

Dear Future 7th Graders,

Congratulations on completing another school year! As you embark on your summer break, I wanted to introduce you to a wonderful book that will not only entertain you but also teach you valuable lessons about empathy, friendship, and the power of believing in yourself. That book is "Fish In a Tree" by Lynda Mullaly Hunt.

In "Fish In a Tree," you'll meet Ally, a young girl who struggles with dyslexia. Despite her intelligence and creativity, she faces challenges in school because she learns differently from her classmates. Throughout the story, Ally learns to embrace her differences and discovers that she is capable of achieving great things with the help of supportive friends and mentors.

As you read this book, I encourage you to reflect on the themes of understanding, acceptance, and resilience. Think about times when you felt like you didn't fit in or faced obstacles that seemed insurmountable. How did you overcome those challenges? What lessons can you learn from Ally's journey?

Additionally, consider the importance of empathy and kindness towards others who may be struggling. Just as Ally finds strength in the support of her friends and teachers, you have the power to make a positive difference in the lives of those around you by offering support and encouragement.

I hope "Fish In a Tree" sparks meaningful discussions and reflections for you over the summer. Remember, reading is not just about words on a page; it's about exploring new perspectives, expanding your horizons, and discovering the beauty of storytelling.

Enjoy your summer reading adventure, and I look forward to hearing your thoughts on the book when you return for the new school year.

Besides reading "Fish In a Tree," there is also a requirement of practicing your ELA skills so they do not get rusty during the summer. The summer packet will review what you have learned

in ELA. It will be graded to reveal which areas we need to focus on and improve. Use the checklist below to keep track of your progress.

1. _____ Read "Fish In a Tree" by Lynda Mullaly Hunt.
2. _____ Type (preferred) or neatly write your answers to all of the discussion questions for "Fish In a Tree" follow the directions at the start of the questions. In case you loose that page, the directions are as followed: After reading the assigned chapters for the week, please answer the coordinating questions. Each question **MUST** be answered in complete sentences and you **MUST** provide the page number in which your answer can be found.
3. _____ Make flashcards and memorize the Literary Elements checklist (included). You will hand in your flashcards and be assessed the first week of school.
4. _____ Complete the grammar worksheets on subjects, run-on sentences, fragments, nouns, verbs, and adverbs. You will have a grammar assessment the first week of school.
5. _____ Memorize the spelling list and commonly confused words list (Included). These are words you should already know before entering 7th grade. You will have a test on these words the first week of school.
6. _____ Read as many books as you can to build your fluency, endurance, and comprehension.

Warm regards,

Sara Zask

Follow the suggested planning calendar to avoid feeling overwhelmed with the skills review practice.

Suggested Planning:

Sure, here's a reading schedule to finish a book with 51 chapters in 8 weeks:

Week 1: 1) Read Chapters 1-7. Then, answer the questions. 2) Complete the first 6 grammar worksheets in order to practice identifying subjects, fragments, run-ons, nouns, verbs, adjectives, and adverbs.

Week 2: 1) Read Chapters 8-14. Then, answer the questions. 2) Complete the next 6 grammar worksheets in order to practice identifying subjects, fragments, run-ons, nouns, verbs, adjectives, and adverbs.

Week 3: Read Chapters 15-21. Then answer the questions. 2) Complete the next 6 grammar worksheets in order to practice identifying subjects, fragments, run-ons, nouns, verbs, adjectives, and adverbs. 3) Make flashcards for the literary elements and devices.

Week 4: Read Chapters 22-28. Then answer the questions. 2) Complete the next 6 grammar worksheets in order to practice identifying subjects, fragments, run-ons, nouns, verbs, adjectives, and adverbs. 3) Study your flashcards for at least 20 minutes.

Week 5: Read Chapters 29-35. Then answer the questions. 2) Complete the next 6 grammar worksheets in order to practice identifying subjects, fragments, run-ons, nouns, verbs, adjectives, and adverbs. 3) Study your flashcards for at least 20 minutes.

Week 6: Read Chapters 36-42. Then answer the questions. 2) Study your flashcards for at least 20 minutes. 3) Practice writing all the spelling words and commonly confused words.

Week 7: Read Chapters 43-49. Then answer the questions. 2) Study your flashcards for at least 20 minutes. 3) Practice writing all the spelling words and commonly confused words.

Week 8: Read Chapters 50-51 (End of Book). Then answer the questions. 2) Study your flashcards for at least 20 minutes. 3) Practice writing all the spelling words and commonly confused words.

This schedule breaks the book into approximately equal parts, allowing you to read about 6-7 chapters per week. Adjust as needed based on your reading speed and preferences!

Directions: After reading the assigned chapters for the week, please answer the coordinating questions. Each question MUST be answered in complete sentences and you MUST provide the page number in which your answer can be found.

Example:

What is the title of the book?

The title of the book is Fish In a Tree. This information can be found on the cover page.

1. Who is the author of Fish in a Tree?
2. What was Ally Nickerson's teacher's name?
3. What shirt did Albert wear every day?
4. What did Ally like to do a lot?
5. How many schools had Ally attended in seven years?
6. What problems did Ally have with reading and writing?
7. What was the name of the principal at Ally's school?
8. What one word did Ally Nickerson write over and over on her paper? Why?
9. What did Jessica's dad do for work?
10. What book character did Ally dress up as for Halloween?
11. Why did Ally love the book, Alice in Wonderland?
12. What did Suki have a collection of at school that she held when she was nervous?
13. Why did Ally get in trouble for the card she gave to Mrs. Hall before she left on maternity leave?
14. Why did Ally give Mrs. Hall the sympathy card?
15. In what grade was Ally?
16. What did Ally name the book she drew pictures in?
17. What did Ally think was the craziest, strangest, most unbelievable thing she could ever draw?
18. Why didn't Ally admit she didn't know the card she gave to Mrs. Hall was a sympathy card?
19. What was the name of the substitute for Mrs. Hall?
20. What restaurant did Ally's mom work in? On what street was A.C. Petersen Farms restaurant?
21. Why did Ally and her family move around so much?
22. What animal did Ally mistakenly call macaroni?

23. How fast can a manatee swim?
24. What was Ally's brother's name?
25. What did Ally's grandpa and dad ask her and
26. Travis about the day they were having?
27. What did Travis want to name his own shop?
28. What did Ally name her imaginary pet llama?
29. What were Travis and Ally both good at in school?
30. What did Ally's grandpa and dad take her and Travis to look for?
31. What special coins did the Nickersons sometimes find in coin shops?
32. What did Travis do when he was nervous?
33. What did Travis do at the coin shop that his dad told him never to do?
34. What kind of coins did Travis want to buy?
35. What did the coin store man tell Travis about the penny he tried to sell to Travis for 75
dollars?
36. Why was the penny smaller than normal pennies?
37. What coin did Travis buy for \$40?
38. What coin did Travis buy for Ally?
39. What was Travis's Dad's rule for buying coins?
40. Why did Travis choose the Walking Liberty half dollar and Mercury dime to buy?
41. What did Travis say you could do if people had low expectations of you?
42. What was on Mr. Daniels' tie the day Ally first met him?
43. What did Alberts hair remind Ally of?
44. What did Mr. Daniels call his students?
45. What math game did Mr. Daniels do with his students?
46. What excuse did Ally give for not liking to write?
47. What room number was Mr. Daniels' room?

48. What was Shay's horse's name?
49. What did Jessica share with the class to represent herself?
50. Why did Oliver bring a lightbulb to share with the class?
51. What did Oliver say he was going to sell when he grew up?
52. What is a mixture of two parts hydrogen and one part oxygen molecules?
53. What did Keisha Almond bring to share with the class?
54. What did Keisha Almond want to do when she grew up?
55. What was special about Keisha's cupcakes?
56. What was Keisha's slogan going to be for her bakery?
57. What two Japanese foods did Suki bring to share with the class?
58. What did Suki think of American food?
59. What were the crackers made from that Suki brought to share with the class?
60. What did Ally bring to share with the class?
61. Why did 1943 steel pennies look weird?
62. Why did the government make pennies of steel instead of copper in 1943?
63. What did Mr. Daniels do to signal to Oliver that he needed to stop doing something?
64. What did Mr. Daniels say he would never do to his students' journals?
65. What did Ally draw in her journal the first day they had to write in them?
66. Why did Ally draw a 3 dimensional cube with dark black sides?
67. What kind of food did Ally tell Keisha she loved?
68. Where did Ally say was the scariest place on the planet?
69. What did Shay, Jessica, and some other girls all have that matched?
70. Why did Albert cut out the back of his sneakers?
71. What did Ally do that made Shay happy and Ally feel terrible?
72. Why did Albert say red was not a wise color?
73. What was the name of the space ship on StarTrek?

74. What did Albert notice about any crew member on Star Trek after they wore a red shirt?
75. What was the first picture Keisha saw that Ally drew in her sketch book?
76. What did Max call their music teacher, Mrs. Muldoon?
77. Why did Mrs. Muldoon take away Keisha's flowers?
78. What did Ally do that started her and Keisha's friendship?
79. Who was Ally in a group with to guess the mystery object in the boxes?
80. What did Oliver always smell like?
81. What are lacrosse balls made of?
82. What did Ally figure out that none of Mr. Daniels' other student ever figured out with the mystery boxes?
83. What did Mr. Daniels do that no teacher had ever done before to Ally after she figured out the mystery box?
84. What was written inside the cupcake Keisha gave to Ally?
85. How did Ally get out of writing a story in class?
- 86.
87. What did Ally say her cat's name was?
88. What did Albert's dad want to do, instead of getting a 'real job'?
89. Why was the train on the Island of Misfit Toys considered a misfit?
90. Why was the cowboy on the Island of Misfit Toys considered a misfit?
91. What did Ally find out about the word 'Flint' when she Google searched it?
92. Why did Albert always wear a Flint shirt?
93. What did the immortal genius, Flint, do on Star Trek, season three, episode #19?
94. Why did Mr. Daniels send Albert to talk to the school psychologist?
95. Why did Albert say it was illogical to think his parents hurt him?
96. How did Albert get all the bruises he always had on him?
97. Why didn't Albert hit back when the boys beat him up?

98. Why did immigrants on Ellis Island spread ice cream on their toast?
99. Why did Albert call the boys who beat him up fire ants?
100. Why was Shay so mean to Ally?
101. What did Travis's car look like?
102. What did Travis do with the Walking Liberty half dollar he bought?
103. What church was on Farmington Avenue?
104. What did Shay see Ally doing when she was riding with Travis in his car?
105. What did Ally say was the difference between an older brother and a big brother?
106. Why didn't Albert have to go to Shay's birthday party?
107. Why didn't Keisha have to go to Shay's birthday party?
108. What is the bubonic plague also called?
109. Where was Shay's party?
110. Why do some butterflies have a giant dot on each wing?
111. Why did lots of butterflies come and land on Ally?
112. What did the Native American story Albert told say about butterflies?
113. What happened when Shay caught the butterfly?
114. What did Albert tell Ally about butterfly wings?
115. What did Albert tell Shay about the color purple?
116. How many Murex brandaris snails did they have to collect in medieval times to collect enough slime to make one purple cloak?
117. What did Ally do to help her remember vocabulary words?
118. What was Ally's one important rule in the classroom?
119. Why did Ally volunteer to explain the difference between 'alone' and 'lonely'?
120. How did Ally explain the difference between 'alone' and 'lonely'?
121. What did Ally say was the worst kind of lonely?
122. What would Oliver do if he were Aquaman?

123. Who did Ally choose as the fictional character she looked up to?
124. Who is Roy G. Biv?
125. What did Mr. Daniels say about Ally after she chose Roy G. Biv as the fictional character she looked up to?
126. What did each angle on the color wheel Ally made have to be for it have seven equal pie pieces?
127. What tool did Ally use to make her color wheel?
128. What did Ally prove with the color wheel she created?
129. Who did Oliver want to give Ally's color wheel to?
130. What did Ally find out about the friendship bracelets?
131. What did Ally win in class that Ally believed was a pity award, rather than a real award?
132. Who did Keisha say looked at her as different?
133. What makes human skin darker?
134. What word did Ally spell with cookie dough inside a cupcake?
135. What did Albert really miss drinking?
136. What game did Mr. Daniels teach Ally?
137. How did Ally know about the game of chess?
138. What did Mr. Daniels do for Ally to convince her to play chess with him?
139. Where did Ally's class go for a field trip?
140. What did Ally and the other kids pick up as they walked to the Noah Webster house?
141. What did Ally name the acorn she picked up?
142. Where is the Eiffel Tower, where Ally's grandfather told her he was going to take her?
143. Why did Albert collect a bunch of acorns?
144. What common saying came from people sleeping on mattresses lifted off the floor with ropes so they would be away from bugs?

145. Who had theories about time travel?
146. What did Noah Webster create?
147. How long did it take Noah Webster to write a dictionary?
148. What did students in colonial times use in place of paper and pencils?

What did students have to wear as a punishment for misbehavior in schools toward the end of Noah Webster's life?

149. What did Shay draw on a chalkboard at the field trip to Noah Webster's house?
150. Where did Mr. Daniels find Ally after she ran out of the Noah Webster house?
151. Where did Mr. Daniel's family go where his brother and he loved to write in the sand
on
152. the beach?
153. What did Mr. Daniels tell Ally she had that made it hard for her to read?
154. Who was the reading consultant at Ally's school?
155. How does the saying, "If you judge a fish on its ability to climb a tree..." end?
156. What is the game of Chess about?
157. What is the object of Chess?
158. What does a chess player say when they can trap the other players' king?
159. What does a chess player say when they can trap the other player's king, and there
is no
160. way the other player can avoid it?
161. Which piece is the most powerful piece on a chessboard?
162. How many pawns are on one side of a chessboard?
163. What did Mr. Daniels say was a mistake that many chess players made?
164. Which chess piece looks like a castle?
165. Which way can rooks travel in chess?
166. Which way can bishops travel in chess?

167. Which chess piece travels in L-shaped moves?
168. Which chess piece can only move one spot in any direction?
169. What is it called in chess when you put your piece in a place where it can choose
between
170. taking two different pieces, so your opponent has to choose which one to let go?
171. Why was Ally so good at chess?
172. Why couldn't Ally and Mr. Daniels play chess on Tuesday or Thursday?
173. How did Mr. Daniels say Ally could help him with his school work?
174. How many senses do people have and what are they?
175. What did Mr. Daniels have Ally write words in, instead of paper and pencil?
176. What computer program did Ally and her family use to communicate with her father
overseas?
177. Why did Travis have to work with a new boss in the garage that made him follow the
manuals?
178. What word did Mr. Daniels write on a paper and give to Ally for her to tear in half?
179. What was Albert's mothers' name?
180. Why did Albert know there was nothing in the refrigerator in his home?
181. Why did Albert say it would be better to be in a tank of water with a killer whale than
with a stonefish?
182. What did Ally's grandpa say about eggs and words?
183. How did the substitute teacher embarrass Ally in front of everyone in her class?
184. What did Ally tell the substitute teacher she had drawn when the teacher saw the
paper
185. was blank?
186. What did the note say that Ally had Keisha help her write to Mr. Daniels after the
substitute teacher embarrassed her?

187. Which chess piece did Ally see as Keisha?
188. Which chess piece did Ally see as Albert?
189. Which chess piece did Ally see as herself?
190. Which chess piece did Ally see as the Shay?
191. Once in a while, what happens to a pawn?
192. How can you get the wolf, the chicken, and the grain across the river to the other side without losing any of them?
193. Who did Shay nominate to run against her in the election for class president?
194. What did the sign say that Albert made for Ally's campaign?
195. What is a homonym?
196. What is an ally?
197. What are the three primary colors?
198. What kind of tie did Mr. Daniels wear on the day of the election for class president?
199. What empty promises did Shay make in her campaign speech?
200. Who did Ally promise to listen to in her campaign speech?
201. What upset Shay about the election for class president?
202. What did Ally hear when she left school the day of the election?
203. Whose name was signed at the bottom of the note Ally found in an envelope on her desk?
204. What did Max always wear?
205. What did Shay say she would have started at school if she had been elected?
206. What did the letter from Max ask Ally to do?
207. Who really wrote the love letter to Ally, pretending it was from Max?
208. What would Albert choose if he could have an unlimited amount of something?
209. What would Oliver choose if he could have an unlimited amount of something?
210. What did Oliver like to do with Elmer's glue?

211. Why did Oliver want tape and glue?
212. What does 'unique' mean?
213. What is E. Coli?
214. Why did Oliver freak out and yell at Shay?
215. What did the shirts say that Ally and Keisha made to go with Alberts?
216. What would flint, steel, and magnesium do together?
217. What book did Ally do her 3 dimensional book report on?
218. What criticism did Shay make about Ally's 3 dimensional book report?
219. What did Ally's dad do in the army?
220. What did Mr. Daniels have on his tie the morning of the book reports?
221. Why did Mr. Daniels put colored plastics sheets over Ally's computer screen?
222. Why did Albert used to call Ally the Flying Tiger?
223. Who were the Flying Tigers?
224. Why did the Flying Tigers repaint their planes
225. every few missions?
226. Why did Albert give people nicknames?
227. Why did Albert think of Keisha as the Baby?
228. What nickname did Albert have for himself?
229. Who invented the light bulb?
230. Who invented the telephone?
231. Who started the Ford Motor Company and perfected the moving assembly line?
232. How did Ally learn about inventors?
233. When was Albert Einstein born?
234. What scientific fields was Albert Einstein known for?
235. Who was the inventor who was also the artist who painted the Mona Lisa?
236. Who was Pablo Picasso?

237. Who was Patricia Polacco?
238. Who is Whoopi Goldberg?
239. Who is Henry Winkler?
240. Who is Muhammad Ali?
241. Who was the 35th president of the United States?
242. Who was the prime minister of England during World War 2?
243. Who created Mickey Mouse?
244. Why was Albert Einstein kicked out of school?
245. What did one of Walt Disney's teachers say about him?
246. Which famous inventor was Travis similar to?
247. How did Henry Ford build his first car?
248. What was inscribed on the paper weight Mr. Daniels gave to Ally?
249. What did Oliver think having dyslexia did?
250. What did all the famous people with dyslexia demonstrate?
251. What was the one thing Albert told Shay she never called him?
252. What letters did Albert tell Shay he saw backwards?
253. What did Suki give to Ally?
254. What happened when Ally tried to be nice and talk to Shay when she was all alone?
255. What was the one thing that finally made Albert fight back against the boys?
256. How did the Teddy Bear get its name?
257. What did the poster in Mrs. Silver's office say?
258. What did Mr. Daniels give to Ally, that she later gave to her brother, Travis?

