Miguel ran to the window. Even though it was only four o'clock, the sky had turned black. Hail hit the roof and the front yard. Every few seconds, lightning lit up the **landscape**.
4. He is known for his dramatic photographs of the West. He took large black and white pictures of **landscapes**, mostly at Yosemite National Park in California. His photographs of mountains, rivers, and forests are shown all over.

5. **Landscape** paintings are just as they sound. They are paintings of a piece of land. The land depicted in landscapes is usually an area that is very important to the artist. It could be a painting of their childhood home. It could be a beautiful vacation spot. It could also be a significant landmark like the Grand Canyon or the Hudson River.
6. Conditions in the refugee camps are bleak. Tents and mud huts are clustered as far as the eye can see. The scorching sun beats down on the desert **landscape**, pushing the temperature as high as 122 degrees Fahrenheit.
7. When architects design homes, they consider many things. They might consider the family who will live in the home. They might consider how the home fits in with the rest of the buildings in the neighborhood. In the countryside, architects might think about how the home blends in with the **landscape**.

rely re · ly

Definition

verb

1. to trust or depend on someone or something.

   Her boss relies on her to lock the office at night.

   The president relies on many advisors.

Advanced Definition

intransitive verb

1. to trust or depend (usu. fol. by on or upon).

   After her accident, she had to rely on her family to take care of her.

   I hope I can rely on your confidentiality in this matter.

   I need a baby sitter that I can really rely on.

These are some examples of how the word or forms of the word are used:

1. While the reef is important to ocean life, it helps humans, too. People **rely** on the reef for both food and jobs.
2. Sunrise, sunset. It's nice to know we can **rely** on the sun to come up in the morning and go down at night.
3. The middle class quickly realized that a good education was very important in order to survive. They couldn't **rely** on inherited wealth like the very rich or nobility.
4. Mrs. Murphy chimed in. "But we didn't have computers back then, so we had to go to the library every day to do research!" She explained that they didn't have online search engines to help them with their work; they could only **rely** on books.

Name: _____ **Date:** _____

1. What does every living thing on the planet need to survive?

A. erosion

B. mud

C. water

D. thunder

2. The writer explains different effects of rain. How does rain help cause erosion of the ground?

A. Earthworms start to come out of the ground when the ground gets muddy after it rains.

B. Heavy rain fills up bird nests.

C. Rain helps break down soil and rocks into small pieces that are then moved to another location.

D. Soil may be dry before a rainfall.

3. Rain is important to birds, earthworms, and humans.

What evidence from the text best supports this conclusion?

A. Birds rely on the rain to make puddles for drinking water.

B. Before it rains, a flower bed or tree bed might be filled with clumps of dry soil.

C. Over a very long time, mountains can wear down and ravines can fill up with rocks and soil.

D. Every living thing on the planet needs water to survive.

4. What would happen to birds if it didn't rain for a long time?

A. Birds would be scared of bursts of thunder.

B. Birds would stop flying altogether.

C. Birds would likely be thirsty and hungry.

D. Earthworms would start eating birds.

ReadWorks® What Happens When It Rains? - Comprehension Questions

5. What is this passage mostly about?

A. how holes in the ground fill up with soil when it rains

B. why birds like rainwater

C. how rain affects the landscape and animals of the environment

D. how to find mud in a flower-bed

6. Read the following sentence: "Before it rains, a flower bed or tree bed might be bumpy and **craggy**, with clumps of dry soil."

The word"**craggy**" most nearly means

A. smooth

B. uneven

C. wet

D. soft

7. Choose the answer that best completes the sentence below.

_____ we might not be able to play outside when it rains, rain is a good thing.

A. Although

B. On the other hand

C. Finally

D. For example

8. Without rain, animals would not survive.

Use evidence from the passage to support this statement.

9. How can erosion change a landscape over time?

10. After a rainstorm we can see how water is important to the landscape and the animals that live there. Describe some ways the water left by the rain impacts the landscape and animals.

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Preparing for a Disaster

by Megan McGibney

Some disasters cannot be stopped. These disasters include earthquakes and tornadoes. Tornadoes ruin whatever is in their path. They can destroy houses and other buildings. Earthquakes have a wider range of intensity-some are so small that no one even notices them, except for the people checking earthquake monitoring equipment. Others have leveled cities. It is very hard to deal with these disasters, and it can take a very long time for life to get back to normal.

