



At Home Learning Resources

Grade 7 - Week 12



How to take the 2020 Census



Online



Phone



Mail

Why it matters

Federal funding

For local programs and organizations

Better planning

For roads, schools, healthcare and emergency services

Determines representation

In Congress and the state legislature

Helps businesses

Locate factories and stores, recruit employees and conduct market research

Shape your future
Your community, your voice

<https://2020census.gov/>

Grade 7 ELA Week 12

All previous activities, as well as other resources can be found on the Lowell Public Schools website: <https://www.lowell.k12.ma.us/Page/3803>

This week completes a focus on historical fiction reading and writing. Your child should be reading, writing, talking and writing about reading, and learning new vocabulary.

Reading: Students need to read each day. They can read the historical fiction text included in this packet and/or read any of the historical fiction books that they have at home, or can access online at Epic Books, Tumblebooks, the Pollard Library online, or other online books. All resources are on the LPS website. There is something for everyone.

Talking and Writing about Reading: As students are reading, they can think about their reading and get ready for summer. Students can also reflect back on the school year and write a bit about what they liked or learned.

Writing: Students will finish working on writing historical fiction stories this week. These resources are charts with examples to help your child write. They are available online in an interactive form with video tutorials here: [Grade 7 Historical Fiction Writing Choice Board](#). This writing should finish this week. Students will be writing, then making it even better by revising, writing some more, and at the end, fixing it up by editing.

Word Work: Students can work on learning new vocabulary in their reading.

My Summer Reading Plan



Books/Authors I want to read:











Where I will get books:

Borrow from the library

Read online

Trade books with friends

Buy at a bookstore

Buy Online

Other _____

Where I will read:

In my bedroom

In the living room

Outside

In my car

At the beach

Other _____

Log all of the books that you read. If you read 1 book, write it down. If you read 100, write them down. You can write them here. If you run out of room, add another piece of paper.

OR

Looking for an even easier way to log your books, do it online. [Click here](#) to enter your book titles online. Your school will keep a list of all of the books that you read.

Remember, you only need to log your books on paper **or** online. NOT BOTH!

Happy Summer Reading!

ALAN GRATZ

REFUGEE



SCHOLASTIC PRESS / NEW YORK

JOSEF

BERLIN, GERMANY—1938

CRACK! BANG!

Josef Landau shot straight up in bed, his heart racing. That sound—it was like someone had kicked the front door in. Or had he dreamed it?

Josef listened, straining his ears in the dark. He wasn't used to the sounds of this new flat, the smaller one he and his family had been forced to move into. They couldn't afford their old place, not since the Nazis told Josef's father he wasn't allowed to practice law anymore because he was Jewish.

Across the room, Josef's little sister, Ruth, was still asleep. Josef tried to relax. Maybe he'd just been having a nightmare.

Something in the darkness outside his room moved with a grunt and a scuffle.

Someone was in the house!

Josef scrambled backward on his bed, his eyes wide. There was a shattering sound in the next room—*crisssh!* Ruth woke up and screamed. Screamed in sheer blind terror. She was only six years old.

“Mama!” Josef cried. “Papa!”

Towering shadows burst into the room. The air seemed to crackle around them like static from a radio. Josef tried to hide in the corner of his bed, but shadowy hands snatched at him. Grabbed for him. He screamed even louder than his little sister, drowning her out. He kicked and flailed in a panic, but one of the shadows caught his ankle and dragged him face-first across his bed. Josef clawed at his sheets, but the hands were too strong. Josef was so scared he wet himself, the warm liquid spreading through his nightclothes.

“No!” Josef screamed. “*No!*”

The shadows threw him to the floor. Another shadow picked up Ruth by the hair and slapped her.

“Be quiet!” the shadow yelled, and it tossed Ruth down on the floor beside Josef. The shock shut Ruth up, but only for a moment. Then she wailed even harder and louder.

“*Hush, Ruthie. Hush,*” Josef begged her. He took her in his arms and wrapped her in a protective hug. “Hush now.”

They cowered together on the floor as the shadows picked up Ruth’s bed and threw it against the wall. *Crash!* The bed broke into pieces. The shadows tore down pictures, pulled drawers from their bureaus, and flung clothing everywhere. They broke lamps and lightbulbs. Josef and Ruth clung to each other, terrified and wet-faced with tears.