LITERARY TERMS AND DEVICES Checklist

Make flashcards for each and memorize:

- Metaphor** A comparison between two seemingly unlike things that does not use the words "like" or "as." Examples: Students are sailors on a journey. OR His stomach tightened into a series of rolling knots.
- Simile** A comparison between two seemingly unlike things that does use the words "like" or "as." Example: The moon hung like a light bulb in the sky.
- Personification** Giving inanimate (not alive) things human characteristics or qualities.
Example: Your homework will rise up and bite you if you put it off.
- Alliteration** The repetition of consonant sounds at the beginnings of words in a phrase or sentence. Example: Mike's mean mother meant well. The consonant sound made by the letter "m" is repeated.
- Imagery** A device that involves using at least one or more of your five senses (hearing, taste, touch, smell, sight) to make a clear picture of something for the reader. Example: The bruise on her arm was purple at top, blue at center, and the size of a dime.
- Hyperbole** A figure of speech in which the writer uses exaggeration for emphasis.
Example: I've told you a billion times to clean this room!
- Foreshadowing** When a writer gives details that hint at what is to come later in the story.
- Flashback** A device that allows the writer to present events that happened before the time of the current story. Various methods can be used, including memories, dream sequences, stories told by characters
- Onomatopoeia** The imitation of natural sounds in word form. Examples: buzz, roar, woof, bang, pop, hiss, and sizzle

Setting	The time and place in which a story takes place. Example; In the book <i>Fever</i> , the story takes place in Pennsylvania in 1793.
Climax	The highest point of tension in a story; usually this occurs when the protagonist and antagonist have a final showdown.
Protagonist	The main character, usually the "good guy" in a story.
Antagonist	The person or thing that opposes the main character, usually the "bad guy."
Resolution	This is the ending of the story, when the conflict has been resolved and the main character has either succeeded or failed in achieving his or her goal.
Conflict	The problem within the story that causes the protagonist & antagonist to oppose each other. Every conflict is either internal (when a character has a conflict with himself, like "insecurity") or external (when a character has a conflict with someone or something outside of himself). There are 3 major types of external conflict: character vs. character, character vs. society, and character vs. nature.
Plot	The sequence of events in a story.
Characterization	Characteristics or attributes that define characters and make them seem real and relatable.
Point of View	The perspective from which a story is told. There are three points of view: first person (in which I or we serves as the narrator), second person (in which you serves as the narrator; rarely used) and third person (in which he, she, they, or it serves as the narrator).
Theme	The story's main message; what the author is trying to say or imply. For example: In <i>Sees Behind Trees</i> the author implies that overcoming challenges is a necessary part of finding your identity. Thus, "Overcoming challenges is necessary to find your identity" is a theme in the novel. Theme is stated as a sentence, and it is a universal idea, meaning that it is not specific to just one story. Instead, a theme can apply to many stories, poems, films, or songs.

Practice typing the following Spelling Words and study the Commonly Confused Words List.
You will be tested on both the first week of school:

COMMONLY CONFUSED WORDS Checklist

Memorize:

Accept, except

1. Sarah will accept the offer.
2. Samuel liked the house except the basement

Affect, effect

1. The storm will affect the school field trip.
2. The effects will probably disappoint students.

Borrow, lend

1. My friend asked if he could borrow my new book.
2. I will lend it to him this week.

Capital, capitol

1. Sacramento is the capital of California.
2. The reports gathered in front of the capitol building.

Desert, dessert

1. The desert does not receive much rain.
2. Last night we had ice cream for dessert.

It's, its

1. It's time to take the dog to the vet.
2. Its shots are due.

Lay, lie

1. Lay the book on the shelf.
2. If you lie down to read, you might fall asleep.

Loose, lose, loss

1. The lion got loose.
2. The zoo cannot lose the lion.
3. It would be a terrible loss.

Passed, past

1. I passed my English test.
2. I spent the past two weeks studying for it.

Peace, piece

1. There was a peace march at the corner.
2. I wrote a story on a piece of paper.

Principal, principle

1. Our school principal is a leader.
2. He thought the most important principle was honesty.

Their, there, they're

1. Where should the students study for their test?
2. Over there is a good place to study.
3. They're going to be studying every afternoon.

To, two, too

1. I am going to the store.
2. I would like two cookies.
3. I am going to the movies too.

Weather, whether

1. The weather outside is stormy.
2. I don't know whether run or walk around the park.

Where, were

1. Where are you going on vacation?
2. They were doing their homework after school.

Whose, who's

1. Do you know whose phone this is?
2. Who's calling?

Your, you're

1. Is your house on the corner?
2. So you're not going to be home

Right, write

1. This is not the right dress.
2. I love to write book reports.

COMMONLY MISSPELLED WORDS Checklist

Memorize:

1. argument - Let's not have an argument over these words.
2. believe - I don't believe that is the correct answer.
3. business - He is going to open his own business.
4. calendar - They bought a new calendar in January.
5. definitely - I definitely want to read that book.
6. different - The girls had on different skirts.
7. embarrass - She doesn't want to embarrass herself in front of the class.
8. experience - They finished the science experiment.
9. foreign - Their entire family had been to a foreign country.
10. government - Their government had an election.
11. judgment - I will use good judgment and stay out of trouble.
12. learned - I have learned so much this year!
13. license - They had to get a license for their new dog.
14. neighbor - Their neighbor has three apple trees in their yard.
15. privilege - It is a privilege to attend Yavneh.
16. probably - We will probably have a test on these words.
17. receive - I did not receive the message.
18. recommend - I recommend reading that book this summer.
19. restaurant - They went to a restaurant every Sunday for lunch.
20. rhyme - The words cat and dog do not rhyme.
21. schedule - That assignment was not on the schedule.
22. separate - Separate the little rocks from the big rocks.
23. through - I went through my backpack and found my homework.
24. twelve - There are twelve apples on the tree.

Name _____ Date _____

Simple and Complete Subjects

Simple subject - main word or word group that tells whom or what the sentence is about.

Complete subject - all the words that tell whom or what a sentence is about.

The simple subject can also be the complete subject at times.

Simple subject: The beautiful painting of the vase was being sold for \$500.

Complete subject: The beautiful painting of the vase was being sold for \$500.

Directions: Label the underlined word(s) SS for simple subject or CS for compound subject.

Example: SS The animals at the Jackson Zoo are treated well.

- ___ 1. The scrumptious chocolate cupcake was begging me to eat it.
- ___ 2. The display of model cars on the table was very valuable.
- ___ 3. Amy Farrah Fowler doesn't dress with much style.
- ___ 4. The winning ticket was accidently thrown into the garbage.
- ___ 5. Amazingly, the mouse escaped the trap with no injuries.
- ___ 6. Last week, Mrs. Peterson and her wonderful husband renewed their wedding vows.
- ___ 7. The dried and crumbled leaves made a mess on the floor.
- ___ 8. A map of Australia was displayed above the trophy table.
- ___ 9. A new restaurant opened in town last month.
- ___ 10. A lone flower stood in the abandoned field.

Directions: Underline the complete subject. Circle or highlight the simple subject.

Example: The devilish grin on her face made her look guilty.

11. Another of my favorite people just walked into the room.
12. The fabulous new show about a cartoon chicken is hilarious.
13. The president of the student council gave a speech at our program last week.
14. A person of interest is being investigated for breaking the school windows.
15. Many of the people at the game were disappointed.
16. A grand opening is being held at the mall next weekend.
17. My cousin from Louisiana drives a school bus.
18. My friends and I played Twister at the birthday party.

Name _____

Date _____
(Answer ID # 0252928)

Nouns

A noun is a word that names a person, a place, a thing, or an idea.

The football players got in a huddle to discuss the play. *players, huddle, play*
 Thunderstorms will erupt with heavy rain, gusty winds, large hail, and possible
 tornadoes. *Thunderstorms, rain, winds, hail, tornadoes*

In each sentence one noun is missing. Write one noun to complete the sentence.

1. I have to coax my <u>(your noun)</u> into going to the dentist. _____	2. Tom does not know what her <u>(your noun)</u> is. _____
3. I drank a <u>(your noun)</u> of milk with my waffles. _____	4. The tornado destroyed a vast <u>(your noun)</u> of land. _____
5. It was foolhardy to go over the waterfall in a <u>(your noun)</u> . _____	6. I am glad that the people insert <u>(your noun)</u> into the newspaper. _____
7. Where is my Power Rangers comic <u>(your noun)</u> ? _____	8. A man in <u>(your noun)</u> grew one very long nail. _____
9. There have been many artifacts found in the <u>(your noun)</u> of the ancient Mayans. _____	10. She became ill from accidentally drinking the <u>(your noun)</u> . _____
11. There are numerous <u>(your noun)</u> to learning to read. _____	12. I will admit that sometimes it is hard for me to get up in the <u>(your noun)</u> . _____
13. Mrs. Harris will assign a different <u>(your noun)</u> to each student. _____	14. The <u>(your noun)</u> would not leave the stables without his mother. _____

Name _____

Date _____
(Answer ID # 0554458)

The Verb "To be"

Circle the form of the verb **be** that best completes each sentence.

- | |
|--|
| 1. Ants (is, are) a major problem in some parts of Africa. |
| 2. The three hostages managed to flee when the prisoners (was, were) discussing their demands. |
| 3. James' short, and often very pointed, poems (is, are, am) excellent examples of the epigram form. |
| 4. The evidence in the murder case (was, were) conclusive enough to convict the criminal. |
| 5. John (is, are) very methodical when he does math problems. |
| 6. The cranes (is, are) built in Shanghai, China and ferried over during a month long voyage. |
| 7. My grandmother's wedding ring (is, are) very sentimental to my mother. |
| 8. I (is, are, am) a very sentimental person and I cherish the items from my great-grandmother. |
| 9. Graduating from high school (is, are, am) a very momentous occasion for most people. |
| 10. Young children (is, are) sometimes afraid to submerge their faces when swimming. |
| 11. They (was, were) kept in a prison camp for the duration of the war. |
| 12. "Only two things (is, are, am) infinite, the universe and human stupidity, and I'm not sure about the former," coined Albert Einstein. |
| 13. You should be quiet while other people (is, are, am) talking. |
| 14. It (is, are, am) essential that you care about other people's feelings. |
| 15. His lyric poems (is, are, am) superb in their beauty, grandeur, and mastery of language. |
| 16. The climate (is, are) very humid and hot in Texas in August. |
| 17. My experience is limited to indoor gyms, but I (is, are, am) anxious to get outside. |
| 18. The peasant (was, were) happy to receive some money from the church on the corner. |
| 19. It (is, are, am) time for us to reveal our plans for the new building. |
| 20. We (was, were) fortunate to see Michael Jordan play at the peak of his career. |

Name _____

Date _____

Circle My Adjective

Adjectives describe or give more information about a noun. Circle the adjectives and draw an arrow to the noun it describes.

1. Early people found that dogs made good hunters.
2. Strong sheepdogs help farmers with large herds of sheep.
3. One famous dog rescued forty lost people in the mountains.
4. Blind people use dogs to guide them through busy streets.
5. Some smart dogs learn to help deaf people.
6. Linda trains young dogs.
7. The dogs learn to help people.
8. Two people in California found a lost dog.
9. They took the little white dog to a shelter.
10. One kind worker at the shelter named the dog Penny.

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Name _____

Date _____
(Answer ID # 0938411)

Adverbs

Fill in each blank with an adverb from the box.

deliberately	instantly	severely	then
dramatically	normally	slowly	tomorrow
equally	regularly	suddenly	too

1.	_____	I was _____ startled by the noise of the pan falling off the kitchen counter.
2.	_____	Isaac is grounded for two weeks because he _____ threw the kickball at his little sister.
3.	_____	I like both of my best friends _____.
4.	_____	Morgan _____ ran into the room to tell all of us that she had just heard about a celebrity coming to visit our school next week.
5.	_____	I admire my next-door neighbor because she _____ visits sick children in the hospital.
6.	_____	We have a meeting this afternoon. We can decide on the decorations _____.
7.	_____	Jonathan _____ injured his arm when he flipped over the handlebars of his bike.
8.	_____	Jason's older brother _____ works every day after school, except on Fridays.
9.	_____	The alarm clock went off at 6:30 in the morning, and Christopher _____ jumped out of bed.
10.	_____	"Can we play on the swings _____?"
11.	_____	There are _____ many stray dogs and cats in our neighborhood, but the city won't do anything about it until someone gets hurt by one of them.
12.	_____	The turtle _____ crawled across the road.

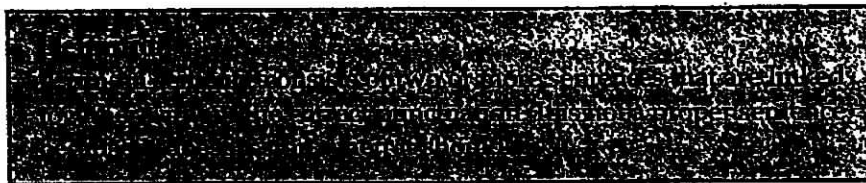
9. RUN-ON SENTENCES

How many sentences does the following group of words contain?

Marc went to town he bought a soda, then he walked home.

If you answered *one*, look again. The above group of words actually contains three complete thoughts and three sets of subjects and verbs. If properly capitalized and punctuated, these words should look like this:

Marc went to town. He bought a soda. Then he walked home.



To correct run-ons, you must insert end punctuation and capital letters where they are needed. Look at the following run-on sentences and then look at the corrected versions of these sentences:

- 1a. The bird ate the worm afterwards, it flew away. (run-on)
- b. The bird ate the worm. Afterwards, it flew away. (two sentences)

- 2a. Claudette caught two trout her mother helped her clean them they ate the fish for dinner. (run-on)
- b. Claudette caught two trout. Her mother helped her clean them. They ate the fish for dinner. (three sentences)

HINT In order to avoid run-on sentences, it is important to look carefully at each sentence you write. If a sentence contains more than one idea, or if it contains several subjects and verbs, it might be a run-on. Be sure to use the proper end punctuation at the conclusion of each sentence and a capital letter at the beginning of each new one.

RUN-ON SENTENCE EXERCISES

A. *Directions:* In the space following each group of words, write R if it is a run-on sentence and S if it is a sentence.

EXAMPLE: Eric ran to town he missed the bus. R

1. Socrates was a famous Greek philosopher. _____
2. Dan met Sue on the bus then they went to the beach. _____
3. The bear chased Stephanie, she climbed a tree just in time. _____
4. We have seen the movie before, we'd like to go again. _____
5. I don't believe in eating pretzels with a fork. _____
6. Mr. Rochester hired Jane Eyre to be a governess she fell in love with him. _____
7. Dark had fallen, it was a stormy night. _____
8. When I go to a play, I like to get there early. _____
9. I do not believe in ghosts, they don't really exist. _____
10. Go dig some clams at the beach bring them back here for dinner.

B. *Directions:* Turn the following run-ons into sentences by putting capital letters where sentences should begin and end punctuation where they should end.

EXAMPLE: Helen bought a house, she loved it.

1. My house wasn't the same anymore it even smelled different.
2. We went to the fair every day you could go on three rides for a dollar.
3. Climbing the mountain was hard I would not do it again.
4. Sailing is her favorite sport each weekend she goes to the lake.
5. The magazine finally arrived now I can read my article.
6. The hurricane destroyed the house everyone inside it was saved.
7. You'd have to see it yourself I can't describe it in words.
8. The writer finished his book he began another one right away.
9. Most people buy pumpkins in the fall they carve them for Halloween.
10. The end of the spy story was exciting it kept me on the edge of my seat.

C: *Directions:* In the space after each group of words, write R if it is a run-on, F if it is a fragment, and S if it is a sentence.

EXAMPLE: In the dark woods. F

1. Riding out the storm on a cold, wild night. _____
2. After the party, Julie drove home with Miriam. _____
3. Daryl spent two weeks in the Soviet Union she thought it was a fascinating place. _____
4. Franklin Roosevelt won reelection in 1940, a year before the United States entered World War II. _____
5. I think I'll visit Sally maybe she'll want to take a walk. _____
6. Even though I had never seen such a beautiful sunset on a winter day. _____
7. Mamie fell from the tree she broke her arm. _____
8. Martin Luther King led the fight against racial discrimination in the 1950s and 1960s. _____
9. No, I think I'll stay inside, it's too hot to run. _____
10. On the far side of the river, chewing on a tree, the beaver. _____

Name _____

Date _____



Subjects and Predicates

Make sentences using any combination of complete subjects and complete predicates from the word bank. Correctly capitalize and punctuate sentences.

Subjects:

- the crowd on that hot and sweltering day
- gargantuan tires made from marshmallows
- a truck with no windshield, doors, or windows
- a tiny girl only eight inches tall wearing a tutu
- the chocolate mud and jelly bean rocks
- a beautiful bride and her handsome groom

Predicates

- bounced and spun in the mud
- ate alligator burgers and snake hot dogs
- made a delicious topping for the huge cake
- raced toward the crowd at 120 m.p.h.
- started to get hot and melt on everything
- rode on the top of the racing truck

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

Bonus activity: Illustrate one of your sentences.

Name _____



Date _____
(Answer ID # 0512958)

Nouns

Use one noun from the list of nouns to complete each sentence.

- | | | | |
|-------------|----------|----------|-----------|
| England | aunt | occasion | trouble |
| Mom | edge | oranges | waterfall |
| agony | feelings | pie | |
| allegations | kettle | rain | |

<p>1. My <u>(noun)</u> gave me a very hearty welcome.</p> <p>_____</p>	<p>2. There is a bird's nest under the <u>(noun)</u> of the roof.</p> <p>_____</p>
<p>3. The <u>(noun)</u> seemed to descend on us the whole morning.</p> <p>_____</p>	<p>4. <u>(noun)</u> hired a maid to help with the housework.</p> <p>_____</p>
<p>5. She says you do not have to go over that again and relive the <u>(noun)</u>.</p> <p>_____</p>	<p>6. It was such a special <u>(noun)</u> that I briefly found myself unable to speak.</p> <p>_____</p>
<p>7. It is essential that you care about other people's <u>(noun)</u>.</p> <p>_____</p>	<p>8. Those <u>(noun)</u> are false, and his lawsuit is frivolous.</p> <p>_____</p>
<p>9. Please separate the <u>(noun)</u> from the apples.</p> <p>_____</p>	<p>10. Sometimes you get into <u>(noun)</u> if you are being naughty.</p> <p>_____</p>
<p>11. Mom will distribute the <u>(noun)</u> evenly between my sisters and myself.</p> <p>_____</p>	<p>12. We took a <u>(noun)</u> on the camping trip with us so we could boil water.</p> <p>_____</p>
<p>13. Queen Elizabeth lives in <u>(noun)</u>.</p> <p>_____</p>	<p>14. It was foolhardy to go over the <u>(noun)</u> in a canoe.</p> <p>_____</p>

Name _____

Date _____
(Answer ID # 0554458)

The Verb "To be"

Circle the form of the verb **be** that best completes each sentence.