Because earthquakes and tornadoes are forces of nature, people have to deal with them as they come. The time or intensity of an earthquake cannot usually be predicted. Tornadoes form when the right conditions are met, so a warning would be given once the conditions are detected. But there is still very little time to get ready once a tornado warning is issued. That's why planning for disaster ahead of time is so important. With proper preparation, we can minimize the disaster's impact.

Earthquakes cannot be reliably predicted. While volcanic activity sometimes triggers earthquakes, many other earthquakes happen without warning. Fortunately, we do know the areas where earthquakes are most likely to occur. The people who live in these places, such as California, Japan, or Italy, know what to do when the ground begins to shake. If they are indoors, they will get away from windows and exterior walls and take cover under a desk or table. If there is no desk around, they can stand against an interior wall, that is, a wall whose other side is not the outside of the building. It is important to take cover in an area that is safe

from potential falling objects, such as wall decor, appliances, or furniture. As you can see, people who live in an earthquake territory need to be very aware of their surroundings.

If people are outside during an earthquake, it is best to get into an open spot. They should get away from buildings, power lines, and anything else that may fall and hurt them. Electrical lines which have already fallen are also dangerous-they may be capable of electrocuting people!

Earthquakes can be incredibly destructive, even if they do not last very long. The majority last less than a minute, but there are often aftershocks-smaller earthquakes that occur minutes or hours after the first one. Of course, it all depends on the size of the quake; most are small and don't have much impact. But the big ones can wreak havoc, especially if the area is not prepared. In places where earthquakes often strike, there are strict codes for buildings with the goal that earthquakes would not cause serious damage. These buildings must be built in such a way that they likely would not fall apart as a result of a big quake. Places like Japan and California have much stricter building codes than places without such a high earthquake risk. But even these rigorous codes sometimes fail to protect people; the disastrous 1995 Great Hanshin-Awaji Earthquake destroyed the city of Kobe, Japan, and killed over 5,500 people.

Knowing what to do when earthquakes happen usually saves lives. The same goes for tornadoes. While some places get tornadoes more than others, it is not easy to predict them. There may be warnings that they will happen, but tornadoes cannot be predicted in the same way rainstorms can, days before they happen.

In order to be safe when a tornado does strike, people must already know where they will find shelter. Families and schools must have tornado drills and discuss where to go once a tornado has been spotted. The best place to go to is a basement. If there is no basement, then people should go into hallways or rooms with no windows on the ground floor. Tornadoes can be strong enough to break windows, which can injure anyone nearby. Even after finding shelter in a basement or windowless room, people should cover themselves with a mattress or other padding in case the tornado damages the ceiling and debris falls through.

People who are outdoors when a tornado hits should seek shelter in a building. If that isn't possible, they must lie flat on low ground away from vehicles, trees, or anything else the tornado might fling about. As with an earthquake, it is important to protect one's head and neck by covering them with one's arms. One of the worst places to be during a tornado is in a car, truck, or bus, because those can easily be thrown around, or simply hit with other flying debris. Tornadoes are very powerful and can even move trailer homes. Anyone in a mobile home during a tornado should leave and seek shelter elsewhere immediately.

Just as places with earthquakes have special building codes, places plagued by tornadoes often have building codes designed to protect buildings from strong winds. People can also build extra-strong safe rooms to weather the storm in. But often nothing can stop this natural disaster from doing a lot of damage.

Although scientists are trying to find better ways to predict these two natural disasters, it is still very hard to know exactly when they will hit and how much damage they will do. In the meantime, people must always be aware that an earthquake or tornado can happen without warning. The important thing is to be prepared and take precautions to stay safe from harm. Buildings can be restored, but lives cannot.

damage dam · age

Definition

noun

1. harm or injury that makes something less useful or valuable.

   The storm caused damage to many houses.

verb

1. to harm or injure.

   Insects damaged the crops.

   The movers damaged some furniture.

Advanced Definition

noun

1. harm or injury that reduces usefulness, value, or soundness.

   Damage to crops caused by insects raised the price of bread and flour.

   The accident caused a lot of damage to our car.

   They will have to pay for the damage they did to our front window.

2. (pl.) in law, money claimed or paid as compensation for injury or loss.

   He sued for $10,000 in damages.

transitive verb

1. to harm or injure; cause loss of usefulness, value, or soundness.

   Lies in the press damaged her reputation.

   Smoking damages your lungs.