The shadows grabbed them again and dragged them into the living room. They threw Josef and Ruth on the floor once more and flicked on the overhead light. As Josef's eyes adjusted, he saw the seven strangers who had invaded his home. Some of them wore regular clothes: white shirts with the sleeves rolled up, gray slacks, brown wool caps, leather work boots. More of them wore the brown shirts and red swastika armbands of the *Sturmabteilung*, Adolf Hitler's "storm troopers."

Josef's mother and father were there too, lying on the floor at the feet of the Brownshirts.

"Josef! Ruth!" Mama cried when she saw them. She lunged for her children, but one of the Nazis grabbed her nightgown and pulled her back.

"Aaron Landau," one of the Brownshirts said to Josef's father, "you have continued to practice law despite the fact that Jews are forbidden to do so under the Civil Service Restoration Act of 1933. For this crime against the German people, you will be taken into protective custody."

Josef looked at his father, panicked.

"This is all a misunderstanding," Papa said. "If you'd just give me a chance to explain—"

The Brownshirt ignored Papa and nodded at the other men. Two of the Nazis yanked Josef's father to his feet and dragged him toward the door.

“No!” Josef cried. He had to do something. He leaped to his feet, grabbed the arm of one of the men carrying his father, and tried to pull him off. Two more of the men jerked Josef away and held him as he fought against them.

The Brownshirt in charge laughed. “Look at this one!” he said, pointing to the wet spot on Josef’s nightclothes. “The boy’s pissed himself!”

The Nazis laughed, and Josef’s face burned hot with shame. He struggled in the men’s arms, trying to break free. “I’ll be a man soon enough,” Josef told them. “I’ll be a man in six months and eleven days.”

The Nazis laughed again. “Six months and eleven days!” the Brownshirt said. “Not that he’s counting.” The Brownshirt suddenly turned serious. “Perhaps you’re close enough that we should take you to a concentration camp too, like your father.”

“No!” Mama cried. “No, my son is just twelve. He’s just a boy. Please—don’t.”

Ruth wrapped herself around Josef’s leg and wailed. “Don’t take him! Don’t take him!”

The Brownshirt scowled at the noise and gave the men carrying Aaron Landau a dismissive wave. Josef watched as they dragged Papa away to the sounds of Mama’s sobs and Ruth’s wails.

“Don’t be so quick to grow up, boy,” the Brownshirt told Josef. “We’ll come for you soon enough.”

The Nazis trashed the rest of Josef's house, breaking furniture and smashing plates and tearing curtains. They left as suddenly as they had come, and Josef and his sister and mother huddled together on their knees in the middle of the room. At last, when they had cried all the tears they could cry, Rachel Landau led her children to her bedroom, put her bed back together, and hugged Josef and Ruth close until morning.

.....

In the days to come, Josef learned that his family wasn't the only one the Nazis had attacked that night. Other Jewish homes and businesses and synagogues were destroyed all over Germany, and tens of thousands of Jewish men were arrested and sent to concentration camps. They called it Kristallnacht, the Night of Broken Glass.

The Nazis hadn't said it with words, but the message was clear: Josef and his family weren't wanted in Germany anymore. But Josef and his mother and sister weren't going anywhere. Not yet. Not without Josef's father.

Mama spent weeks going from one government office to another, trying to find out where her husband was and how to get him back. Nobody would tell her anything, and Josef began to despair that he would never see his father again.

And then, six months after he'd been taken away, they got a telegram. A telegram from Papa! He'd been released from a concentration camp called Dachau, but only on condition that he leave the country within fourteen days.

Josef didn't want to leave. Germany was his home. Where would they go? How would they live? But the Nazis had told them to get out of Germany twice now, and the Landau family wasn't going to wait around to see what the Nazis would do next.

ISABEL

JUST OUTSIDE HAVANA, CUBA—1994

IT TOOK ONLY TWO TRIES TO GET THE SCRAWNY calico kitten to come out from under the pink cinder-block house and eat from Isabel Fernandez's hand. The cat was hungry, just like everyone else in Cuba, and its belly quickly won out over its fear.

The cat was so tiny it could only nibble at the beans. Its little tummy purred like an outboard motor, and it butted its head against Isabel's hand in between bites.