- | |
|---|
| 1. Ants (is, are) a major problem in some parts of Africa. |
| 2. The three hostages managed to flee when the prisoners (was, were) discussing their demands. |
| 3. James' short, and often very pointed, poems (is, are, am) excellent examples of the epigram form. |
| 4. The evidence in the murder case (was, were) conclusive enough to convict the criminal. |
| 5. John (is, are) very methodical when he does math problems. |
| 6. The cranes (is, are) built in Shanghai, China and ferried over during a month long voyage. |
| 7. My grandmother's wedding ring (is, are) very sentimental to my mother. |
| 8. I (is, are, am) a very sentimental person and I cherish the items from my great-grandmother. |
| 9. Graduating from high school (is, are, am) a very momentous occasion for most people. |
| 10. Young children (is, are) sometimes afraid to submerge their faces when swimming. |
| 11. They (was, were) kept in a prison camp for the duration of the war. |
| 12. "Only two things (is, are, am) infinite, the universe and human stupidity, and I'm not sure about the former," coined Albert Einstein. |
| 13. You should be quiet while other people (is, are, am) talking. |
| 14. It (is, are, am) essential that you care about other people's feelings. |
| 15. His lyric poems (is, are, am) superb in their beauty, grandeur, and mastery of language. |
| 16. The climate (is, are) very humid and hot in Texas in August. |
| 17. My experience is limited to indoor gyms, but I (is, are, am) anxious to get outside. |
| 18. The peasant (was, were) happy to receive some money from the church on the corner. |
| 19. It (is, are, am) time for us to reveal our plans for the new building. |
| 20. We (was, were) fortunate to see Michael Jordan play at the peak of his career. |

Name _____

Date _____

Where's The Adjective?

Some adjectives modify nouns by telling WHICH ONE (this, that, those, these, any, each).

Underline the adjectives that tell WHICH ONE.

- 1) That puppy is sleeping.
- 2) This apple is bigger than that one.
- 3) Each child will receive an award.
- 4) I like those flowers better than these ones.
- 5) Are there any loaves of bread left?
- 6) Wasn't that movie great?
- 7) This pizza has pepperoni on it.
- 8) Are these the glasses you are looking for?
- 9) I will accept any offers.
- 10) This chair is much softer than that chair.

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Name _____

Date _____
(Answer ID # 0634532)

Adverbs

Write the adverb in each sentence and write the word the adverb describes. Write whether the adverb tells when or where.

Example:

The people in town searched everywhere, but they were unsuccessful in locating the lost dog.
Julia periodically volunteers at our local police department to help with tours of the station.
periodically describes volunteers; when

1. Dad, upon running outside after hearing the noise, found that a car had just sped down our street and slammed into our neighbor's truck.

2. Please put these boxes over there, so I can pack some more of my mother's blankets in them.

3. We are expecting the mailman momentarily.

4. Each sailboat made its way to the dock and anchored alongside.

5. My parents immediately grounded me when they found out that I had cheated on my history test.

6. The subways in New York City run underground.

7. Afterwards, Grace thanked everyone for coming to her birthday party.

8. The alarm clock went off at 6:30 in the morning, and Christian instantly jumped out of bed.

9. The people in town searched everywhere, but they were unsuccessful in locating the lost dog.

Name _____



Date _____

(Answer ID # 0569199)

Correcting Run-on Sentences

A **run-on sentence** is a sentence that runs into another sentence. Two or more parts of a run-on sentence can stand by itself. Interestingly, run-on sentences can exist in **both** short and long sentences. The length of a sentence does not determine whether that sentence is a run-on sentence!

run-on Mary wanted help with her homework she couldn't do it by herself.

correct Mary wanted help with her homework. She couldn't do it by herself.

Correct each run-on sentence.

1. We are going to paint my room and we are going to put up wallpaper border with birdhouses on it and we are going to hang curtains.

2. My dog likes to chew on bones he likes to chase birds he likes to roll in the mud.

3. Martha's house is on Princeton Street it is white and green it is close to mine.

4. We went to Disneyland for vacation last summer we got to see Mickey and Minnie Mouse.

5. The three brothers were very close they did everything together they dressed alike they even liked the same food!

6. Mom didn't know which car she wanted to buy she liked both the blue and the red ones.

Name _____ Date _____

Subjects and Predicates

The subject tells whom or what the sentence is about.

Example: Did you hear the song playing on the radio?

The predicate of a sentence tells something about the subject.

Example: Did you hear the song playing on the radio?

Directions: Determine if the underlined words are the subject or the predicate.

Write S for subject and P for predicate.

- ___ 1. Hurricane Katrina caused enormous damage to the Mississippi Gulf Coast.
- ___ 2. Hurricanes are only one type of weather phenomenon.
- ___ 3. Many other types of weather phenomenon are also destructive.
- ___ 4. Tornadoes, cyclones, and ice storms also cause great damage.
- ___ 5. Not all types of weather phenomenon are destructive.
- ___ 6. Many are fascinating and beautiful events.
- ___ 7. The rainbow is an example of a beautiful weather phenomenon.
- ___ 8. Mirages occur when light is refracted to produce an image of an object.
- ___ 9. The Belt of Venus, bands of pinkish sky, occurs during a dusty evening.
- ___ 10. Moon bows are like rainbows but occur at night.

Directions: Underline the subject once and the predicate twice.

11. Everyone needs to have a safety plan for a tornado.
12. Ice storms can cause very hazardous driving conditions.
13. Have you ever seen a blue, orange, or red colored moon?
14. Mammatus clouds are often associated with a storm front.
15. A fire whirl is a tornado spinning too close to a forest fire.

Name _____



Date _____

(Answer ID # 0904211)

Nouns

A noun is a word that names a person, a place, a thing, or an idea.

If I can hear my neighbors, I assume they can hear me. *neighbors*

It is too late to convince Kylie B. Thompson not to go. *Kylie B. Thompson*

Write the nouns in each sentence.

1. Dad missed the other car by an inch. (3 nouns) _____	2. A daze may be the result of a blow to the head. (4 nouns) _____
3. My brother put another bed in his spacious bedroom. (3 nouns) _____	4. The President was the guest of honor at the formal dinner held in Buckingham Palace. (5 nouns) _____
5. I detest getting up early every morning. (1 noun) _____	6. Sometimes you get into trouble if you are being naughty. (1 noun) _____
7. Please do not drag me into the middle of your argument. (1 noun) _____	8. Greek artisans were known for the beauty and grace of their urns. (4 nouns) _____
9. Please separate the oranges from the apples. (2 nouns) _____	10. Dad said he would increase my allowance when I turn ten years old. (3 nouns) _____
11. Mom asked me to pump gas into the car for her. (3 nouns) _____	12. The governor gave him a pardon at the last minute. (3 nouns) _____
13. We won the game as a result of our great teamwork. (3 nouns) _____	14. The loaf of bread began to mold. (2 nouns) _____

Name _____

Date _____
(Answer ID # 0262932)

Verbs

Use one verb from the list of verbs to complete each sentence.

allowed	migrate	training	won
began	restrict	was	wrote
devote	saw	will	
likes	told	will	

1. The time and money to revive the lighthouse (verb) be worth it. _____	2. Rick (verb) a lie about me and hurt my feelings. _____
3. My approach to (verb) the dog was to be very patient and calm. _____	4. I hope the college (verb) approve my application for admission. _____
5. Kelly (verb) to play with her brother's trucks. _____	6. I (verb) my best friend a letter today. _____
7. I am not (verb) to stay out after midnight. _____	8. The actors (verb) all of their time into learning their lines. _____
9. After launch, the spacecraft (verb) visible just above the horizon. _____	10. Every year, millions of monarch butterflies (verb) south to wintering grounds in Mexico. _____
11. Wildlife officials (verb) travel to the lighthouse during the summer months. _____	12. We (verb) the game as a result of our great teamwork. _____
13. The sailors swore they (verb) a gigantic octopus. _____	14. The backpackers (verb) to slowly trudge up the hill. _____

Name _____

Date _____

Where's The Adjective?

Some adjectives modify nouns by telling WHAT KIND (small, huge, blue, smelly).

Underline the adjectives in each sentence that tell WHAT KIND.

- 1) He is a good reader.
- 2) The small, brown puppy fell out of the basket.
- 3) David bought a new red scooter.
- 4) It is an action-adventure film.
- 5) The shiny black beetle crawled onto the red rose.
- 6) She has a fuzzy yellow cardigan.
- 7) The pig pen is smelly.
- 8) Sam has a beautiful red racing bicycle.
- 9) The naughty girl broke my new flower vase.
- 10) This book is long, dull, and boring.
- 11) He could hardly see through the thick gray fog.
- 12) David is tall, dark, and handsome.

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Submitted by Doctor Grammar

Name _____

Date _____
(Answer ID # 0696108)

Adverbs

Rewrite each sentence and underline the adverb that tells *how*.

1. The sweet, five-year-old little girl graciously offered her seat on the bus to the frail, old lady standing next to her.

2. Makayla arrogantly told her friends that her dad had bought another yacht.

3. Christina dearly loves her cute, new baby brother, Timothy.

4. Our dog wildly ran after a squirrel that he saw in our backyard.

5. Madison sighed dramatically when her mother asked her to wash the dishes.

6. Timothy accidentally lost the paperwork that showed he had purchased the bicycle.

7. The tired, young husband nervously paced the floor in the hospital waiting to hear the first cries of his newborn son.

8. My brother conveniently forgot to mention that he was also involved in breaking Dad's favorite lamp.

9. I completely understand how someone could confuse me with my twin sister.

10. We were firmly told that we were not to go anywhere after school for a whole week.

Name _____

Date _____
(Answer ID # 0507872)

Correcting Run-on Sentences

A **run-on** sentence is a sentence that runs into another sentence. Two or more parts of a run-on sentence can stand by itself. Interestingly, run-on sentences can exist in both short and long sentences. The length of a sentence does not determine whether that sentence is a run-on sentence!

run-on My friends spent the night with me we watched a funny movie.

correct My friends spent the night with me. We watched a funny movie.

Correct each run-on sentence.

1. We went to my cousin's wedding over 300 people were invited.

2. I know I left my scarf somewhere maybe it is in my closet.

3. The soldier took down the flag the soldier folded it and the soldier put it away.

4. I can't remember the last time that I was sick I think it was about four years ago.

5. I went swimming last summer I got sunburned a few times, though.

6. Sergeant Reed and Officer Smoker came to our class they showed us their equipment and they talked about the SWAT Team they told us why they became members of the SWAT Team.

Name _____

Date _____

Subjects and Predicates

The subject tells whom or what the sentence is about.

Example: *The building at the end of the street* was built by my dad.

The predicate of a sentence tells something about the subject.

Example: The building at the end of the street *was built by my dad*.

Directions: Highlight or circle the part of the sentence indicated in parentheses.

Examples: The little girl in my daughter's class is a very talented singer. (Subject)

The puppy chased the kitten up the tree. (Predicate)

1. I went to the store and bought a new pair of shoes. (Predicate)
2. The new entertainment center looks great in our living room. (Predicate)
3. The doctor at the hospital saw more than fifty patients today. (Subject)
4. Many of the people at the event wished they had an umbrella. (Subject)
5. Did the big, red dog look ferocious to you? (Predicate)
6. The middle of the cake was not done. (Subject)
7. How did you meet the famous singer at the concert? (Predicate)
8. The carpenter cut the piece of wood about three inches too short. (Predicate)
9. Sometimes the entire class eats lunch outside on the picnic tables. (Subject)
10. Batman rescued the lady from the evil villain. (Subject)
11. My freshman year in high school cannot get here fast enough. (Predicate)
12. Can the magician make the rabbit disappear? (Predicate)
13. My dog hassles and slobbers everywhere during a thunderstorm. (Subject)
14. When did the movie end? (Subject)
15. After lunch, the secretary is leaving for the day. (Subject)
16. The long and winding road along the side of the mountain is scary. (Predicate)
17. Many of the contestants at the beauty review last week were pretty. (Subject)
18. How can you say that to me? (Predicate)

Name _____



Date _____

(Answer ID # 0954823)

Nouns

Choose the correct spelling for each plural noun.

1. revvisions	revisionies	revisions	revisiones	revisoins
2. stomachs	stomachies	stomacs	strachs	stomachés
3. cautions	cautionies	cautiones	cuations	cautoins
4. sunsets	sunseties	sunsets	sunses	sunets
5. haleos	hleos	haloies	haloes	haleo
6. pitces	pithes	piches	pitches	pitchies

In each sentence one noun is missing. Write one noun to complete the sentence.

7. My parents turned down my (your noun) for an increase in my allowance.

8. He presented himself as the candidate to liberate the (your noun) from corruption.

9. Where did you leave your math (your noun) ?

10. The (your noun) of the building is beginning to crack.

Write the plural form of each noun.

11. usage _____	12. prose _____	13. dispatch _____
14. expense _____	15. chorus _____	16. population _____
17. haircut _____	18. hoax _____	19. government _____

(answer key 0954823)

Use each of the following nouns **once** to complete each sentence: *letter, job, health and cats*.

20. Do you think black (noun) bring bad luck? _____	21. I wrote my best friend a (noun) today. _____
22. I called my brother to congratulate him on his new (noun) . _____	23. Seth's (noun) began to decline. _____

Write the nouns in each sentence.

24. Getting the children out of the house safely was the foremost thought in my head. (4 nouns) _____	25. A horse named Pokey was the only one to survive the barn fire. (3 nouns) _____
26. The wheelchair ramp made it easier for my grandmother to get into the building. (3 nouns) _____	27. On the outskirts is a famed bronze temple, dating from the Ming dynasty. (3 nouns) _____

In each sentence one noun is missing. Write one noun to complete the sentence.

28. The loyal soldiers refused to betray their (your noun) . _____	29. After I get up in the (your noun) , I will make pancakes for everyone. _____
30. A king's ring was a symbol of his (your noun) in medieval times. _____	31. If you perform well in school, you will get into a good (your noun) . _____

Write the nouns in each sentence.

32. Did you know that a hamster has a tail? (2 nouns) _____	33. The President was the guest of honor at the formal dinner held in Buckingham Palace. (5 nouns) _____
34. The vulture's talon helped him grab the little animal. (3 nouns) _____	35. We began to wander through the store looking for the right book. (2 nouns) _____

Name _____

Date _____
(Answer ID # 0864996)

Verbs

A verb tells what people or things do.

More generally, a verb tells the action a noun or pronoun does.

The governor gave him a pardon at the last minute. *gave*

The sailor tied the rope in a knot. *tied*

In each sentence one verb is missing. Write one verb to complete the sentence.

1. Dad <u>(your verb)</u> me to the doctor's office, so Mom does not have to leave her job early. _____	2. Please do not <u>(your verb)</u> me into the middle of your argument. _____
3. A valiant Boy Scout <u>(your verb)</u> the little girl from drowning. _____	4. The actors <u>(your verb)</u> all of their time into learning their lines. _____
5. <u>(your verb)</u> as much as you like because we have plenty. _____	6. Greek artisans <u>(your verb)</u> known for the beauty and grace of their urns. _____
7. I felt pain in my knee when I tried to <u>(your verb)</u> . _____	8. A potent winter-like storm <u>(your verb)</u> blizzard conditions to the area. _____
9. If you <u>(your verb)</u> in shallow water, you may break your neck or back. _____	10. Mom <u>(your verb)</u> me to pump gas into the car for her. _____
11. The library <u>(your verb)</u> planning to increase their collection of reference books. _____	12. Did you <u>(your verb)</u> that a hamster has a tail? _____
13. The farmer harvested the wheat when it <u>(your verb)</u> mature. _____	14. Mom <u>(your verb)</u> me a new outfit for my birthday. _____

Name _____

Date _____

Where's The Adjective?

Some adjectives modify nouns by telling HOW MANY (several, few, many, one, all, seven).

Underline the adjectives in each sentence that tell HOW MANY.

- 1) There are five players on a basketball team.
- 2) Several days ago my dog went missing.
- 3) All of the students will receive a certificate.
- 4) There are many puppies for sale.
- 5) We ordered only one pizza.
- 6) How many ice cream cones did you want?
- 7) There are only a few newspapers left to deliver.
- 8) Sam rented two videos for tonight.
- 9) Several of the girls wanted to go skating.
- 10) There are fifty states in the United States.
- 11) Only a few of the students finished their project on time.
- 12) Tom Cruise has been in many films.

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Submitted by Doctor Grammar

Name _____

Date _____
(Answer ID # 0656598)

Adverbs

Rewrite each sentence and underline the adverb that tells *where*.

1. While I was trying to back away from the ferocious dog, I fell backwards over a log, but my big brother rescued me.

2. I do not come around this restaurant often because I live so far away.

3. Jordan was anxious to get home from school, so she ran ahead.

4. Almost everyone in the class walked across the bridge, but Morgan was too frightened.

5. The little boy at the end of the line fell behind.

6. Megan had to go away to college last fall.

7. Each sailboat made its way to the dock and anchored alongside.

8. Kyle and Daniel went snorkeling in the bay where hundreds of fish swam beneath.

9. Jacob ran away from the fire.

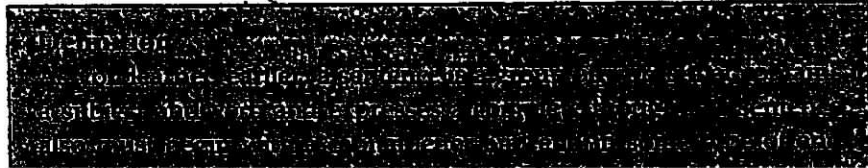
10. The Osborn's lived nearby last year, but then they moved to a different state.

8. SENTENCE FRAGMENTS

Which of the following groups of words are sentences?

1. In an old, dark cottage at the end of an autumn day.
2. Running through the town on Monday.
3. When Ann heard the angry dog.

Although the above groups of words look like sentences, you may have figured out that none of them actually is a sentence. Two of them are missing a subject and a verb, and all three of them leave you up in the air as to what is going to happen. These words are fragments—incomplete pieces of sentences.



punctuation. A sentence fragment, on the other hand, is a group of words that does not express a complete thought. Fragments, such as the examples above, do not finish the ideas or thoughts they begin. In other words, they leave you hanging.