   The flood damaged all these wonderful old buildings.

intransitive verb

1. to become harmed or injured.

   A flimsy airplane damages easily.

These are some examples of how the word or forms of the word are used:

1. The ancient paintings must be treated with care so they're not **damaged**.
2. A pesticide is a chemical designed to kill insects and other pests that **damage** plants and crops.
3. Over time, constant stress from anxiety can **damage** your health, says Elizabeth Carll, a psychologist in Huntington, N.Y.
4. On Earth, every time you run or pick up a heavy object, your bones experience tiny amounts of **damage**.
5. When brain cells are lost, dementia (dih-MEN-shuh) is the result. Bleeding or blood clots in the brain can also cause this **damage**.
6. A group of Japanese planes had orders to bomb the Nevada, which was docked at the northern end of Battleship Row, east of Ford Island. The Nevada was docked near the USS Arizona, which was heavily **damaged** in the attack.
7. Coral reefs around the world are in trouble. Fishing nets and ships **damage** the reefs and break off sections of them.
8. Exotic creatures, such as pet tigers, can be dangerous to people. Many foreign animals **damage** the environment. Pythons, for example, dine on the local wildlife.
9. Many kids will spend hours playing outside in the summer sun. Be careful, though. The sun's harmful rays can cause **damage** to your skin and eyes.
10. Earth Day was started by a man named Gaylord Nelson. Nelson was a United States senator from Wisconsin. He was worried about the **damage** being done to the planet.

destroy de · stroy

Definition

verb

1. to damage something so that it cannot be fixed.

   Their barn was destroyed by a fire.

Advanced Definition

transitive verb

1. to damage beyond repair; ruin.

   Most of the city was destroyed by the bombings.

   The fire destroyed the entire building.

2. to put an end to.

   Losing in the first round destroyed her dream of winning the championship.

3. to kill.

   Many animals in shelters eventually have to be destroyed.

4. to make useless.

   Renewed incidents of violence destroyed recent efforts being made toward peace.

intransitive verb

1. to be destructive; harm or ruin.

   He has the power to create or to destroy.

Spanish cognate

destruir: The Spanish word *destruir* means destroy.

These are some examples of how the word or forms of the word are used:

1. Fires are scary and dangerous. They hurt and **destroy** things in your home. And they spread quickly.

2. At this point, Magellan was down to three ships. One had been **destroyed** by a winter storm.
3. The soil loses all of its nutrients and turns sandy. Wind continues the process, **destroying** the rest of the grass roots.
4. For instance, sometimes the earth cracks up, slides and slips. The very hot matter inside it oozes out on the surface. Strong waves of water **destroy** everything in their way.
5. On Jan. 17, 1995, an earthquake struck in Kobe, Japan. It caused over 6,000 deaths. In 1906, a huge earthquake hit San Francisco, killing over 3,000 people and **destroying** over 25,000 buildings
6. People are **destroying** the Amazon. Each year, farmers and loggers cut down rain forest trees to make room for farms, homes, and roads. Scientists have recently discovered that the Amazon is shrinking twice as quickly as they once thought.
7. Yeoman and most other scientists say you shouldn't worry too much about asteroids. Most don't think a space rock will pose a threat in the near future. If an asteroid does come near Earth, scientists might be able to **destroy** it.
8. Most tornadoes last fewer than 15 minutes. During that time, a twister can travel across a large area of land and **destroy** everything in its path.

impact im · pact

Definition

noun

1. the coming together of objects with great force.

   The impact of the bus against the tree cracked the windshield.

2. a strong and powerful effect.

   The senator's speech on gun control had a great impact on voters.

Advanced Definition

noun

1. a forceful coming together of two objects or bodies.

   The impact of the crash was strong enough to shake the building.

2. effect or influence.

   His stirring speech had a great impact on the audience.

   My professor's impact on my thinking was deep and lasting.

transitive verb

1. to force or press closely into something.

   Here is where the meteorite impacted the earth.

2. to affect directly.

   The scientists are studying how the dam has impacted the ecosystem of the river.

   The tragedy has impacted all our lives.

Spanish cognate

impacto: The Spanish word *impacto* means impact.

These are some examples of how the word or forms of the word are used:

1. "If the virus becomes highly contagious among humans, the health **impact** in terms of deaths

and sickness will be enormous," says Dr. Shigeru Omi.

2. Using renewable energy is a good way to reduce our dependence on fossil fuels, though renewable energies have some negative **impacts** on the earth as well.