"You're not much to look at, are you, kitty?" Isabel said. Its fur was scraggly and dull, and Isabel could feel the cat's bones through its skin. The little kitten wasn't too different from her, Isabel realized: thin, hungry, and in need of a bath. Isabel was eleven years old, and all lanky arms and legs. Her brown face was splotchy with freckles, and her thick black hair was cut short for summer and pulled back behind her ears. She was barefoot like always, and wore a tank top and shorts.

The kitten gobbled up the last of the beans and mewed pitifully. Isabel wished she had something else to give it, but this food was already more than she could spare. Her lunch hadn't been much bigger than the cat's—just a few

beans and a small pile of white rice. There had been rationing and food coupon books when Isabel was little, but a few years ago, in 1989, the Soviet Union had fallen, and Cuba had hit rock bottom. Cuba was a communist country, like Russia had been, and for decades the Soviets had been buying Cuba's sugar for eleven times the price and sending the little island food and gasoline and medicine for free.

But when the Soviet Union went away, so did all their support. Most of the farms in Cuba grew only sugarcane, and with no one to overpay for it the cane fields dried up, the sugar refineries closed, and people lost their jobs. Without Russia's gas they couldn't run the tractors to change the fields over to food, and without the extra food the Cuban people began to starve. All the cows and pigs and sheep had been slaughtered and eaten. People had even broken into the Havana zoo and eaten the animals, and cats like this little kitten had ended up on dinner tables.

But nobody was going to eat *this* cat. "You'll just be our little secret," Isabel whispered.

"Hey, Isabel!" Iván said, making her jump. The cat skittered away underneath the house.

Iván was a year older than Isabel and lived next door. He and Isabel had been friends as long as she could remember. Iván was lighter skinned than Isabel, with curly dark hair. He wore sandals; tan shorts; a striped, short-sleeved, button-down shirt; and a cap with a fancy

letter *I* on it—the logo of the Havana baseball team *Industriales*. He wanted to be a professional baseball player when he grew up, and he was good enough that it wasn't a crazy dream.

Iván plopped to the dusty ground beside Isabel. “Look! I found a bit of dead fish on the beach for the cat.”

Isabel recoiled at the smell, but the kitten came running back, eating greedily from Iván's hand.

“She needs a name,” Iván said. Iván gave names to everything—the stray dogs who wandered the town, his bicycle, even his baseball glove. “How about Jorge? Or Javier? Or Lázaro?”

“Those are all boy names!” Isabel said.

“Yes, but they are all players for the Lions, and she's a little lion!” The Lions was the nickname of the *Industriales*.

“Iván!” his father called from next door. “I need your help in the shed.”

Iván climbed to his feet. “I have to go. We're building . . . a doghouse,” he said, before sprinting away.

Isabel shook her head. Iván thought he was being sneaky, but Isabel knew exactly what he and his father were building in their shed, and it wasn't a doghouse. It was a boat. A boat to sail to the United States.

Isabel was worried the Castillos were going to get caught. Fidel Castro, the man who ruled Cuba as president and prime minister, wouldn't allow anyone to leave

the country—especially not to go to the United States—*el norte*, as Cubans called it. *The north*. If you were caught trying to leave for *el norte* by boat, Castro would throw you in jail.

Isabel knew because her own father had been caught by the Cuban navy. Papi had been thrown in jail for a year the last time he tried to sail for Florida.

Isabel noticed her father and grandfather heading down the road toward the city to stand in line for food. She put the little kitten back under the house and ran inside for her trumpet. Isabel loved tagging along on trips into Havana to stand on a street corner and play her trumpet for pesos. She never did make much. Not because she wasn't good. As her mother liked to say, Isabel could play the storm clouds from the sky. People often stopped to listen and clap and tap their feet when she played. But the only people who could afford to give her pesos were the tourists—visitors from Canada or Europe or Mexico. Ever since the Soviet Union had collapsed, the only currency most Cubans had were the booklets you got stamped when you went to pick up your food rations from the store. And food ration booklets were pretty worthless anyway—there wasn't enough food to go around, whether you had a booklet or not.

Isabel caught up with her father and grandfather, then parted ways with them on the Malecón, the broad road that curved along the seawall on Havana Harbor.