TYPES OF FRAGMENTS

Some sentence fragments are easy to spot because they don't contain subjects and verbs:

1. Living in the country.
2. The woman on the camel.
3. All around the tower of the church.

Other sentence fragments contain subjects and verbs but still do not express a complete thought:

1. After she finished the book.
2. Although Amy disagreed with the president.
3. Before I play the piano again.

TURNING FRAGMENTS INTO SENTENCES

Now look back at the three sentence fragments at the beginning of this lesson. Add whatever words are necessary to turn these fragments into complete sentences. Then write your sentences in the following spaces:

1. _____
2. _____
3. _____

SENTENCE FRAGMENT EXERCISES

A. *Directions:* In the space following each group of words, write *F* if it is a fragment and *S* if it is a sentence.

EXAMPLE: Sam didn't know what. F

1. At the beginning of the game on Tuesday. _____
2. When Mitzi arrived home from the movie. _____
3. I bought a cat yesterday. _____
4. With a gleam in her eye and a toss of her head. _____
5. Ed cried. _____
6. Why must you always on Thursday? _____
7. If I had a model train set. _____
8. Before Bea had a chance to call her name. _____
9. I suppose I haven't expressed myself clearly. _____
10. Skimming above the surface of the water a beautiful fish. _____

B. *Directions:* Rewrite the following fragments so that they are sentences. Be sure to use every word of the fragment in your sentence.

EXAMPLE: If you eat that toadstool.

If you eat that toadstool, you might die.

1. Whenever I see a grizzly bear.

2. My favorite rock performer in the world.

3. In a dusty corner at the back of the attic.

4. Running through the woods on a cold winter morning.

5. Although Janice had never been to Norway before.

6. Because I was late for my first class.

7. Hoping that the bus hadn't left without her.

8. While we were setting up your tent in the woods.

9. In the event of a flood or tornado.

10. Before you read that book about South Africa.

C. *Directions:* Read the following sentence fragments. In the space at the end of each fragment, write *yes* if the fragment contains a subject and verb and *no* if the fragment does not contain a subject and verb.
EXAMPLE: When I saw the fox. yes

1. At the end of a long day in the mountains. _____

2. Even if you do catch the frog. _____

3. Since you insist on choosing the turkey. _____

4. Above the beautiful, swift river. _____

5. On top of the bowl of cornflakes. _____

6. Swimming in the slimy river. _____

7. Through the dark tunnel out into the sunlight. _____

8. Because you do not like the mail carrier. _____

9. When Carl feeds the peacock. _____

10. In the quietest part of the recital. _____

Name _____ Date _____



Subjects and Predicates

Make sentences using any combination of complete subjects and complete predicates from the word bank. Correctly capitalize and punctuate sentences.

Subjects:

the handsome and mighty warrior
a gold-winged beast with razor sharp spikes
the ferocious, pink and orange mouse
colonel sanders and his enormous chickens
the dilapidated limousine with spinner wheel

Predicates

roared to life with the intensity of a siren
attacked the castle and captured the prince
ran in circles and danced the polka
escaped the gargantuan monster's jaws
played Barbie dolls and listened to the radio

1. _____

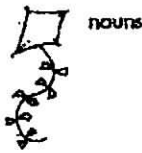
2. _____

3. _____

4. _____

5. _____

BONUS ACTIVITY: Turn your sentences into a story and illustrate it.



Name _____

Who, What, Where?

Nouns are words that name people, places, things, or ideas.
people: man, Tom, doctor
places: store, pharmacy, school
things and ideas: flashlight, trust, smile, pain

Write each noun under the correct category.

PEOPLE

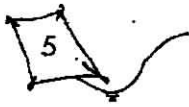
1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

PLACES

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

THINGS/IDEAS

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____



Name _____



Date _____

(Answer ID # 0856479)

Verbs

A verb tells what people or things do.

More generally, a verb tells the action a noun or pronoun does.

The passengers were transferred to buses to reach their final destination. *were, transferred, reach*

The program is too cumbersome and does not have enough flexibility. *is, does, have*

Write the verbs in each sentence.

1. The dense plot failed to win over critics. (2 verbs) _____	2. The column of the building is beginning to crack. (2 verbs) _____
3. If you are not listening, I will stop talking. (5 verbs) _____	4. Our teacher needed to prepare us for the upcoming exam. (2 verbs) _____
5. Queen Elizabeth lives in England. (1 verb) _____	6. As children, we should submit to our parents' authority and obey them. (3 verbs) _____
7. The capital of Norway is Oslo. (1 verb) _____	8. People said the initial tremor lasted anywhere from 10 seconds to one minute. (2 verbs) _____
9. A man came to our house to fix the lock on our door. (2 verbs) _____	10. I slept until 9 o'clock this morning. (1 verb) _____
11. Even with a discount card, out-of-pocket expenses for health care can be substantial. (2 verbs) _____	12. While jaguars are seldom seen, their raspy voices are unmistakable. (2 verbs) _____
13. He presented himself as the candidate to liberate the country from corruption. (2 verbs) _____	14. The argument is between Helen and Mary. (1 verb) _____

Name _____

Date _____

Where's The Adjective?

An adjective is a word which modifies a noun. It describes the noun, or names one of the characteristics of a noun.

For example, the following adjectives are underlined:

red car, sweet apple, dirty water

Circle the adjectives that describe the underlined noun or nouns in each sentence. (Words that you should circle are in italics.)

Example: The *small red shiny* beetle scampered down the *green* leaf.

1. Ten puppies are playing in the tall, green grass.
2. Where is the small frying pan?
3. Sam has a blue racing bicycle.
4. The black kitten was playing with a small red ball.
5. Do you know the man in the black leather jacket?
6. I have seven colored marking pens for school.
7. The city is big, dirty, and noisy.
8. Three ugly witches made a magic potion.
9. That is the biggest stuffed toy in the shop.
10. He ran through the wet muddy field.
11. Hand me the yellow plastic bowl.
12. The blue vase was broken by the naughty boy.
13. The black and white cat climbed the fence.
14. David has a red apple, but Sam has a green one.
15. Sam's apple is sour.

Name _____

Date _____
(Answer ID # 0990532)

Adverbs

Rewrite each sentence and underline the adverb that tells *when*.

1. "Feed the dog now!"

2. Our neighborhood frequently has Crime Watch meetings at the local YMCA.

3. We have a meeting this afternoon. We can decide on the decorations then.

4. My nephew was born prematurely and, therefore, had some problems with his lungs.

5. Jose's older brother normally works every day after school, except on Fridays.

6. Elizabeth's adorable, little poodle often sits by the window waiting for her to come home from school.

7. My older sister occasionally goes to the movies with us if she's bored with watching TV.

8. The fire fighters responded immediately when they received the emergency call.

9. Anthony often sings in the shower.

10. We visit the library monthly.

Name _____

Date _____

Subjects and Predicates

The **subject** tells whom or what the sentence is about.

Example: *The statue of King Henry VIII* stands in the entryway of the building.

The **predicate** of a sentence tells something about the subject.

Example: The statue of King Henry VIII *stands in the entryway of the building.*

Directions: Determine if the underlined section is the subject or predicate.
Write S for subject and P for predicate.

Examples: S The fluffy, little kitten chased the ball across the floor.

P Many of my friends have joined the chorus this year.

- ___ 1. Some of the people in my community have decided to recycle.
- ___ 2. The mayor of our city is excited about the community's interest.
- ___ 3. He has planned an informational program for the town.
- ___ 4. The planning committee decided to turn it into a festival.
- ___ 5. The schools decided to make posters advertising the event.

Directions: Draw one line under the complete subject.

Draw two lines under the complete predicate.

Example: The students learned about recycling while making the posters.

6. The students and their parents placed the posters in store windows.
7. Excitement grew in the town about the upcoming event.
8. An expert on recycling has been invited to speak at our festival.
9. The entire town will be offered recycling bins for their home.
10. A local recycling bin manufacturer is donating all of the bins to our town.
11. The city council wants our city to set an example for others.
12. This festival is going to be a great success.

Circle the form of the verb be that best completes each sentence.

- | |
|--|
| 14. The fact that our country enjoys more freedom than any other country in the world (is, are) indisputable. |
| 15. Do you think the quilting project (is, are) so big that it will overwhelm the volunteers? |
| 16. This (is, are) the most absurd proposal I ever heard. |
| 17. Contributions to the Presidential Campaign Fund (is, are) voluntary. |
| 18. I know the landlord (is, are) going to scrutinize every room in the apartment before she refunds our cleaning deposit. |

Circle the form of the verb be that best completes each sentence.

- | |
|--|
| 19. A sick animal (is, are) vulnerable to predators. |
| 20. I (is, are, am) very fortunate to have such wonderful children. |
| 21. The elite players (was, were) chosen to play in the All Stars game. |
| 22. Byzantium, an ancient city of Thrace, (is, are) the site of present-day Istanbul, Turkey. |
| 23. Andrew Johnson (was, were) buried beneath a willow he had planted himself with a shoot taken from a tree at Napoleon's tomb. |

Circle the verb that best completes each sentence.

- | |
|--|
| 24. The mechanic performed an exhaustive test on my car to (see, saw) why it kept dying on me. |
| 25. My great grandmother (come, came) to America as an immigrant from Russia. |
| 26. The rocket (fly, flew) into a deck of low cloud, then re-emerged and was visible from the ground for over two minutes. |
| 27. Her demure temperament was something that caused a lot of people to think that she was unfriendly because she rarely (speak, spoke) to others. |
| 28. An authentic Van Gogh painting can (sell, sold) for millions of dollars. |

Write the verbs in each sentence.

- | | |
|---|--|
| 29. If you perform well in school, you will get into a good college. (3 verbs)
_____ | 30. It was such a special occasion that I briefly found myself unable to speak. (3 verbs)
_____ |
| 31. People are attracted to mountainous regions because of the rich, fertile soil. (2 verbs)
_____ | 32. Neither Jeff nor myself like to play with snakes. (2 verbs)
_____ |

Name _____

Date _____

What Kind of Adjective?

Adjectives modify by telling WHICH ONE, HOW MANY, WHAT KIND.

In the following sentences, underline all the adjectives.

Put a '1' over the word if it tells WHICH ONE.

Put a '2' over the word if it tells HOW MANY.

Put a '3' over the word if it tells WHAT KIND.

Example: Th¹ese ²two blue³berry pies are going to the cou³nty fair.

1. The brick chimney put out black smoke.
2. The apple trees need pruning.
3. The boy has two skateboards.
4. She has a younger sister.
5. That goat ate my new shoes.
6. My aunt bought six towels at the store.
7. The city zoo has two new elephants.
8. There are four pear trees in the orchard.
9. The dog found a red ball in the park.
10. That little old man is my grandfather.
11. The brown puppy is very frisky.
12. I want to ride the old, slow mare.
13. He saw a bright, shiny star in the sky.
14. Do you want that black kitten?
15. Sixteen people were sick yesterday.

Name _____

Date _____

Is It A Noun or an Adjective?

Decide whether the underlined word in the following sentences is used as a noun or an adjective.

Example:

We are going to buy a pumpkin for a Jack-o-lantern this Halloween.

_____ noun _____

Do you like to eat pumpkin seeds? _____ adjective _____

1. That is a beautiful oak tree. _____
2. Will you build me a tree house? _____
3. She always has an apple for lunch. _____
4. I like apple pie with ice cream. _____
5. My grandmother has a beautiful flower garden. _____
6. That vase has a single flower in it. _____
7. Barn owls are beautiful birds. _____
8. Farmer Brown has a huge red barn. _____
9. Which book do you want to read? _____
10. He built a book shelf in his room. _____
11. Hand me the blue dog collar. _____
12. Sam has a new dog. _____
13. I like that brown horse with the black mane. _____
14. Is he going to the horse races this weekend? _____
15. I need the blue cardboard to back this picture. _____

Name _____

Date _____
(Answer ID # 0781952)

Adverbs

Rewrite each sentence and underline the adverb.

1. Nicole and Sierra scored equally on the test.

2. Mrs. Carmichael sternly warned me that if my grades didn't improve, I would be repeating the seventh grade.

3. I can barely hear what you're saying because of the loud fire alarm.

4. The little girl hinted broadly for a new bike for her birthday.

5. Our teacher asks us to research a new science topic monthly.

6. Madison sighed dramatically when her mother asked her to wash the dishes.

7. Robert's older brother normally works every day after school, except on Fridays.

8. As soon as Sydney is ready, we will promptly leave for the mall.

9. Andrew watched as the snail crossed the sidewalk slowly.

10. Sean severely injured his arm when he flipped over the handlebars of his bike.

6th grade to 7th grade Math Summer Packet

Dear Students and Parents,

This summer, we encourage you to continue to practice your mathematics at home. Practicing math skills over the summer can keep the brain's pathways for computation and mathematical vocabulary strong.

Please make sure to follow the suggested directions for the best outcomes:

1. **Do NOT use a calculator.** Take time to "grow your brain" and practice your math facts.
2. Show all work! If you get an answer incorrect, it helps to go back to your work and find the step that led to your error.
3. Be neat and organized! Part of success in math is being able to organize your work and keep track of your calculations and steps. Use all the paper necessary to neatly show your work.
4. Box your final answers (another organizational strategy).
5. Do not rush! Take advantage of the summer pace and see if you digest more of what you're working on.
6. If you are stuck on a problem, read the example problems provided at the beginning of each exercise. If you're still stuck, check out one of the math websites listed below.

Resources:

For help with a topic: www.purplemath.com and select 6th grade on the left hand column, then select the topic from the top.

For Math Fact Practice: www.aplusmath.com and select flash cards. You can switch the operation and difficulty each time.

Another resource for help relearning a topic: www.khanacademy.org

Math Learning Games: www.funbrain.com

More suggestions:


If you have a cellular phone, there are free math apps that your child can play on and build their math skills. There are many out there.

Rounding Decimals

Rounding Decimals


Round 8.135 to the nearest tenth.

$$8.\overline{1}35 \rightarrow 8.1$$


less than 5

Round 32.56713 to the nearest hundredth.

$$32.56\overline{7}13 \rightarrow 32.57$$


greater than 5

Round to the nearest whole number:

1. 41.803

2. 119.63

3. 20.05

4. 3.45

5. 79.531

6. 8.437

7. 29.37

8. 109.96

Round to the nearest tenth:

9. 33.335

10. 1.861

11. 99.96

12. 103.103

13. 16.031

14. 281.05

15. 8.741

16. 27.773

Round to the nearest hundredth:

17. 69.713

18. 5.569

19. 609.906

20. 247.898

21. 5.535

22. 67.1951

23. 14.0305

24. 6.9372

Multiplying and Dividing by 10, 100, etc.

When multiplying by a power of 10, move the decimal to the right:

$$34.61 \times 10 \rightarrow \text{move 1 place} \rightarrow 346.1$$

$$6.77 \times 100 \rightarrow \text{move 2 places} \rightarrow 677$$

When dividing by a power of 10, move the decimal to the left:

$$7.39 \div 100 \rightarrow \text{move 2 place} \rightarrow 0.0739$$

$$105.61 \div 1000 \rightarrow \text{move 3 places} \rightarrow 0.10561$$

1. $4.81 \times 100 =$

10. $90,000 \div 100 =$

2. $37.68 \div 10 =$

11. $0.000618 \times 1,000 =$

3. $0.46 \times 1000 =$

12. $39.006 \div 1,000 =$

4. $7.12 \div 10,000 =$

13. $16 \times 100 =$

5. $5.4 \times 10 =$

14. $28.889 \div 10,000 =$

6. $27,500 \div 1,000 =$

15. $36.89 \times 10,000 =$

7. $4.395 \times 100,000 =$

16. $0.091 \div 100 =$

8. $0.0075 \div 100 =$

17. $0.0336 \times 100,000 =$

9. $2.274 \times 10 =$

18. $1,672 \div 100,000 =$

Powers and Exponents

$$\begin{array}{c} \text{Exponent} \\ \swarrow \\ 3^4 = 3 \cdot 3 \cdot 3 \cdot 3 = 81 \\ \downarrow \quad \underbrace{\hspace{2cm}} \\ \text{Base} \quad \text{common factors} \end{array}$$

The exponent tells you how many times to use the **base** as a factor.

EXAMPLE 1 Write 6^3 as a product of the same factor.

The base is 6. The exponent 3 means that 6 is used as a factor 3 times.

$$6^3 = 6 \cdot 6 \cdot 6$$

EXAMPLE 2 Evaluate 5^4 .

$$\begin{aligned} 5^4 &= 5 \cdot 5 \cdot 5 \cdot 5 \\ &= 625 \end{aligned}$$

EXAMPLE 3 Write $4 \cdot 4 \cdot 4 \cdot 4 \cdot 4$ in exponential form.

The base is 4. It is used as a factor 5 times, so the exponent is 5.

$$4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 = 4^5$$

Write each power as a product of the same factor (see example 1 above):

1. 7^3

2. 2^7

3. 9^2

4. 15^4

Evaluate each expression (see example 2 above):

5. 3^5

6. 7^3

7. 8^4

8. 5^3

Write each product in exponential form (see example 3 above):

9. $2 \cdot 2 \cdot 2 \cdot 2$

10. $7 \cdot 7 \cdot 7 \cdot 7 \cdot 7 \cdot 7$

11. $10 \cdot 10 \cdot 10$

12. $9 \cdot 9 \cdot 9 \cdot 9 \cdot 9$

13. $12 \cdot 12 \cdot 12$

14. $5 \cdot 5 \cdot 5 \cdot 5$

15. $6 \cdot 6 \cdot 6 \cdot 6 \cdot 6$

16. $1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1 \cdot 1$

Order of Operations

Use the **order of operations** to evaluate numerical expressions.

1. Do all operations **within grouping symbols** first.
2. Evaluate all **powers** before other operations.
3. **Multiply and divide** in order from left to right.
4. **Add and subtract** in order from left to right.

EXAMPLE 1 Evaluate $(10 - 2) - 4 \cdot 2$.

$$\begin{aligned}(10 - 2) - 4 \cdot 2 &= 8 - 4 \cdot 2 && \text{Subtract first since } 10 - 2 \text{ is in parentheses.} \\ &= 8 - 8 && \text{Multiply 4 and 2.} \\ &= 0 && \text{Subtract 8 from 8.}\end{aligned}$$

EXAMPLE 2 Evaluate $8 + (1 + 5)^2 \div 4$.

$$\begin{aligned}8 + (1 + 5)^2 \div 4 &= 8 + 6^2 \div 4 && \text{First, add 1 and 5 inside the parentheses.} \\ &= 8 + 36 \div 4 && \text{Find the value of } 6^2. \\ &= 8 + 9 && \text{Divide 36 by 4.} \\ &= 17 && \text{Add 8 and 9.}\end{aligned}$$

Evaluate each expression.