3. Some drugs are grown or manufactured in the United States. But just because they're not connected to terrorism or trafficking doesn't mean they don't have a harmful **impact** on society. Drug users are more likely to commit crimes such as theft or assault. And drug-related gang rivalries contribute to violence in cities across the country.

4. The collisions leave lasting impressions. Nearly every rocky body in the solar system has an odd feature that can be explained by a crash, says Stewart. **Impacts** happen elsewhere in the universe too. Many exoplanets (planets that exist outside our solar system) are surrounded by telltale dust clouds that could have been caused only by collisions, she notes.

5. Although the friend and a third teen walked away, Bollier, now 27, wasn't so lucky. The**impact** not only crushed his jaw, nose, and right eye but also snapped his neck, leaving him paralyzed from the neck down.

6. Energy usage is another environmental issue. Local foods travel a shorter distance to market, so less fuel is required to deliver the food. However, notes Chin, the type of transportation matters. For a 100-mile trip, for instance, a typical pickup truck uses more than 10 times the fuel per pound carried than a full semitrailer. Farming practices, water usage, and other factors affect foods' environmental **impact** too.

7. Human activity can have a negative **impact** on the environment. Humans destroy the habitats of animals and plants when they build cities and cut down forests. When people burn oil, coal, and natural gas, they can also change the climate.

8. Elsewhere on the track, two other cars careen toward each other. When they crash, both bumper cars reverse course. They bounce backward, away from the point o**fmpact**. One driver's head is knocked sideways, but these mini crashes are all fun. No one is hurt and no one is crying.

Name: _____ **Date:** _____

1. What types of natural disasters are discussed in this passage?

A. earthquakes and floods

B. earthquakes and tornadoes

C. tornadoes and floods

D. tornadoes and hurricanes

2. Which of the following is explained in the text?

A. what causes earthquakes

B. what causes tornadoes

C. how to stay safe during a tornado

D. where tornadoes come from

3. During an earthquake, people indoors take shelter under desks, cover their head and neck, or stand against walls without heavy objects on them. These actions suggest that during an earthquake there is a danger of what?

A. cars, trucks, and buses being thrown around

B. trailer homes getting picked up and moved

C. heavy objects falling and hurting people

D. a rainstorm happening at the same time

4. Earthquakes and tornadoes can be described as all of the following EXCEPT

A. dangerous

B. powerful

C. difficult to predict

D. impossible to prepare for

5. The main purpose of this passage is

A. to explain why and how to prepare for earthquakes and tornadoes

B. to describe how tornadoes form and where they are likely to happen

C. to prove that earthquakes cause more damage than tornadoes

D. to warn people about the risks of living in places like California, Japan, and Italy

6. Read the following sentence: "Although scientists are trying to find ways to **predict** these two natural disasters, it is still very hard to know when exactly they will hit and how much damage they will cause."

What is the meaning of the word **predict** in this sentence?

A. to prevent something from doing damage

B. to study something until it is completely understood

C. to ignore something until it goes away on its own

D. to tell ahead of time when something is going to happen

7. Choose the answer that best completes the sentence below.

Earthquakes cannot be predicted; _____, they can be prepared for.

A. for example

B. however

C. therefore

D. particularly

8. Being inside a car, truck, bus, or trailer home during a tornado is dangerous.

What evidence from the passage supports this statement?

9. According to the passage, what are two things people should do during an earthquake?

10. Explain how preparing for earthquakes and tornadoes could minimize the damage from these two natural disasters. Support your answer with information from the passage.

Stargazing

by ReadWorks

After the sun sets, take a look at the night sky. On a clear night, you'll be able to see stars scattered across the black expanse that we call our universe. If you're lucky, you might be able to spot some stars that look bigger than others-they shine brighter and attract our attention more than their smaller neighbors do. You might wonder: why are some stars brighter than others?

After much observation, scientists discovered the way stars appear to us depends on more than their actual size-it's also about how far they are from us. Therefore, the farther a star is from Earth, the smaller it will appear to us. The closer it is, the bigger it will look.

Try to think of the biggest star you've seen in the sky. An easy one, right? The sun! That's because the sun is closest to us compared to all other stars, located at just a short 150 million kilometers from Earth.