On one side of the road stood block after block of green and yellow and pink and baby blue homes and shops. The paint was peeling and the buildings were old and weathered, but they still looked grand to Isabel. Isabel stood on the wide promenade, where it seemed all of Havana was on display. People might have been hungry, but life went on. Mothers carried babies in slings across their chests. Couples kissed under palm trees. Buskers played rumbas on guitars and drums. Boys took turns diving into the sea. Tourists took pictures. It was Isabel's favorite place in the whole city.

Isabel tossed an old ball cap on the ground on the off chance that one of the tourists actually had a peso to spare, and lifted the trumpet to her lips. As she blew, her fingers tapped out the notes she knew by heart. It was a salsa tune she liked to play, but this time she listened past the music. Past the noise of the cars and trucks on the Malecón, past the people talking as they walked by, past the crash of the waves against the seawall behind her.

Isabel was listening for the *clave* underneath the music, the mysterious hidden beat inside Cuban music that everybody seemed to hear except her. An irregular rhythm that lay over the top of the regular beat, like a heartbeat beneath the skin. Try as she might, she had never heard it, never felt it. She listened now, intently, trying to hear the heartbeat of Cuba in her own music.

What she heard instead was the sound of breaking glass.

If you could go back in time and restart the school year, what would you do differently and why?

1

What were your favorite parts of this school year?

2

What were your least favorite parts of this school year?

3

What one word would describe this school year? Explain why you chose the word.

4

What will you miss most about your classmates?

5

What will you miss most about your teacher?

6

What will you miss most about your classroom/school?

7

What was your favorite non-academic activity or event from this school year?

8

What was your favorite academic activity or event from this school year?

9

What was the best day you had this year?
What made it the best?

10

What was the most interesting skill or topic you learned this year?

11

What was the most difficult skill or topic you learned this year?

12

What was something that was difficult for you at first but is now easy?

13

What was the easiest skill or topic you learned this year?

14

What do you wish that you had studied or learned this year?

15

What do you think was the most important things you learned this school year?

16

What did you accomplish this year that you are most proud of?

17

What was the kindest gesture you did for someone this year?

18

What was the kindest gesture someone did for you this year?

19

Which area of the classroom was your favorite? Why?

20

Which area of the school was your favorite? Why?

21

What will you miss most about this school year?

22

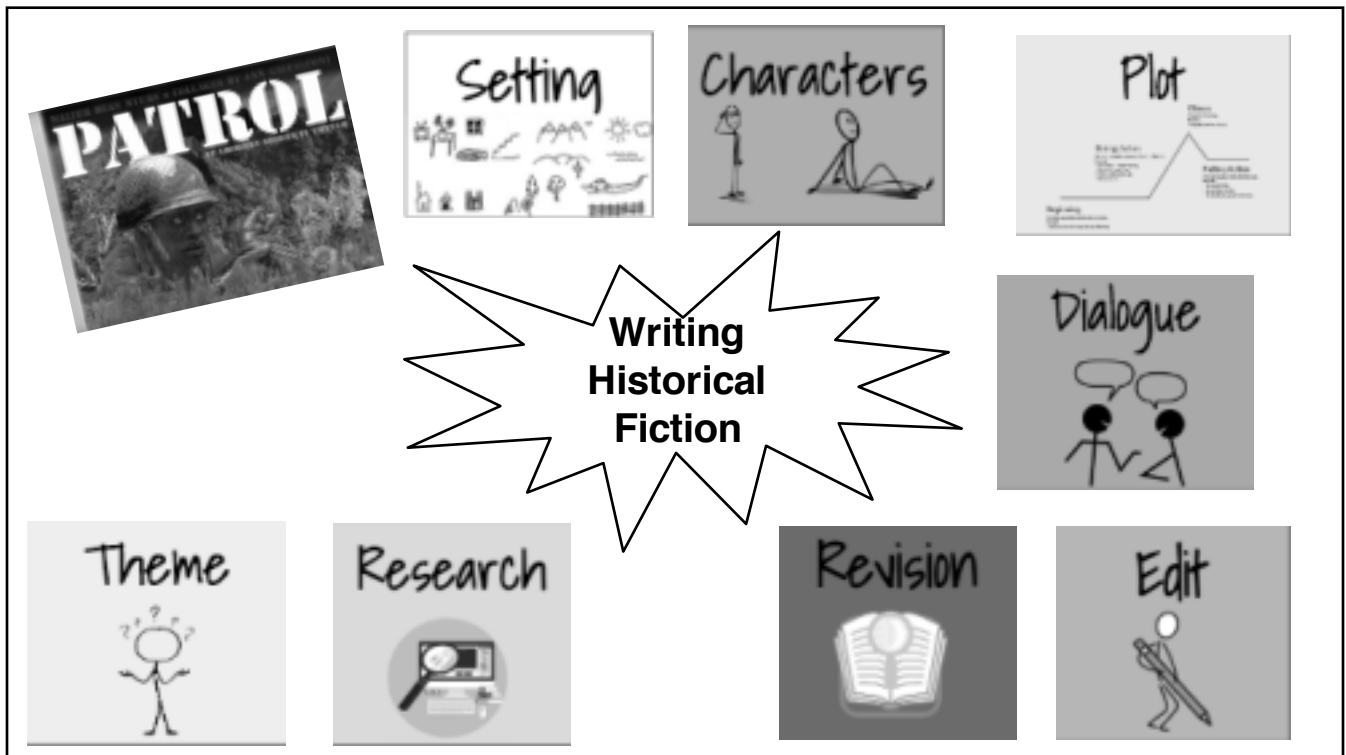
What was your favorite part of a normal school day? Why?