1. $(1 + 7) \times 3$

2. $28 - 4 \cdot 7$

3. $5 + 4 \cdot 3$

4. $(40 \div 5) - 7 + 2$

5. $35 \div 7(2)$

6. 3×10^3

7. $45 \div 5 + 36 \div 4$

8. $42 \div 6 \times 2 - 9$

9. $2 \times 8 - 3^2 + 2$

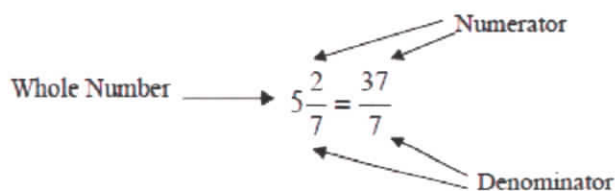
10. $5 \times 2^2 + 32 \div 8$

11. $3 \times 6 - (9 - 8)^3$

12. 3.5×10^2

Mixed Numbers

To convert a mixed number, $5\frac{2}{7}$, to an improper fraction, $\frac{37}{7}$:



$$5\frac{2}{7}$$

Work in a clockwise direction, beginning with the denominator, (7).

$$5 \times 7 = 35$$

Multiply the denominator (7) by the whole number, (5)

$$35 + 2 = 37$$

Add that product, (35), to the numerator (2) of the fraction.

$$\frac{(5 \times 7) + 2}{7} = \frac{37}{7}$$

The denominator remains the same for the mixed number and the improper fraction.

Convert to Improper Fractions:

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

6) $14\frac{3}{4} =$

11) $9 =$
Hint: See #10

2) $5\frac{3}{8} =$

7) $6\frac{3}{5} =$

12) $7\frac{3}{4} =$

3) $2\frac{4}{9} =$

8) $9\frac{1}{10} =$

13) $12\frac{5}{9} =$

4) $5\frac{6}{7} =$

9) $16\frac{1}{2} =$

14) $10\frac{3}{8} =$

5) $8\frac{1}{8} =$

10) $8\frac{0}{1} =$

15) $28\frac{2}{3} =$

Finding Equivalent Fractions with Larger Denominators

This process is sometimes called “Boosting”

$$\text{Example: } \frac{5}{8} = \frac{?}{56}$$

$$56 \div 8 = 7$$

Divide the larger denominator by the smaller to find the factor used to multiply the denominator. (Note: The product of the smaller denominator and the factor is the larger denominator)

$$\frac{5}{8} \times \frac{7}{7} = \frac{5 \times 7}{8 \times 7}$$

Use this factor to multiply the numerator.

$$\frac{5}{8} = \frac{35}{56}$$

The result is two equivalent fractions.

Note: Equal denominators are required for addition and subtraction of fractions.

Find the equivalent fractions as indicated:

1) $\frac{2}{5} = \frac{\quad}{15}$

6) $\frac{3}{4} = \frac{\quad}{44}$

11) $\frac{8}{9} = \frac{\quad}{81}$

2) $\frac{3}{8} = \frac{\quad}{32}$

7) $\frac{3}{5} = \frac{\quad}{45}$

12) $\frac{3}{4} = \frac{\quad}{68}$

3) $\frac{4}{9} = \frac{\quad}{54}$

8) $\frac{1}{10} = \frac{\quad}{60}$

13) $\frac{5}{9} = \frac{\quad}{108}$

4) $\frac{6}{7} = \frac{\quad}{49}$

9) $\frac{1}{2} = \frac{\quad}{28}$

14) $\frac{3}{8} = \frac{\quad}{112}$

5) $\frac{1}{8} = \frac{\quad}{48}$

10) $\frac{10}{100} = \frac{\quad}{700}$

15) $\frac{2}{3} = \frac{\quad}{462}$

Equivalent Fractions with Smaller Denominators

Reducing Fractions

Example: Reduce the following fraction to lowest terms

$$\frac{90}{105}$$

There are **three common methods**, DO NOT mix steps of the methods!

Method 1:

$$\frac{90 \div 15}{105 \div 15} = \frac{6}{7}$$

The Greatest Common Factor for 90 and 105 is 15. Divide the numerator and the denominator by the GCF, 15.

Method 2:

$$\frac{90 \div 5}{105 \div 5} = \frac{18}{21}$$

Examine the numerator and denominator for any common factors, divide both numerator and denominator by that common factor. Repeat as needed.

➤ Both 90 and 105 are divisible by 5.

$$\frac{18 \div 3}{21 \div 3} = \frac{6}{7}$$

➤ Both 18 and 21 are divisible by 3.

Method 3:

$$\frac{90}{105} = \frac{2 \times 3 \times 3 \times 5}{7 \times 3 \times 5}$$

Express the numerator and denominator as a product of prime factors.

$$\frac{90}{105} = \frac{2 \times 3 \times (3 \times 5)}{7 \times (3 \times 5)}$$

Divide numerator and denominator by common factors, (3x5)

$$= \frac{2 \times 3}{7} = \frac{6}{7}$$

Multiply remaining factors.

Reduce these fractions.

1) $\frac{28}{50} =$

5) $\frac{32}{48} =$

9) $\frac{36}{216} =$

2) $\frac{8}{24} =$

6) $\frac{36}{54} =$

10) $\frac{35}{42} =$

3) $\frac{30}{54} =$

7) $\frac{14}{56} =$

11) $12 \frac{54}{99} =$

4) $\frac{18}{42} =$

8) $\frac{18}{28} =$

12) $15 \frac{280}{320} =$

Improper Fractions

Example: Convert $\frac{14}{3}$ to an Improper Fraction

$$14 \div 3 = 4$$

Remainder 2

Remember: Dividend \div Divisor = Quotient

Divide the numerator (14) by the denominator (3).

$$\frac{14}{3} = 4\frac{2}{3}$$

Write the mixed number in the form: $\text{Quotient} \frac{\text{remainder}}{\text{divisor}}$

Note: Check your answer to see if you can reduce the fraction.

Convert these improper fractions to mixed numbers. *Be sure to reduce when it's possible.*

#11, 12 Hint: how many wholes will there be?

1) $\frac{8}{5} =$

6) $\frac{114}{5} =$

11) $15\frac{280}{6} =$

2) $\frac{18}{7} =$

7) $\frac{128}{3} =$

12) $8\frac{315}{3} =$

3) $\frac{37}{9} =$

8) $\frac{401}{3} =$

13) $\frac{54}{8} =$

4) $\frac{127}{5} =$

9) $\frac{36}{6} =$

14) $\frac{26}{8} =$

5) $\frac{32}{9} =$

10) $\frac{235}{2} =$

15) $\frac{258}{9} =$

Multiplying Fractions

When multiplying fractions, you multiply the numerators, then multiply the denominators and then reduce if necessary.

EXAMPLE 1 Find $\frac{3}{8} \cdot \frac{4}{11}$. Write in simplest form.

$$\begin{aligned}\frac{3}{8} \cdot \frac{4}{11} &= \frac{3}{\cancel{8}_2} \cdot \frac{\cancel{4}^1}{11} \\ &= \frac{3 \cdot 1}{2 \cdot 11} \\ &= \frac{3}{22}\end{aligned}$$

Divide 8 and 4 by their GCF, 4.

Multiply the numerators and denominators.

Simplify.

To multiply mixed numbers, first rewrite them as improper fractions.

Multiply and then write in simplest form.

1. $\frac{2}{3} \cdot \frac{3}{5}$

2. $\frac{4}{7} \cdot \frac{3}{4}$

3. $\frac{1}{2} \cdot \frac{7}{9}$

4. $\frac{9}{10} \cdot \frac{2}{3}$

5. $\frac{5}{8} \cdot \left(\frac{4}{9}\right)$

6. $\frac{4}{7} \cdot \left(\frac{2}{3}\right)$

**** Remember to rewrite the mixed numbers as improper fractions before multiplying.**

7. $2\frac{2}{5} \cdot \frac{1}{6}$

8. $3\frac{1}{3} \cdot 1\frac{1}{2}$

9. $3\frac{3}{7} \cdot 2\frac{5}{8}$

10. $1\frac{7}{8} \cdot \left(2\frac{2}{5}\right)$

11. $1\frac{3}{4} \cdot 2\frac{1}{5}$

12. $2\frac{2}{3} \cdot 2\frac{3}{7}$

Dividing Fractions

Two numbers whose product is 1 are **multiplicative inverses**, or **reciprocals**, of each other.

EXAMPLE 1 Write the multiplicative inverse of $2\frac{3}{4}$.

$$2\frac{3}{4} = \frac{11}{4} \quad \text{Write } 2\frac{3}{4} \text{ as an improper fraction.}$$

Since $\frac{11}{4} \cdot \frac{4}{11} = 1$, the multiplicative inverse of $2\frac{3}{4}$ is $\frac{4}{11}$.

To divide by a fraction or mixed number, multiply by its multiplicative inverse.

EXAMPLE 2 Find $\frac{3}{8} \div \frac{6}{7}$. Write in simplest form.

$$\frac{3}{8} \div \frac{6}{7} = \frac{3}{8} \cdot \frac{7}{6} \quad \text{Multiply by the multiplicative inverse of } \frac{6}{7}, \text{ which is } \frac{7}{6}.$$

$$= \frac{\overset{1}{\cancel{3}}}{8} \cdot \frac{7}{\underset{2}{\cancel{6}}} \quad \text{Divide 6 and 3 by their GCF, 3.}$$

$$= \frac{7}{16} \quad \text{Simplify.}$$

Write the multiplicative inverse of each number:

1. $\frac{3}{5}$

2. $\frac{8}{9}$

3. $\frac{1}{10}$

4. $\frac{1}{6}$

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

6. $1\frac{2}{3}$

7. $5\frac{2}{5}$

8. $7\frac{1}{4}$

Divide. Write in simplest form:

9. $\frac{1}{3} \div \frac{1}{6}$

10. $\frac{2}{5} \div \frac{4}{7}$

11. $\frac{5}{6} \div \frac{3}{4}$

12. $1\frac{1}{5} \div 2\frac{1}{4}$

13. $3\frac{1}{7} \div 3\frac{2}{3}$

14. $\frac{4}{9} \div 2$

15. $\frac{6}{11} \div 4$

16. $5 \div 2\frac{1}{3}$

Adding and Subtracting Fractions

In order to add fractions, they have to be the same size fractions, meaning they must have a common denominator. To get a common denominator you need to convert the fractions proportionally, multiplying the numerator and denominator by the same value.

EXAMPLE 1 Find $\frac{3}{5} + \frac{2}{3}$. Write in simplest form.

$$\begin{aligned}\frac{3}{5} + \frac{2}{3} &= \frac{3}{5} \cdot \frac{3}{3} + \frac{2}{3} \cdot \frac{5}{5} \\ &= \frac{9}{15} + \frac{10}{15} \\ &= \frac{9+10}{15} \\ &= \frac{19}{15} \text{ or } 1\frac{4}{15}\end{aligned}$$

The LCD is $5 \cdot 3$ or 15.

Rename each fraction using the LCD.

Add the numerators. The denominators are the same.

Simplify.

Add or subtract. Write in simplest form.

1. $\frac{2}{5} + \frac{3}{10}$

2. $\frac{1}{3} + \frac{2}{9}$

3. $\frac{5}{9} - \frac{1}{6}$

4. $\frac{3}{4} - \frac{1}{8}$

5. $\frac{4}{5} + \frac{1}{3}$

6. $1\frac{2}{3} + \frac{4}{9}$

7. $\frac{1}{2} - \frac{3}{10}$

8. $2\frac{1}{4} + 1\frac{3}{8}$

9. $3\frac{3}{4} - 1\frac{1}{3}$

10. $1\frac{1}{5} + 2\frac{1}{4}$

11. $3\frac{1}{3} - 2\frac{4}{9}$

12. $3\frac{3}{5} - 2\frac{2}{3}$

Solving Addition and Subtraction Equations

EXAMPLE 1 Solve $w + 19 = 45$. Check your solution.

$$\begin{array}{ll} w + 19 = 45 & \text{Write the equation.} \\ w + 19 - 19 = 45 - 19 & \text{Subtract 19 from each side.} \\ w = 26 & 19 - 19 = 0 \text{ and } 45 - 19 = 26. \text{ } w \text{ is by itself.} \end{array}$$

Check

$$\begin{array}{ll} w + 19 = 45 & \text{Write the original equation.} \\ 26 + 19 \stackrel{?}{=} 45 & \text{Replace } w \text{ with 26. Is this sentence true?} \\ 45 = 45 \checkmark & 26 + 19 = 45 \end{array}$$

EXAMPLE 2 Solve $h - 25 = -76$. Check your solution.

$$\begin{array}{ll} h - 25 = -76 & \text{Write the equation.} \\ h - 25 + 25 = -76 + 25 & \text{Add 25 to each side.} \\ h = -51 & -25 + 25 = 0 \text{ and } -76 + 25 = -51. \text{ } h \text{ is by itself.} \end{array}$$

Check

$$\begin{array}{ll} h - 25 = -76 & \text{Write the original equation.} \\ -51 - 25 \stackrel{?}{=} -76 & \text{Replace } h \text{ with } -51. \text{ Is this sentence true?} \\ -76 = -76 \checkmark & -51 - 25 = -51 + (-25) \text{ or } -76 \end{array}$$

Solve each equation. Check your solution.

1. $s - 4 = 12$

2. $d + 2 = 21$

3. $h + 6 = 15$

4. $x + 5 = 8$

5. $b - 10 = 34$

6. $f + 22 = 36$

7. $c + 17 = 41$

8. $v - 36 = 25$

9. $y - 29 = 51$

10. $z - 32 = 19$

11. $t + 13 = 29$

12. $k + 39 = 55$

13. $b + 62 = 95$

14. $x - 39 = 65$

15. $n - 47 = 56$

Solving Multiplication and Division Equations

Use the inverse operation to solve for the variable. Multiplication is the inverse of division and vice versa. Remember you should not divide by a fraction, but rather multiply by the multiplicative inverse.

EXAMPLE 1 Solve $19w = 114$. Check your solution.

$$\begin{array}{ll} 19w = 114 & \text{Write the equation.} \\ \frac{19w}{19} = \frac{114}{19} & \text{Divide each side of the equation by 19.} \\ 1w = 6 & 19 \div 19 = 1 \text{ and } 114 \div 19 = 6. \\ w = 6 & \text{Identity Property; } 1w = w \end{array}$$

Check

$$\begin{array}{ll} 19w = 114 & \text{Write the original equation.} \\ 19(6) \stackrel{?}{=} 114 & \text{Replace } w \text{ with 6.} \\ 114 = 114 \checkmark & \text{This sentence is true.} \end{array}$$

EXAMPLE 2 Solve $\frac{d}{15} = -9$. Check your solution.

$$\begin{array}{ll} \frac{d}{15} = -9 & \\ \frac{d}{15}(15) = -9(15) & \text{Multiply each side of the equation by 15.} \\ d = -135 & \end{array}$$

Check

$$\begin{array}{ll} \frac{d}{15} = -9 & \text{Write the original equation.} \\ \frac{-135}{15} \stackrel{?}{=} -9 & \text{Replace } d \text{ with } -135. \\ -9 = -9 \checkmark & -135 \div 15 = -9 \end{array}$$

Solve each equation. Show your work. Check your solutions.

1. $\frac{r}{5} = 6$

2. $2d = 12$

3. $7h = 21$

4. $8x = 40$

5. $\frac{f}{8} = 6$

6. $\frac{x}{10} = 7$

7. $6c = 24$

8. $\frac{h}{11} = 12$

9. $12t = 60$

10. $5z = 125$

11. $2t = 28$

12. $11k = 33$

Solving Equations with Rational Numbers

EXAMPLE 1 Solve $x - 2.73 = 1.31$. Check your solution.

$$\begin{array}{ll}
 x - 2.73 = 1.31 & \text{Write the equation.} \\
 x - 2.73 + 2.73 = 1.31 + 2.73 & \text{Add 2.73 to each side.} \\
 x = 4.04 & \text{Simplify.} \\
 \text{Check } x - 2.73 = 1.31 & \text{Write the original equation.} \\
 4.04 - 2.73 \stackrel{?}{=} 1.31 & \text{Replace } x \text{ with 4.04.} \\
 1.31 = 1.31 \checkmark & \text{Simplify.}
 \end{array}$$

EXAMPLE 2 Solve $\frac{4}{5}y = \frac{2}{3}$. Check your solution.

$$\begin{array}{ll}
 \frac{4}{5}y = \frac{2}{3} & \text{Write the equation.} \\
 \frac{5}{4}\left(\frac{4}{5}y\right) = \frac{5}{4} \cdot \frac{2}{3} & \text{Multiply each side by } \frac{5}{4}. \\
 y = \frac{5}{6} & \text{Simplify.} \\
 \text{Check } \frac{4}{5}\left(\frac{5}{6}\right) \stackrel{?}{=} \frac{2}{3} & \text{Write the original equation.} \\
 \frac{2}{3} = \frac{2}{3} \checkmark & \text{Replace } y \text{ with } \frac{5}{6}. \\
 & \text{Simplify.}
 \end{array}$$

Solve each equation. Check your solutions.

1. $t + 1.32 = 3.48$

2. $b - 4.22 = 7.08$

3. $r - 4.48 = 8.07$

4. $h + \frac{4}{9} = \frac{7}{9}$

5. $x - \frac{1}{4} = \frac{5}{8}$

6. $f - \frac{1}{3} = \frac{3}{5}$

7. $3.2c = 9.6$

8. $1.26d = 5.04$

9. $\frac{3}{5}x = 6$

10. $\frac{3}{4}t = \frac{2}{3}$

11. $\frac{w}{2.5} = 4.2$

12. $1\frac{3}{4}r = 3\frac{5}{8}$

Solving Proportions

A proportion is two fractions that are equivalent. For example, we know that $\frac{1}{2} = \frac{3}{6}$ and we can say that one-half is proportional to three-sixths. You can use cross products to determine if two fractions are proportional.

EXAMPLE 1 Determine whether the pair of ratios $\frac{20}{24}$ and $\frac{12}{18}$ forms a proportion.

Find the cross products.

$$\begin{array}{l} \begin{array}{c} \textcircled{20} \quad \textcircled{12} \\ \diagdown \quad \diagup \\ \textcircled{24} \quad \textcircled{18} \end{array} \rightarrow 24 \cdot 12 = 288 \\ \rightarrow 20 \cdot 18 = 360 \end{array}$$

Since the cross products are not equal, the ratios do not form a proportion.