The next one? That's a tougher question. Many people answer Alpha Centauri, but some don't know that it's actually a cluster of three stars-Alpha Centauri A, Alpha Centauri B, and Proxima Centauri. Proxima Centauri is 4.24 light-years away and closest to our sun. A light-year is the distance that light travels in one year. We use this measurement because light is the only thing in the universe that maintains a constant speed. However, even though

Proxima Centauri is the closest star to the earth after the sun, you can only see it with a very powerful telescope. That doesn't make sense-didn't we just say that closer stars appear larger and more visible?

Well, Proxima Centauri is what we call a red dwarf. Red dwarf stars are very small, typically having less than half the mass of the sun. That means they generate less energy than the sun. Most stars burn hydrogen for fuel. Similar to the way a car uses gas for power, a star uses hydrogen for energy. Red dwarfs burn hydrogen very slowly, which means they generate little light compared to stars like the sun.

Proxima Centauri is the closest star after the sun, but that doesn't necessarily mean it's what we consider close in our minds. To completely understand how far away this star is, let's think about traveling 4.24 light-years away. NASA has built one of the fastest spacecrafts in existence, called New Horizons, which travels at about 60,000 kilometers per hour. Even at this speed, it would take the spacecraft 78,000 years to reach Proxima Centauri from Earth.

Sadly, the first few closest stars are not visible to the naked eye at night, which means we can't see them while we're stargazing from our homes or backyards. The closest star we can see at night is called Sirius, or the Dog Star. While Proxima Centauri is only 4.24 light-years away, Sirius is 8.6 light-years away. However, since Sirius is so large (almost twice the size of the sun), we can see it in the night sky.

So go outside and see what you can find up there!

generate gen · er · ate

Advanced Definition

transitive verb

1. to cause to be brought into being.

   The human body generates heat.

   The farm uses a windmill to generate its own electricity.

   The news generated a great deal of excitement.

   Establishment of the factory will generate more jobs in the area.

   The lottery generates significant revenue for the state.

2. to beget (offspring).

   Laboratory mice exposed to the chemicals were no longer capable of generating offspring.

Spanish cognate

generar: The Spanish word *generar* means generate.

These are some examples of how the word or forms of the word are used:

1. After surviving a roller coaster, most riders would say they just had a thrilling ride. Some would mention how scary it was. Some wouldn't say anything as they focused on racing back to the end of the line, ready to wait 50 minutes for another chance to feel like their stomach was in their mouth. But how many riders would mention the great application of potential energy to **generate** a massive amount of kinetic energy with the sole intention of delivering an exhilarating two-minute roller coaster ride?
2. A parachute, which slows the skydivers fall by creating air resistance, is required to reduce the kinetic energy the skydiver **generates** as he falls.
3. The energy from the battery also goes up to the dashboard to make the radio and lights work, and charge your mobile phone. Anything that uses electricity in the car relies on the engine to **generate** that electricity.

mass mass

Definition

noun

1. a body of matter that has no form.

   He took a mass of clay and made it into a pot.

2. weight.

   The mass of this brick is greater than the mass of that book.

adjective

1. having to do with large numbers of people.

   TV is a form of mass communication.

Advanced Definition

noun

1. a large unspecified amount or number.

   a mass of people in the hall

2. a body of relatively formless matter, often of a large size.

   a mass of wet clay

3. the greater part of anything.

   The mass of the members wanted free elections.

4. in physics, the quality of a body that determines its resistance to acceleration.
5. size or bulk.
6. (pl.) the total body of common people (usu. prec. by the).

adjective

1. pertaining to that which characterizes or affects the masses or large numbers of people.

   mass culture

   mass communication

   mass paranoia

intransitive verb

1. to merge together to form a mass.

The people massed in front of the governor's door.

transitive verb

1. to assemble or group into a mass.

These are some examples of how the word or forms of the word are used:

1. A glacier is a huge **mass** of ice that slowly moves.
2. The word "Christmas" comes from old English words that mean "**mass** of Christ."
3. The giant **mass** of wet soil moved downhill quickly. It eventually covered thirty nearby houses with mud and dirt.
4. It is anything that takes up space and has **mass**. Mass is a measure of how much matter is in an object.
5. Momentum, the quantity of motion in a moving object, is determined by an object's **mass** and its velocity. Most of the time, it's against the rules to hit things.
6. The tiny ball has very little **mass**, but the boy's fast swing sends it off the table entirely. In this case, the boy is giving the ball too much momentum.
7. Imagine watching hundreds of thousands of bats swirl around you, swarming to form a large, black **mass** that flies off into the horizon. At Carlsbad Caverns in New Mexico, this scene is a regular occurrence.

visible vis · i · ble

Definition

adjective

1. able to be seen.