23

What was your favorite book you read in school this year?

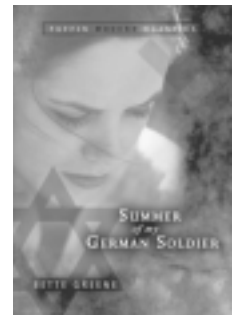
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Grade 7 Historical Fiction Writing Choice Board - Visit the online option for an interactive board with tutorials. Use the anchor charts to help you write your own historical fiction story.



What is Historical fiction?

Historical fiction is an imagined story set in the real world that portrays life as it might have been lived in the past. It tells a compelling story first and relates historical information second.



- Based on real people from the past, but includes people from your imagination as well
- Portrays life as it might have been lived in the past
- Focuses on the problems and issues of the past
- Has narrative structure with characters, plot, rising action, climax, falling action, resolution, and setting.

Setting is the time and place of your story. (location in the world, city, country, inside, outside) What century, what year, what season

Try to transport your readers into the past in the first paragraph or two.

Patrol by Walter Dean Myers

The land of my enemy
has wide valleys,
mountains that stretch
along the far horizon,
rushing brown rivers,
and thick green forests.

My squad of nine men
are in the forest.

Above me, birds twitter nervously in the treetops.
Insects and small animals scurry through the underbrush,
trying to avoid the crush of my combat boots.



Your setting brings the past to life

Characters

What kind of person is the main character?

The character could have... but instead... This shows that...

What's new for the character?

What's the character's backstory?

What do moments of trouble reveal about the person?

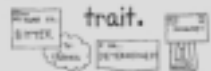
My squad of nine men are in the forest.

Above me, birds twitter nervously in the treetops.
Insects and small animals scurry through the underbrush,
trying to avoid the crush of my combat boots.

The squad leader raises his hand. We stop.
The sound of my breath is soft in the morning air.

Who is telling the story? What is the narrator's point of view?

Expect characters to be complicated and show more than one trait.



They change and grow in response to their experiences.



Look at a character's less likeable sides.



They consider how the past is not dead, but is always with us.



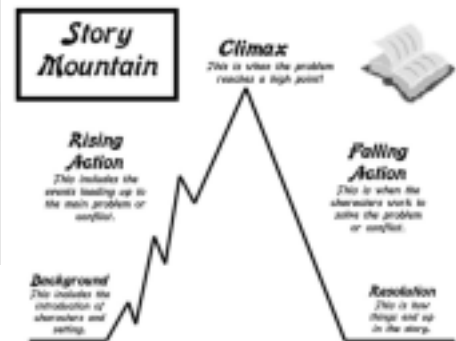
Reflect on the characters and the story again, after you read the ending.



Plot



What's going on?



Somewhere in the forest, hidden in the shadows, is the enemy.
He knows I have come to kill him.
He waits for me.

Shots! A firefight!
I dive to the ground.
My heart beats faster.
I lift my rifle and fire into the green forest.
Bullets sing and whine over my head.
I empty my clip, sending more bullets into the trees, the bushes.