EXAMPLE 2 Solve $\frac{12}{30} = \frac{k}{70}$.

$$\frac{12}{30} = \frac{k}{70}$$

Write the equation.

$$12 \cdot 70 = 30 \cdot k$$

Find the cross products.

$$840 = 30k$$

Multiply.

$$\frac{840}{30} = \frac{30k}{30}$$

Divide each side by 30.

$$28 = k$$

Simplify.

The solution is 28.

Determine whether each pair of fractions forms a proportion: (you can use a calculator for this part but show work)

1. $\frac{17}{10}, \frac{12}{5}$	2. $\frac{6}{9}, \frac{12}{18}$	3. $\frac{8}{12}, \frac{10}{15}$
4. $\frac{7}{15}, \frac{13}{32}$	5. $\frac{7}{9}, \frac{49}{63}$	6. $\frac{8}{24}, \frac{12}{28}$
7. $\frac{4}{7}, \frac{12}{71}$	8. $\frac{20}{35}, \frac{30}{45}$	9. $\frac{18}{24}, \frac{3}{4}$

Solve each proportion:

10. $\frac{x}{5} = \frac{15}{25}$

11. $\frac{3}{4} = \frac{12}{c}$

12. $\frac{6}{9} = \frac{10}{r}$

13. $\frac{16}{24} = \frac{z}{15}$

14. $\frac{5}{8} = \frac{s}{12}$

15. $\frac{14}{t} = \frac{10}{11}$

16. $\frac{w}{6} = \frac{2.8}{7}$

17. $\frac{5}{y} = \frac{7}{16.8}$

18. $\frac{x}{18} = \frac{7}{36}$

Fractions, Decimals, and Percent

EXAMPLE 1 Write 56% as a decimal.

$$\begin{aligned} 56\% &= \underbrace{56}_{\text{}} \% \text{ Divide by 100 and remove the percent symbol.} \\ &= 0.56 \end{aligned}$$

EXAMPLE 2 Write 0.17 as a percent.

$$\begin{aligned} 0.17 &= \underbrace{0.17}_{\text{}} \text{ Multiply by 100 and add the percent symbol.} \\ &= 17\% \end{aligned}$$

EXAMPLE 3 Write $\frac{7}{20}$ as a percent.

Method 1 Use a proportion.

$$\begin{aligned} \frac{7}{20} &= \frac{x}{100} && \text{Write the proportion.} \\ 7 \cdot 100 &= 20 \cdot x && \text{Find cross products.} \\ 700 &= 20x && \text{Multiply.} \\ \frac{700}{20} &= \frac{20x}{20} && \text{Divide each side by 20.} \\ 35 &= x && \text{Simplify.} \end{aligned}$$

Method 2 Write as a decimal.

$$\begin{aligned} \frac{7}{20} &= \underbrace{0.35}_{\text{}} \text{ Convert to a decimal by dividing.} \\ &= 35\% \text{ Multiply by 100 and add the} \\ &\quad \text{percent symbol.} \end{aligned}$$

So, $\frac{7}{20}$ can be written as 35%.

NO CALCULATORS!

Write each percent as a decimal: (see example 1 above)

1. 10% 2. 36% 3. 82% 4. 49.1%

Write each decimal as a percent: (see example 2 above)

5. 0.14 6. 0.59 7. 0.932 8. 1.07

Write each fraction as a percent: (see example 3 above)

9. $\frac{3}{4}$ 10. $\frac{7}{10}$ 11. $\frac{9}{16}$ 12. $\frac{1}{40}$

Area of Parallelograms, Triangles, & Trapezoids

Formulas:

Area of a Triangle = $\frac{1}{2}bh$

Area of a Parallelogram = bh

Area of a Trapezoid = $\frac{1}{2}h(b_1 + b_2)$

EXAMPLES Find the area of each figure.

- 1 The base is 8 yards. The height is 6 yards.

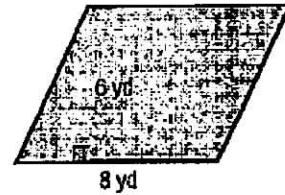
$A = bh$

$A = 8 \cdot 6$ or 48

The area is 48 square yards.

Area of a parallelogram

Replace b with 8 and h with 6. Multiply.



- 2 The base is 10 feet. The height is 4 feet.

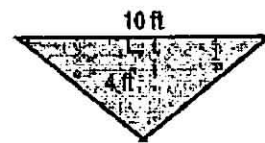
$A = \frac{1}{2}bh$

$A = \frac{1}{2} \cdot 10 \cdot 4$ or 20

The area is 20 square feet.

Area of a triangle

Replace b with 10 and h with 4. Multiply.



- 3 The height is 5 inches. The lengths of the bases are 9 inches and 7 inches.

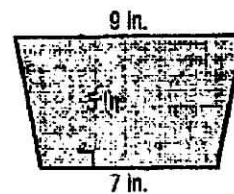
$A = \frac{1}{2}h(b_1 + b_2)$

$A = \frac{1}{2} \cdot 5 \cdot (9 + 7)$ or 40

The area is 40 square inches.

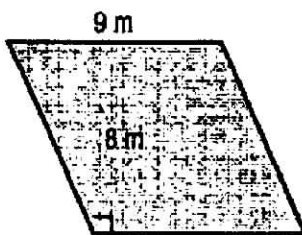
Area of a trapezoid

Replace h with 5, b_1 with 9, and b_2 with 7. Simplify.

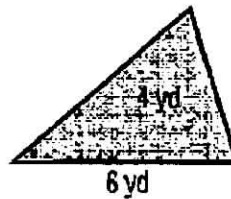


Find the area of each figure.

1.



2.



3.



4. parallelogram: base, 11 cm; height, 12 cm

5. triangle: base, 8 mi; height, 13 mi

6. trapezoid: height, 7 km; bases, 8 km and 12 km

The Coordinate Plane

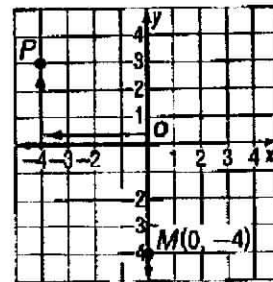
The **coordinate plane** is used to locate points. The horizontal number line is the **x-axis**. The vertical number line is the **y-axis**. Their intersection is the **origin**.

Points are located using **ordered pairs**. The first number in an ordered pair is the **x-coordinate**; the second number is the **y-coordinate**.

The coordinate plane is separated into four sections called **quadrants**.

EXAMPLE 1 Name the ordered pair for point P. Then identify the quadrant in which P lies.

- Start at the origin.
 - Move 4 units left along the x-axis.
 - Move 3 units up on the y-axis.
- The ordered pair for point P is $(-4, 3)$.
P is in the upper left quadrant or quadrant II.

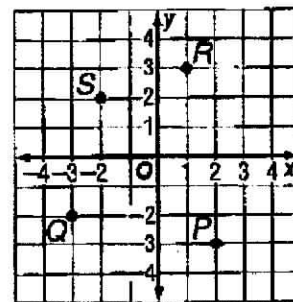


EXAMPLE 2 Graph and label the point $M(0, -4)$.

- Start at the origin.
- Move 0 units along the x-axis.
- Move 4 units down on the y-axis.
- Draw a dot and label it $M(0, -4)$.

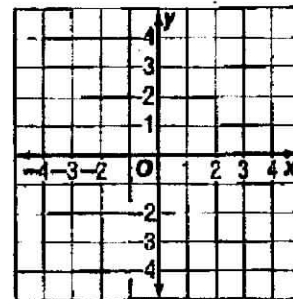
Name the ordered pair for each point graphed at the right. Then identify the quadrant in which each point lies.

- | | |
|------|------|
| 1. P | 2. Q |
| 3. R | 4. S |



Graph and label each point on the coordinate plane.

- | | |
|---------------|----------------|
| 5. $A(-1, 1)$ | 6. $B(0, -3)$ |
| 7. $C(3, 2)$ | 8. $D(-3, -1)$ |
| 9. $E(1, -2)$ | 10. $F(1, 3)$ |



7th Grade Life Science

Unit: Cells and Body Systems

Performance Expectations: MS-LS1-2. MS-LS1-3.

Learning Outcomes:

By the end of the lesson, students should be able to:

- Describe the three tenets of the cell theory.
- Describe evidence supporting the cell theory.
- Use scientific tools to gather evidence in support of the cell theory.
- Explain how both simple and complex organisms are composed of cells that perform essential functions.
- Recognize the importance of microscopy in the discovery of cells.

Day 1 Activity

A. Quick Write (2 to 4 Mins)

What Do You Already Know about Cells? What are all living things made of?

B. Reading

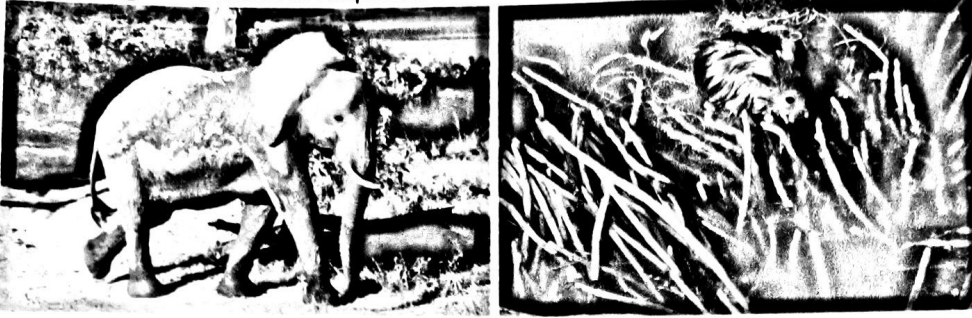
Do you know what all living things are made of? For most of human history, we did not know the answer to this question. It was not until 1665 that people realized that all living things are made up of tiny cells, and that cells perform all of the functions that keep organisms alive. Below is a picture of one such cell that constitutes most of your blood. What do you know about cells? How big do you think they are? How many do you think are in the human body? If you looked inside a cell, what do you think you would find?

The discovery of cells was made when Robert Hooke looked through his microscope at the bark of a cork tree. He saw the spaces created by the cells of the cork tree's bark and began to form a theory. Without this amazing discovery, many scientific breakthroughs would not have been possible. For example, we would not be able to treat most diseases such as cancer effectively. People would not understand heredity and genetics. The discovery of cells has been the basis for much of what we know about life science today.

By building upon the work of Robert Hooke, German scientists Theodor Schwann, Matthias Schleiden, and Rudolf Virchow developed the cell theory. This theory is one of the fundamental principles of biology. But what exactly is the cell theory and why is it important to understand the structure and function of organisms? In this concept, you will learn about the importance of cells and the cell theory.

C. Reflection Questions

1. As time progressed and technology improved, microscopes were able to give clearer images of extremely tiny objects. How did this development advance the cell theory?
2. Comparing Cell Sizes: An elephant and a mouse both are made of cells.



Compare the sizes of the cells found in an elephant to those found in a mouse. Why is an elephant so much larger than a mouse? Use scientific reasoning to support your claims.

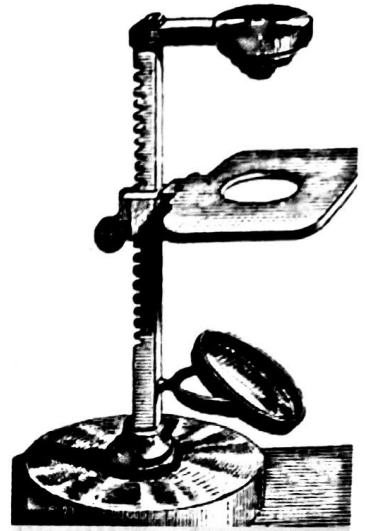
3. Two Different Cell Types: Living cells are classed as either prokaryotic or eukaryotic. Identify the following as characteristics of prokaryotic cells, eukaryotic cells, or both. Label each characteristic with either P for prokaryotic , E for eukaryotic or B for both.

Have a nucleus	
contain cytoplasm	
Are the smallest unit of living matter	
Have membrane bound organelles	
Contain DNA	
Are produced by division of another cell	
Mostly single-celled organisms	
Comprise most multi-celled organisms	

The Microscope: The Tool of Modern Biology

Today, most people accept the idea that our bodies are made of **cells**. Scientists agree these tiny structures work together to keep us alive. People have not always understood how cells work, however. Ancient Greek thinkers such as Plato pondered the construction of living things. These early scientists knew that living things must be made of smaller parts. Exactly what these parts might be, however, remained a mystery for centuries.

In the 17th century, an important innovation helped solve this mystery. In 1655, Robert Hooke used an early microscope to study a thin slice of wood from a cork tree. Hooke observed that tiny structures acted together to form the entire tree; he called these structures "cells." In 1676, Antonie van Leeuwenhoek used a refined microscope to examine water. He saw tiny organisms made of single cells floating in the water. With his microscope, van Leeuwenhoek made the first reported observations of bacteria! Biologists now had a tool they could use to study the tiniest bits of nature.



The development of the microscope changed our understanding of biology.

Almost 200 years after van Leeuwenhoek, Matthias Jacob Schleiden and Theodor Schwann reported their findings that all living things are made of cells. Since then, microscopes have become even more powerful. Biologists have used them to study many different kinds of organisms. Although these organisms may look and act very differently, biologists using microscopes have confirmed the cells of these organisms are quite similar.

We can see through a microscope that all cells are surrounded by a **membrane**, which holds the cell and its contents together. This membrane is thin and porous, allowing water and other substances to move into and out of the cell. Cells obtain nutrients and dispose of waste through their porous membranes.

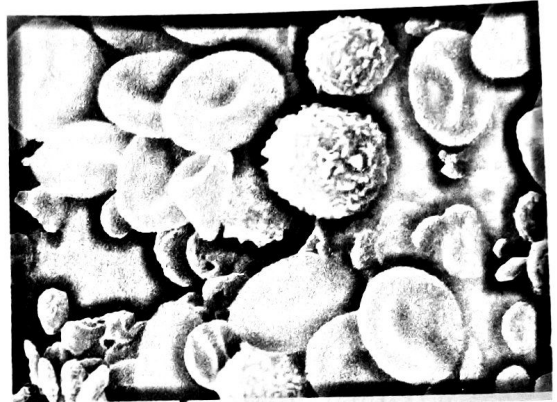
Biologists have discovered all cells contain genetic material called DNA. This material helps the cell reproduce. Cells also contain structures that process nutrients and build proteins, which cells need to survive. These structures are surrounded by a substance called **cytoplasm**. Cytoplasm fills up the gaps in the cell and separates the cell's different parts. In addition, the

The Microscope: The Tool of Modern Biology

cells in plants are surrounded by an extra layer called a **cell wall**. Cell walls are thicker than cell membranes. The thick walls help the cells maintain their shape.

More advanced microscopes have allowed biologists to see that more complex cells contain **organelles**. These tiny structures complete various functions to help the cell survive. There are many types of organelles:

- The **nucleus** is the part of the cell that contains most of the DNA. The plural form of *nucleus* is *nuclei*. Nuclei are the control centers of cells.
- **Mitochondria** convert energy into a form the cell can use.
- **Chloroplasts** use sunlight to produce energy for plant cells.
- **Vacuoles** fill the center of plant cells. They contain water that makes the cells rigid and enables plants to stand upright.



Red blood cells viewed through a microscope look like round flower petals.

As people discovered different kinds of cells, scientists began to use this information to classify organisms. Organisms made of the simplest cells are called **prokaryotes**. Most prokaryotic cells are encased in cell walls. These cells do not contain nuclei. Bacteria and some other single-celled organisms are prokaryotes.

Organisms made of more complex cells are **eukaryotes**. All eukaryotic cells contain nuclei, but these cells can otherwise differ greatly. Plants and animals are both eukaryotes, for example. Plant cells have a cell wall, chloroplasts, and vacuoles, but animal cells do not.

Despite these differences, all living things rely on the healthy functioning of their cells. Biologists will continue to use the microscope and other tools to study ways to cure disease, prevent illness, and keep cells functioning in a healthy way.

Day 2 Activity

A. Quick Write (2 to 4 Mins)

What is cell theory? Describe.

B. Reading Discovering the Basic Unit of Life

What Evidence Supports the Cell Theory?

Our modern understanding of life's processes and diversity relies partly on a body of knowledge called cell theory. There are three tenets—or principles—of the cell theory. First, cells are the most basic unit of biological structure. Cells are the building blocks of all organisms. Second, all organisms are made of one or more cells. For example, adult humans are made up of many trillions of cells, while a bacterium is just one cell. Third, all cells come from pre-existing cells. These tenets may seem obvious now, but they were hypotheses at the time. Over time, scientists provided plenty of evidence to support their hypotheses. Evidence came from an instrument that is now the workhorse of biology—the microscope.

In the 1600s, many scientists were experimenting with glass lenses and mirrors to create microscopes and telescopes. With these inventions, scientists could visualize previously unseen parts of nature, including tiny cells. Scientists first observed cells in the 1600s, but didn't realize their biological significance until the 1800s. Matthias Schleiden had observed plants under the microscope and realized that all the different parts of plants were made of cells, each cell having a nucleus. Meanwhile, Theodor Schwann had been studying animals and realized that all the different parts of animals were made of cells. These cells also had a nucleus! The two combined their ideas and developed the first two tenets of the cell theory. However, they were unable to agree on where cells came from.

A scientist named Robert Remak developed a method enabling him to watch cells divide. Remak proposed that cells arose from other cells. However, he was a lesser-known scientist trying to promote an idea that went against the ideas of Schleiden and Schwann, who were better known. A few years later, German scientist Rudolf Virchow presented Remak's work as his own, and the scientific community accepted Remak's idea. In the late 1850s, over 200 years since the discovery of the cell, modern cell theory finally emerged.

Once it was understood that all living things were made of cells, scientists looked at cells more closely. What were they made of? What did they do? These questions sparked discoveries that supported the cell theory and improved our lives. For example, medical research today is based on a cellular approach. This advance helped to combat the many diseases that are caused by single-celled organisms. The study of cells has helped scientists' understanding of genetics. That in turn has helped doctors to treat disease using a genetic approach. Forensic scientists use cells collected from crime scenes to learn about what happened and who was involved. These are some examples of how a better understanding of cells has improved our lives and advanced science.

C. Reflection Question

1. Evidence, or Just Fact? The passage below presents several facts about cells. However, only some of these facts provide evidence for the cell theory. Select the sentences that specifically confirm one or more of the three tenets of the cell theory.

Although scientists developed each principle of cell theory independently, each one has been confirmed by extensive research on cells. For example, when researchers remove a cell's nucleus, they find that the cell is unable to survive. Removal of other organelles such as mitochondria also results in cell death, showing that nothing can live outside of a cell. Many things show attributes of life. Like cells, crystals can reproduce. Fire can reproduce and is responsive. Cells respond and reproduce, but they also respire. Cells comprise all animal and plant tissues, but they vary greatly in size and complexity. In fact, some fungi, algae, and muscle cells are so big that they have multiple nuclei! Researchers could not have made these kinds of discoveries without the microscope. Most cells are too small to be seen with the naked eye. Robert Hooke was the first to observe cells in tissue of cork wood. He coined the word "cells" to describe the tiny compartments he saw in the cork tissue.