The skyscraper is visible from across the river.

Advanced Definition

adjective

1. able to be seen; perceptible through sight.

Things are visible to certain animals at night that are not visible to humans.

On a clear day, the mountains are visible from the city.

2. obvious; manifest.

There has been no visible change in the patient's condition.

Is there any visible difference between the original and the copy?

Spanish cognate

visible: The Spanish word *visible* means visible.

These are some examples of how the word or forms of the word are used:

1. At night a large, bright city like Houston is even **visible** from outer space!
2. Electromagnetic waves come in a wide variety of types: they could be infrared, **visible** light, UV or radio waves.
3. The human eye can detect only a very narrow range of **visible** radiation, which we see as light bouncing off objects.
4. The fossils that were discovered deep in the earth (after earthquakes made them **visible**) gave scientists clues as to what Earth may have looked like.
5. Today, New York's Empire State Building is one of the most famous structures in the world. It stands hundreds of feet taller than the skyscrapers that surround it, and is **visible** from far away in Long Island and New Jersey.
6. We can easily see liquids and solids around us, but most gases aren't **visible**. We can't see the air around us, but it is still made of atoms that constantly move around freely in space.

7. Erosion is an example of a slow process that changes the surface of the earth. Think of a windy beach, how sand from the beach is carried toward the dunes or, depending on the behavior of the wind, how the sand from the dunes is carried further down the beach. We can see and feel the sand moving over the land and through the air, but the long-term effects of that movement won't be **visible** for years.

8. If you walk down the street in many big cities in the United States, you might notice people sleeping on the sidewalk or begging for food or money. These individuals are very **visible** to passersby, and it is difficult to ignore them.

9. The skin and wings of the peppered moths had changed color and become almost completely black! What caused this change was the fact that predators had eaten a lot of the gray-colored moths because the moths were clearly **visible** on the black-colored trees.

10. The Campanile, also known as the Sather Tower, is a bell tower and clock tower at the University of California in Berkeley (UC Berkeley). Standing at 307 feet, it is the third tallest bell tower in the world and is **visible** throughout Berkeley-and beyond.

Name: _____ **Date:** _____

1. What affects how big a star appears to be?

A. a star's distance from Earth

B. the speed of NASA's fastest spacecraft

C. what a car uses for power

D. the name of the star

2. A large star shining brightly in the sky is an effect. What could be a cause?

A. The star is burning hydrogen very slowly.

B. The star is far away from Earth.

C. The star is close to Earth.

D. The star is less than half as big as Proxima Centauri.

3. The sun is closer to Earth than any other star.

What evidence from the passage supports this statement?

A. A light year is the distance that light travels in one year.

B. Alpha Centauri is a cluster of three stars.

C. Sirius and the sun can be seen without a telescope.

D. The sun appears bigger than any other star.

4. Why do you need a telescope to see Proxima Centauri?

A. Proxima Centuari burns hydrogen for energy.

B. Proxima Centauri is too small to be seen without a telescope.

C. Proxima Centauri is too close to Earth to be seen without a telescope.

D. Proxima Centauri is too close to the sun to be seen without a telescope.

5. What is this passage mainly about?

A. why Sirius is known as the Dog Star

B. why some stars appear larger than others in the sky

C. the difference between a light year and a year on Earth

D. the New Horizons spacecraft built by NASA

6. Read the following sentence: "Sadly, the first few closest stars are not visible to **the naked eye** at night, which means we can't see them while we're stargazing from our homes or backyards."

What does the phrase **the naked eye** mean in the sentence above?

A. what people see when they shut their eyes

B. an eye that cannot see as well as it used to

C. a patch worn over an eye to protect it from very bright light

D. eyesight without the help of glasses, telescopes, or other items

7. Choose the answer that best completes the sentence below.

Proxima Centauri is a red dwarf star; _____, it does not generate as much light as the sun.

A. most importantly

B. before

C. including

D. consequently

8. Why can Sirius be seen in the night sky?

9. Which would probably generate more light: a star that burns hydrogen quickly or a star that burns hydrogen slowly?

10. Imagine that you are looking at two stars in the night sky. The second star appears brighter than the first star. Name at least two reasons from the passage that the second star might appear brighter.