Microscopes have helped scientists make other significant strides in cell biology. For example, microscopy has advanced scientists' models of cell division. By studying cells using microscopes, scientists realized that both prokaryotes and eukaryotes give rise to other cells by fission. Although many cell types make up living things, the eukaryote cell cycle is very well conserved, comprising four distinct cycles. Recent studies have discovered surprising similarities between the eukaryote cell cycle and the process of binary fission in prokaryotes. However, unlike eukaryotes, prokaryote cells often exchange or combine genetic information with other cells. But how did cell division arise in the first place? Fat molecules form globular hollow structures called micelles. When something disturbs a micelle, it will divide in two. Micelles can enclose molecules such as nucleic acids. Perhaps a self-reproducing nucleic acid formed inside a micelle. This structure could have been the first simple cell and the earliest form of life on Earth.

In 1665, Robert Hooke first introduced the world to cells. When he examined thin slices of a cork tree under a microscope, Hooke observed that the cork was divided into tiny compartments. These compartments reminded Hooke of the rooms where monks reside. The monks' rooms were called cells, and so Hooke gave the same name to the cork compartments. After Hooke's discovery, many scientists became interested in cells. Through thousands of observations and experiments, much about the structure and functions of living cells was uncovered.

In the mid-19th century, German scientists Theodor Schwann, Matthias Schleiden, and Rudolph Virchow developed the cell theory. The cell theory is one of the fundamental principles of biology. The original version of the cell theory states:

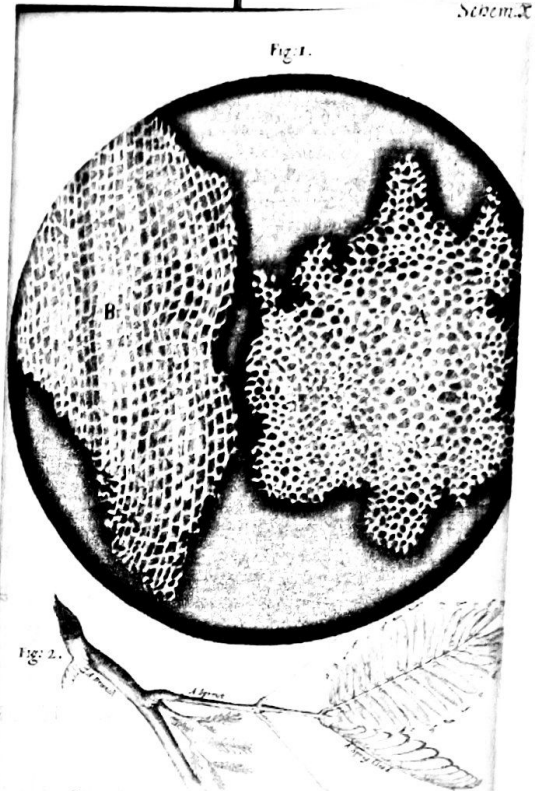
- Cells are the basic unit of life.
- All living organisms, both unicellular and multicellular, are composed of cells.
- Cells arise from pre-existing cells.

Like many scientific theories, the cell theory has been revised as new information has been discovered. Today the cell theory also includes:

- Cells contain hereditary information (DNA) that is passed from one cell to another during cell division.
- The flow of energy in living organisms occurs in cells.
- All cells have the same basic chemical composition and structure.

The six parts of the cell theory have continued to develop. Scientists from around the world have collected data about cellular structure and function. Interestingly, all cells, from single-celled bacteria to complex humans, are very similar.

There are two basic types of cells: prokaryotic and eukaryotic. Prokaryotic cells, such as bacteria, do not have nuclei or other membrane-bound structures. Prokaryotes are mostly unicellular organisms. Eukaryotic cells, which include plant, animal, and



Robert Hooke drew his observations of cork cells.

fungi cells, are more advanced and contain at least one nucleus and many membrane-bound structures. Eukaryotic cells generally make up multicellular beings.

The cell's main job is to organize the functions of the living organism. Many cells working together for a common function form tissue. There are many different kinds of tissue. Muscle tissue helps with movement. Cardiac tissue controls the heart. Nerve tissue carries messages from the brain to locations throughout the body.

Tissues form such organs as the heart, stomach, and skin. Organs coordinate to keep an organism alive. Muscles move the body, but they cannot function without input from the brain or blood pumped from the heart. Each organ is part of a larger organ system. The digestive system absorbs nutrients from food. The immune system fights off disease and infection. Collectively the organ systems make up an entire organism.

It should be remembered that life starts with the cell. The parts of a cell have specific functions that support tissues, organs, and organ systems. These cell parts are called "organelles."

The cell membrane is a double layer of fatty acids that forms the cell's boundary and contains its parts. Both prokaryotes and eukaryotes are contained within a cell membrane.

The nucleus contains DNA and directs the cell's activity. It is surrounded by a separate membrane called the "nuclear envelope." Since prokaryotes do not have a contained nucleus, their DNA is free-floating in the cytoplasm.

Cytoplasm is a jelly-like substance that fills the cell and contains all of the organelles.

The endoplasmic reticulum is a folded mass of tubes that stores proteins and produces fats that are sent to other cell



In a eukaryotic animal cell, each organelle performs a unique function for the cell.

parts. Endoplasmic reticulum can be smooth or rough. Rough endoplasmic reticulum is studded with ribosomes that are used in protein synthesis.

Mitochondria are a bean-shaped mass of membranes. The mitochondria serve as centers for cellular respiration and provide energy for the cell.

The Golgi apparatus, shaped like a stack of pancakes, packages proteins and other materials for movement around the cell.

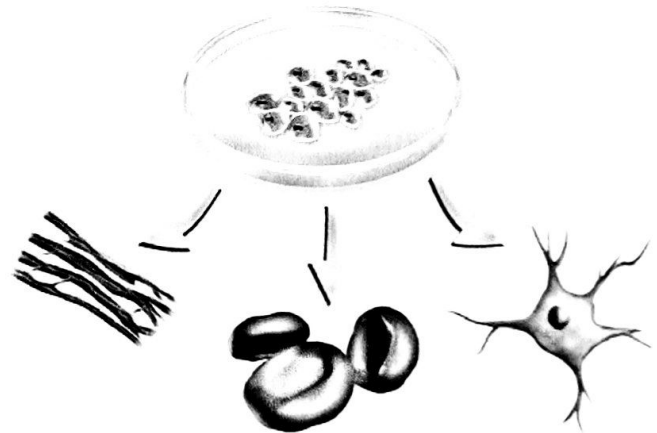
Vacuoles are sacs that store water, food, and/or waste products. Plant cells have a large central vacuole for storing water.

Lysosomes are acid-containing sacs that break down wastes for removal from the cell.

Plant and animal cells are very similar; however, there are a few differences. Such organelles as the cell wall and chloroplasts are found only in plant cells and can be used to differentiate between plant and animal cells. The cell wall is a rigid membrane surrounding the cell. It gives structure and support to plants. Chloroplasts are green, disk-shaped organelles containing the pigment chlorophyll. Photosynthesis takes place in chloroplasts.

Eukaryotic cells have the same basic structures, but not all eukaryotic cells are alike. Early in an organism's life cycle, all of its cells are identical. These base cells are called stem cells. As the organism grows, the cells differentiate, or specialize. Cells change depending on the function they will perform. The genetic material in a cell directs its differentiation.

Compare a muscle cell with a nerve cell, called a neuron. The size, shape, and structure of neurons differ to suit their



The stem cells in the Petri dish differentiate to form muscle cells (left), blood cells (center), and neurons (right).

functions. Muscle cells are long and thin and contain many mitochondria. The muscle cell's shape allows it to stretch and contract to produce movement. The many mitochondria provide energy for quick response. Neurons are long, thin cells with appendages on both ends. The long appendages help send electric signals to and from the brain and through the body.

Since Robert Hooke's cell discovery, the scientific community has carefully explored these microscopic units of life. Knowing how cells function is the first step to understanding life itself. Today, experiments with stem cells, somatic cell nuclear transfer, gene therapy, and other technologies open up a wealth of new cellular possibilities.

Activity 3

- A. Quick Write (2 to 4 Mins)
- B. Reading Plant or Animal

How Are Cells' Structures Related to Their Functions?

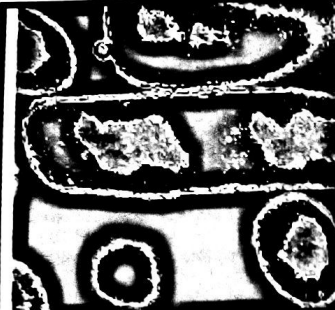

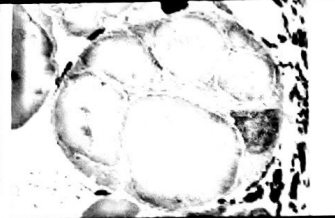

All living things are made of cells, but not all cells are the same. While a specific cell's structure depends on the type of cell, some structures are common to all eukaryotic cells. For example, all eukaryotic cells have a nucleus, membrane-bound organelles, a plasma membrane, and cytoplasm. The nucleus of a cell surrounds the genetic material with a membrane. Other structures called organelles are also surrounded by membranes. The membranes around the organelles both protect and isolate, helping the organelles work more efficiently. Organelles perform various vital tasks, and each organelle has a specific structure related to its function. Organelles provide the cell with energy, excrete waste products, and make proteins. All eukaryotic cells also have a plasma membrane that envelopes the entire cell. The membrane has many passages through it. These passages chemically control what can enter or leave the cell. All eukaryotic cells also have cytoplasm. This jelly-like fluid fills the cell's interior and contains thread-like proteins that help the cell keep its shape.

Given the variety of eukaryotic cells, it's not surprising they differ in many ways. Plants and animals have eukaryotic cells. However, plants and animals have different needs, so their cell structures differ. Plant cells have a thick cell wall. Together, these rigid cells help the plant keep its form. Many animal cells have coatings of molecules that allow the cells to stick together and to recognize each other. Most eukaryotic cells have mitochondria. This is an organelle that converts glucose (food) into energy for the cell. Plant cells make their own glucose through photosynthesis in organelles called chloroplasts. Some eukaryotic cells are single-celled organisms. Single-celled eukaryotes often have some type of structure to help them move, such as the cilia on a paramecium or the flagella on a protozoan. Cilia are tiny hair-like structures that wave back and forth, propelling the organism along. Flagella are larger, whip-like exterior hairs used to help the cell move about.

The other type of cell is a prokaryotic cell. All prokaryotic cells found so far are single-celled organisms such as bacteria. Most prokaryotic cells are much smaller than eukaryotic cells. They are also simpler. For example, prokaryotic cells lack membrane-bound organelles. Instead, prokaryotes carry out various functions throughout the cytoplasm. All prokaryotic cells have cell walls for protection and shape, but the thickness of the cell wall is not the same for all types of prokaryote. Many prokaryotes have flagella that allow them to move. With their small size and simpler structure, prokaryotic cells multiply faster than eukaryotic cells. Their high rate of reproduction is one reason why these single-celled organisms are so successful.

C. Reflection Questions

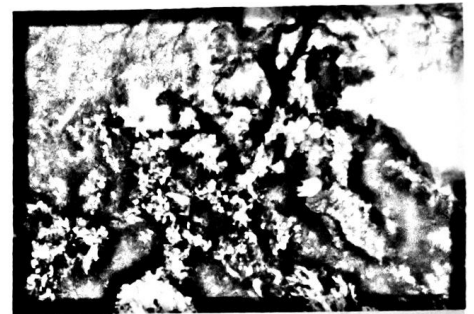
Review the characteristics of each type of cell. Then classify each of the following microscopic images as a eukaryotic or prokaryotic cell.

Are They Plants or Animals?

Some scientists believe about 2 million different species of plants, animals, and other organisms live on Earth. Other scientists believe the number of species on Earth may be greater than 5 million! New species are constantly being discovered. When a new organism is discovered, biologists try to identify it. Is it a plant, an animal, or some other type of creature? What kind of environment does the organism live in? What kind of conditions help it survive?

Telling the difference between plants and animals may seem simple. Some organisms are more difficult to categorize than others, however. For example, coral do not move. Their bodies are shaped like some plants, and most types of coral must live in sunlight. But coral are animals! Scientists determined this fact by examining coral very closely. They studied the bodies of different species of coral and learned that coral function more like animals than like plants.

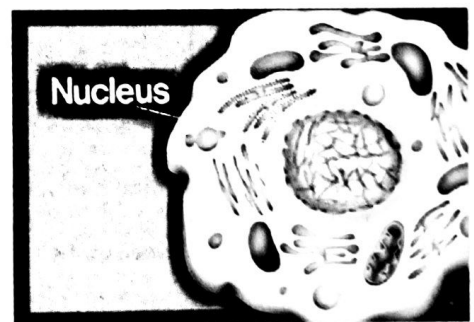


Coral live in warm, shallow waters of the ocean.

Scientists determined that coral are animals by studying coral cells. **Cells** are the tiny building blocks that make up all living things. Some cells are very simple. Bacteria cells, for example, have only a few parts. We call organisms with these simple types of cells **prokaryotic organisms**.

Most cells are more complicated. They contain a nucleus and other parts that help the cells obtain energy, reproduce, and carry out other functions. We call organisms made of these complex cells **eukaryotic organisms**. All plants, animals, algae, and fungi are eukaryotic organisms.

Even though both contain a nucleus, plant cells are very different than animal cells. Animal cells are surrounded by a membrane that allows water and nutrients to pass in and out of the cell. This membrane is similar to a net. The membrane is not stiff or solid, but it can still hold all the cell parts together.



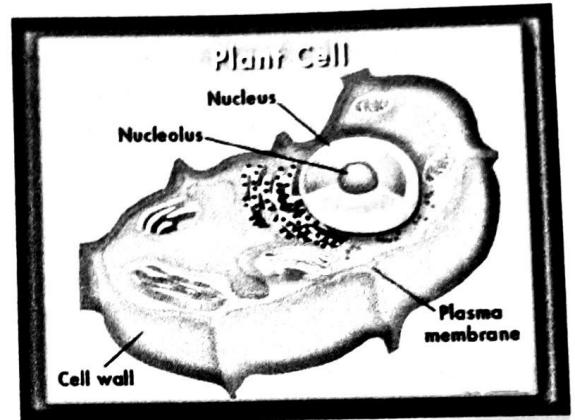
Most eukaryotic cells contain a **nucleus** that directs their growth and reproduction.

Are They Plants or Animals?

A membrane also surrounds plants cells. However, plant cells also have a sturdy wall around their exterior. This wall around plant cells contains many gaps that allow water and nutrients to pass into and out of the cell. But even with these gaps, cell walls are very strong. Remember that plants do not have skeletons to hold them upright. Instead, plants are held upright by their cell walls.

Can you guess what kind of cells scientists discovered in coral? Scientists found cells without walls! This discovery meant that coral were not plants.

Like plants, however, most coral grow best where they receive lots of sunlight. Plants are **autotrophic**, which means they make their own food. Special parts of a plant's cells use energy from the sun to make food for the plant. Coral cells, however, do not contain these special parts. Coral are **heterotrophic**; they cannot make their own food.



Plant cells contain a cell wall.

So why do most coral need sunlight? The reason is algae. For most coral, algae are the main source of food. Algae are autotrophic, so they depend on sunlight to survive. Because the coral depend on the algae, most coral grow in shallow water penetrated by sunlight.

Scientists have determined that coral behave like animals in other ways as well. Like most sea animals, coral reproduce by producing egg and sperm cells that join and begin growing. New coral larvae swim to a sunny, shallow area where they can find food. Then the larvae attach to a hard surface and begin forming their skeletons around the surface. Usually at night, the coral reach their tentacles out to pull food into their mouths.

Scientists continue to study coral to learn what factors in their environments help these animals thrive. In the same way, scientists study newly discovered organisms, hoping to learn more about Earth and the creatures that inhabit it.

Activity 4

A. Quick Write (2 to 4 Mins) What is the cell theory and how does it help to understand the structure and function of organisms?

B. Reading

How Do Cells Relate to the Structures of Simple and Complex Organisms?

Prokaryotes and single-celled eukaryotes are made of just one cell—the entire structure of the organism. The structures of that cell help the organism gain energy, move, expel waste, respond to the environment, and reproduce. All cells reproduce by cell division. Most single-celled organisms reproduce by mitosis, a simple form of cell division. In multicellular organisms, mitosis enables growth and repair. Cell division is the start and end-point of the cell cycle. As with other life processes, cell division relies on internal structures inside the cell.

All complex organisms—including humans—start off as a single cell. Through cells dividing over and over, complex organisms grow in size. As more cells are formed, the cells begin to diversify into different cell types with specific functions. For example, a muscle cell is different from a bone cell, a nerve cell, and a blood cell. Although these cells begin with the same genetic information, their final structure varies greatly. This variety of cell types explains the amazing complexity of multicellular organisms.

In complex organisms, specialized cells group together to form tissues. A tissue's cells are similar and work together to perform the same function. Examples of animal tissues are muscles, skin, and nerves. Examples of plant tissues are xylem (transports water) and phloem (transports nutrients). Tissues that work together and perform the same function are organized into organs like the heart and brain in animals or the stem and leaves in plants. Organs work with other organs to form organ systems, like the nervous system in animals or the vascular system in plants. All the organ systems inside of an organism work together to help it gain energy, move, expel waste, respond to the environment, and reproduce.

C. Reflection Questions

Cell City

Imagine a city so small that the only way to view it is through a microscope. Not only is this city full of life, but its existence is what allows us to have life too. Here is a booming metropolis, a city filled with workers, factories, and even a mayor. Welcome to Cell City!

Cell City is surrounded by a wall called the cell membrane. The job of the cell membrane is to act as a perimeter, protecting and guarding the inside of the cell from outside intruders.

Inside Cell City, we see the framework of the cell. The cytoskeleton makes each cell different and creates a system of organization. The paths created by the cytoskeleton allow parts of the cell to move around. This movement is part of mitosis or cell division. As we wander along, we notice workers busily coming and going. These are called ribosomes and it is their job to carry out the manual labor of the cell.

They take the raw ingredients of amino acids, combined with DNA, to make proteins. Cell City has some special places that act as parks or open spaces. This is cytoplasm and it is a semi-fluid substance like jelly. This material fills and cushions the interior of the cell. Factories, power plants, and communication stations are important parts of any city. The rough reticulum serves as a factory where the ribosomes work to manufacture their goods. The smooth reticulum is a place where they make hormones and steroids. The Golgi Apparatus is the post office, packaging and shipping goods to other parts of the cell.

The mitochondria are the power plant, where the cell creates and stores its energy. The lysosomes act like a wrecking ball, knocking down and destroying damaged or older parts of the cell. They also serve as a garbage disposal by breaking down and removing waste.

As we pass through Town Hall, called the nuclear envelope, we find ourselves at the center of all the activity. This is where the nucleus acts as the brain, controlling all of the activity within the cell. This fascinating tour ends as we step back from the microscope. Each day, billions of cell cities just like this one go about their business, keeping us energized and alive.

1. If someone asked you how a cell is like a city, what would you say?
2. How does comparing a cell to a city make it easier to understand?
3. List all the functions of a cell, then discuss how each function helps the cell survive.

Stem cell research is a common issue debated in the media. Scientists believe that stem cells may one day provide effective treatments to many serious diseases and injuries, but some people feel that there are ethical issues associated with this research.

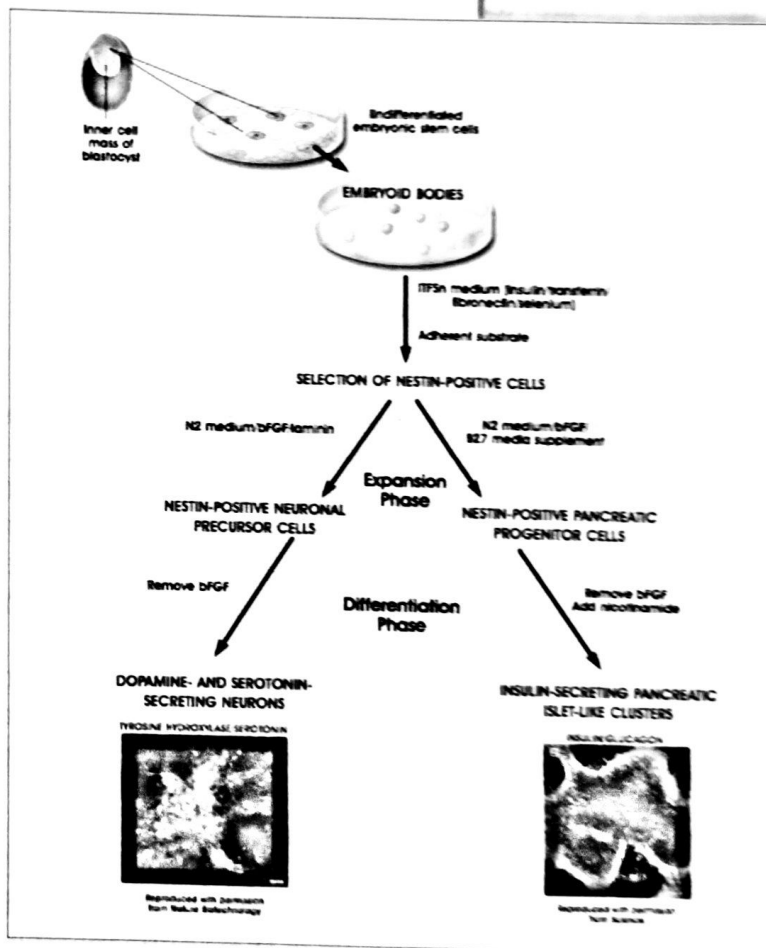
What are stem cells?

Stem cells are incredibly important cells in the body. These cells are responsible for making many other types of cells. Stem cells are responsible for the creation of heart, bone, brain, and muscle cells. Stem cells are unique, as they are the only cells in the body that can create more than one type of cell.

Adults have limited stem cells in their bodies. Adult stem cells are found in small amounts in bone marrow, and also the placenta and umbilical cord of pregnant women. Embryos have many stem cells. The stem cells that are the most vital to research are found in 4-5 day-old embryos. These embryos have as many as 150 stem cells, which create cells of different human tissues. The stem cells from these embryos can be used to create new and healthy cells to potentially treat many different diseases.

What are the benefits of stem cell research?

Stem cell research can benefit science in countless ways. Studying these early cells may help scientists understand how cells grow and how certain health problems begin. Many diseases are caused by damage to cells or cell mutation. Stem cell therapies can grow new, healthy cells to replace diseased cells.

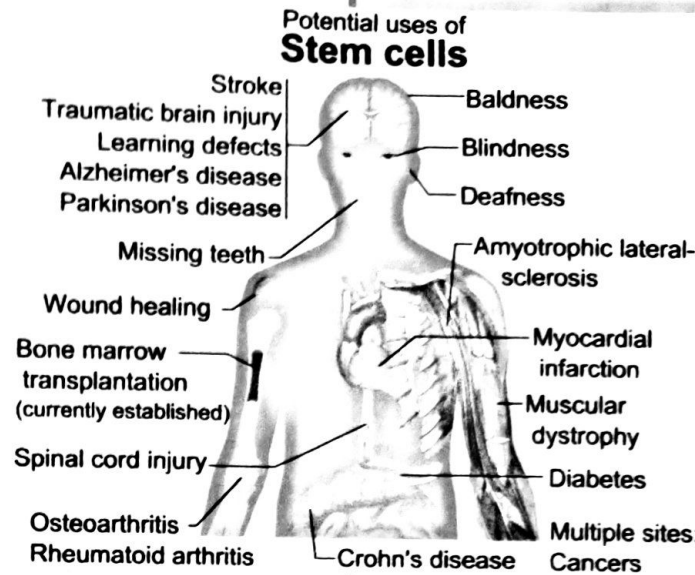


Stem cells provide a wide variety of uses and can be adapted to meet different needs.

Many health conditions may one day be treated by stem cell therapies, including:

- Birth defects
- Alzheimer's Disease
- Diabetes
- Cancer
- Burns
- Spinal cord injuries
- Parkinson's disease

Stem cells may also be used to test drug therapies. Scientists can see how a drug will react in the human body by injecting stem cells with the medication.



There are many potential uses for stem cells.

What is the controversy with stem cell research?

In the United States, embryos for stem cell research are provided by in vitro fertilization centers. These centers help infertile couples conceive a child by fertilizing eggs in a laboratory and implanting the fertilized eggs into the mother. The embryos used in stem cell research were embryos that, for one reason or another, were not used to make a pregnancy. These eggs cannot survive outside of the mother and will never become a full-grown baby, however some people believe it is unethical to use these embryos for research purposes.

Is stem cell research a new field?

Stem cells may seem like a new topic, however the research began many years ago. In the 1950s, scientists first discovered that adults have stem cells in their bone marrow. This discovery eventually led to bone marrow transplants, which now treat cancers and blood-related health conditions.

In 1973, shortly after the Roe vs. Wade trial legalized abortion, the United States government pulled federal funding of embryonic research. The first experiment on embryonic stem cells was done in 1998 at the University of Wisconsin using embryos from in vitro fertilization. In 2002, the National Institutes of Health funded its first study on embryonic stem

cells. In 2009, President Barack Obama lifted the ban on federal funding for embryonic stem cell research.

Is it possible to perform research on only adult stem cells?

Many scientists research adult stem cells, but the potential of these cells is limited. Adults have very few stem cells in their bodies, and these cells can be difficult to separate. Adult stem cells may also have mutations, which make them less effective than embryonic stem cells.

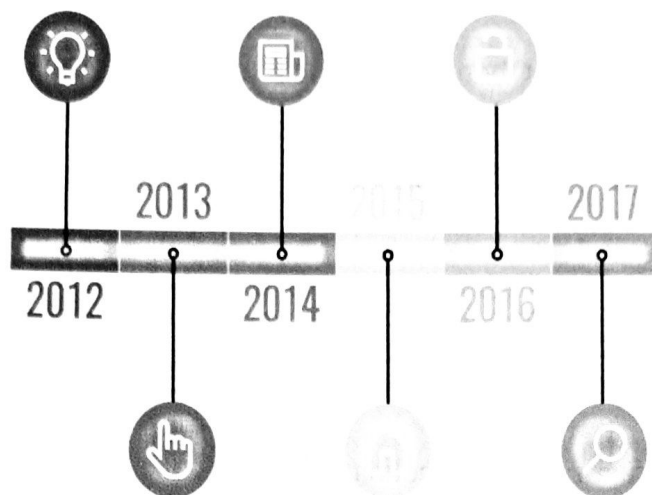
Since embryos grow at a fast rate, stem cells from embryos have the potential to grow into many different types of cells. Adult stem cells may only be able to grow into a few different cell types. Many scientists believe that embryonic cells offer the best potential for treating disease.

This may change in the future. Exciting new research known as nuclear reprogramming has shown that adult stem cells can be genetically altered to regain some of the diverse abilities of embryonic stem cells. This research is still in the early stages, but it may open the door for future treatments to be developed from adult stem cells.

Day 5 Assessment

Project: Cell Theory Timeline

What were the major contributions that led to the development of the cell theory?



Many scientists made observations and discoveries that led to the development of the cell theory. Robert Hooke's compound microscope was just one of these contributions. What are other important milestones that led to the development of the cell theory? Has the cell theory changed since it was first developed? If so, how? How might our knowledge of cells change in the future with even more advancements in technology?

Research the cell theory. **Create a timeline showing at least five of the major discoveries that contributed to the development of the cell theory, beginning with Robert Hooke's contribution.**

Each point on the timeline should include 1. the discovery, 2. the date of the discovery, 3. the name(s) of the discoverer(s), and 4. illustration of the observation that led to the discovery. Be sure to include technological advances that made possible these discoveries.

Summer is here!



Students in Grades 6-8,

Attached are some Catholic summer activity ideas. Choose at least 4 to complete and write a brief (3-5 sentences) reflection.

Remember to go to Mass. We don't take a break from our Sunday obligations. Please continue to get your mass coupons clipped over the summer.

Summer work will be collected during the first week of school.

Have a safe and fun-filled Summer!

Mrs. Bachu



Low to No Tech Summer Activities for Catholic Students

<p>Linguistic: Reading, writing, and communicating</p> <hr/> <ul style="list-style-type: none"> <input type="checkbox"/> Write a story or poem based on a Bible passage. <input type="checkbox"/> Create a prayer journal. <input type="checkbox"/> Read a book about a saint and write a summary. <input type="checkbox"/> Compose letters to God. <input type="checkbox"/> Memorize a favorite prayer and recite it. <input type="checkbox"/> Write a play about a Biblical story. <input type="checkbox"/> Start a book club with friends, focusing on books that have moral messages. <input type="checkbox"/> Create a Catholic-themed crossword puzzle. <input type="checkbox"/> Write a letter to a missionary. 	<p>Logical-Mathematical: Logical reasoning, problem-solving, and using numbers</p> <hr/> <ul style="list-style-type: none"> <input type="checkbox"/> Create a Bible trivia game. <input type="checkbox"/> Plan a budget for a charity project and complete it with family or friends. <input type="checkbox"/> Construct a timeline of significant events in the Bible. <input type="checkbox"/> Organize a community service project. <input type="checkbox"/> Develop a strategy for a church fundraising event. <input type="checkbox"/> Calculate the ages of people in different Biblical stories. 	<p>Visual: Visualizing and creating visual art</p> <hr/> <ul style="list-style-type: none"> <input type="checkbox"/> Draw or paint Biblical scenes. <input type="checkbox"/> Create a diorama of a Bible story. <input type="checkbox"/> Design a stained-glass window pattern. <input type="checkbox"/> Make a model of your church. <input type="checkbox"/> Craft a rosary using beads. <input type="checkbox"/> Build a model of Noah's Ark. <input type="checkbox"/> Illustrate a comic strip of a saint's life. <input type="checkbox"/> Create a vision board with pictures of how you see God's work in your life. <input type="checkbox"/> Sculpt a religious statue using clay.
<p>Bodily-Kinesthetic: Physical movement and hands-on tasks</p> <hr/> <ul style="list-style-type: none"> <input type="checkbox"/> Organize a sports event for charity. <input type="checkbox"/> Act out a Bible story in a play. <input type="checkbox"/> Create a fitness routine inspired by the life of a saint. <input type="checkbox"/> Choreograph a dance to go with your favorite hymn. <input type="checkbox"/> Help with gardening at the church. <input type="checkbox"/> Volunteer to clean and maintain church grounds. <input type="checkbox"/> Practice mindfulness and prayer through yoga. 		<p>Naturalistic: Exploring and appreciating nature</p> <hr/> <ul style="list-style-type: none"> <input type="checkbox"/> Plant a garden and donate the harvest to a food bank. <input type="checkbox"/> Go on a nature walk and reflect on God's creation. <input type="checkbox"/> Identify and study different plants and animals mentioned in the Bible. <input type="checkbox"/> Clean up a local park or beach. <input type="checkbox"/> Build a birdhouse and observe the birds. <input type="checkbox"/> Camp out and discuss God's creation around the campfire. <input type="checkbox"/> Organize an outdoor prayer meeting. <input type="checkbox"/> Create a nature journal with reflections and drawings. <input type="checkbox"/> Volunteer at an animal shelter. <input type="checkbox"/> Plan a hike to a scenic spot and have a prayer session there.

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<p>Musical: Music and rhythm</p> <hr/> <ul style="list-style-type: none"> <input type="checkbox"/> Join the church choir. <input type="checkbox"/> Learn to play a hymn on an instrument. <input type="checkbox"/> Compose a religious song. <input type="checkbox"/> Organize a musical performance for a church event. <input type="checkbox"/> Create a playlist of favorite worship songs. <input type="checkbox"/> Learn Gregorian chant. <input type="checkbox"/> Teach younger children religious songs. <input type="checkbox"/> Listen to and discuss the messages in different hymns. 	<p>Intrapersonal: Self-reflection and understanding</p> <hr/> <ul style="list-style-type: none"> <input type="checkbox"/> Spend a day in silent retreat. <input type="checkbox"/> Reflect on daily Bible readings. <input type="checkbox"/> Practice Ignatian meditation. <input type="checkbox"/> Set personal spiritual goals for the summer. <input type="checkbox"/> Keep a daily gratitude journal. <input type="checkbox"/> Explore different forms of prayer. <input type="checkbox"/> Attend a youth retreat. <input type="checkbox"/> Write reflections on weekly homilies. <input type="checkbox"/> Practice fasting and prayer for a special intention. <input type="checkbox"/> Spend time in Eucharistic adoration. 	<p>Interpersonal: Interacting and working with others</p> <hr/> <ul style="list-style-type: none"> <input type="checkbox"/> Volunteer at a local soup kitchen. <input type="checkbox"/> Organize a small group Bible study. <input type="checkbox"/> Help run a vacation Bible school. <input type="checkbox"/> Visit nursing homes and share stories from the Bible. <input type="checkbox"/> Mentor younger students in faith formation. <input type="checkbox"/> Host a game night with faith-based games. <input type="checkbox"/> Participate in a church service project. <input type="checkbox"/> Lead a prayer group. <input type="checkbox"/> Plan a youth group retreat. <input type="checkbox"/> Help coordinate a parish event. <p>Miscellaneous: A variety of interests and skills</p> <hr/> <ul style="list-style-type: none"> <input type="checkbox"/> Make and deliver care packages for the homeless. <input type="checkbox"/> Bake cookies and deliver them to your parish staff. <input type="checkbox"/> Organize a family prayer night. <input type="checkbox"/> Create homemade greeting cards for people in your parish. <input type="checkbox"/> Read the Bible under a favorite tree. <input type="checkbox"/> Organize a charity car wash. <input type="checkbox"/> Help with a church yard sale. <input type="checkbox"/> Create a rosary walk with your family. <input type="checkbox"/> Spend time in silent prayer each day.
<p>Existential: Exploring big questions and the meaning of life</p> <hr/> <ul style="list-style-type: none"> <input type="checkbox"/> Contemplate and discuss the big questions of life and faith. <input type="checkbox"/> Visit a historical church and learn about its significance. <input type="checkbox"/> Debate moral and ethical questions from a Catholic perspective. <input type="checkbox"/> Explore the meaning of different sacraments. <input type="checkbox"/> Research the lives of different saints and their impact on the world. <input type="checkbox"/> Visit a monastery and learn about monastic life. <input type="checkbox"/> Discuss the Catholic view on social justice issues. <input type="checkbox"/> Participate in an interfaith dialogue event. <input type="checkbox"/> Plan and lead a group discussion on the teachings of Jesus. 		

Summer Reading Social Studies Assignment

Task: Exploring Current Events in Our Changing World

As global citizens, it is important for us to stay informed about the events and issues shaping our world today. This summer, your assignment is to dive into the world of current events by selecting and analyzing a recent article that highlights an important event or issue from around the globe. Through this assignment, you will not only expand your understanding of our world but also develop critical thinking skills and learn to express your thoughts effectively.

Research:

1. Find a current event article: (An online or newspaper article that was published within the last six months) that focuses on a significant event, trend, or issue happening in our world today. The article should relate to a topic within the field of social studies, such as politics, culture, economics, or global issues. Ensure that the article is from a trustworthy source, such as a trusted news organization or a true online publication. Keep in mind that your article should provide enough details and material to create a complete analysis.

Summary:

2. After reading the article carefully, write a summary of the main points and arguments presented. Your summary should highlight the key ideas of the event or issue discussed and provide a clear understanding of why this event is important. Try to capture the essence of the article in your own words, avoiding direct quotations.

Analysis:

3. In this section, share your thoughts and feelings on the event or issue presented in the article. Consider the following points as you craft your analysis:

Importance - Explain why this event or issue is important in our world. How does it impact different communities, nations, or global relationships? Why should people pay attention to it?

Personal Connection: Share your personal thoughts and feelings about the event or issue. How does it relate to your own experiences, values, or beliefs? Discuss any emotional or intellectual reactions you had while reading the article.

Potential Consequences: Analyze the potential short-term and long-term consequences of the event or issue. Consider its impact on local communities, nations, and the global community as a whole.

When Writing Your Response:

Length and Formatting:

- Your assignment should be written in essay format.
- The response should be two pages in length, double-spaced, with standard margins (1 inch) and a font size of 12.
- Include a title that accurately reflects the content of your assignment.
- Use proper grammar, punctuation, and sentence structure to ensure clarity and coherence in your writing.

Submission:

- Submit your assignment as a printed copy to your social studies teacher on the first week of school.

Note: Remember to choose an article that genuinely interests you, as this will help keep you engaged and enrich your learning experience. If you have any questions or need assistance in finding a suitable article, feel free to reach out to me via email or Google Classroom.

Enjoy your summer reading and exploration of our ever-changing world!