We wait. We wait.
Images of those I love come to mind.

Still we wait.
Then we are startled by the sound of the planes.
We look up at them and see their shadows spreading
over the valley's edge toward us.
They pass us and do their work.
The bombs explode, rumbling like thunder
at a distance that is never distant enough.

And war.
We land.
I am glad that I am alive.

Before the end,
resolve problems,
teach lessons, or
make changes that
tie back to the
big meaning.

Theme

The message of the story lives on after your story ends, and often can be related to life today.

How does the ending of the book lead to new insights about possible themes and about what came before?

Notice how Walter Dean Myers alludes to the BIG MESSAGE of his story, Patrol in this short excerpt:

We stare across the distance. I know he wants me to lift my rifle, to be the enemy. I want him to lift his rifle. I want him to turn away. In a heartbeat we have learned too much about each other.

What mistakes are we making now that people also made in history?

Dialogue

Make sure each character speaks in a way that makes sense for them. Moms sound like moms. Kids sound like kids.

Feel free to include words or speech that may be old fashioned or colloquial language of that time period.

Include only the information that characters would really say to each other

Use slang if appropriate to the time period

Excerpt from Patrol by Walter Dean Myers:

*"Secure the village!" a sergeant calls.
He points towards the enemy.*

Excerpt from Refugee by Alan Gratz:

"Mother," said Jonas, only one of his eyes visible through the crack in his door, "are you going to open it? It sounds as if they might break it down."

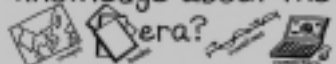
Mother's head turned to see both Jonas and me peering out of our rooms. She attempted a forced smile. "Yes, darling. I will open the door. I won't let anyone break down our door."

1. Edit for voice
2. Edit Word choice for historical accuracy

Your research should make your plot and characters seem real. Read your work to make sure it is accurate!

Researching for Historical Accuracy
Whatever details you include in your story, it's worth getting them right.

What nonfiction sources can I use to build background knowledge about the era?



The pickup zone is just beyond a rice paddy. In the paddy, a farmer squats, waiting for the squad to pass. His stick-thin legs disappear into the shallow water, and it looks as if it is he who grows there. He is the harvest we must understand.

A shot!
I reach for the ground and scramble for cover. The elephant grass cuts my arms as I slide toward a low wall. Then, there is an opening in the tall grass, and I look through. There is the enemy!
He is looking at me!
We are surprised to see each other.
Shocked.
How young he is.


Reminder: This is about story writing, not filling the reader with facts!



Revision - Making your writing better by looking closely

Characteristics of Historical Fiction	Not Yet	Starting To	Yes
Based on real people or events from the past			
Portrays life as it might have been lived in the past			
Focuses on the problems and issues of life in the past			
Has narrative structure with characters, plot, and setting			
Often uses old-fashioned language in dialogue			
Communicates important understandings of history			

Revise, using all you know about storytelling, not summarizing.



- Are there true details?
- Are there made up details?
- Does this story match the time period in which it was set?
- Have I taught my reader anything about the time period?
- Have I left my reader with a lesson?

THEY TOOK ME IN MY NIGHTGOWN.

Thinking back, the sigas were there—family photos burned in the fireplace, Mother sewing her best silver and jewelry into the lining of her coat late at night, and Papa not returning from work. My younger brother, Jonas, was asking questions. I asked questions, too, but perhaps I refused to acknowledge the sigas. Only later did I realize that Mother and Father intended we escape. We did not escape.

We were taken.

June 14, 1941. I had changed into my nightgown and settled in at my desk to write my cousin Joanna a letter. I opened a new ivory writing tablet and a case of pens and pencils, a gift from my aunt for my fifteenth birthday.

The evening breeze floated through the open window over my desk, waiting the curtain from side to side. I could smell the lily of the valley that Mother and I had planted two years ago. Dear Joanna.

It wasn't a knocking. It was an urgent booming that made me jump in my chair. Flats pounded on our front door. No one stirred inside the house. I left my desk and peered out into the hallway. My mother stood flat against the wall facing our framed map of Lithuania, her eyes closed and her face pulled with an anxiety I had never seen. She was praying.

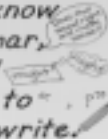
"Mother," said Jonas, only one of his eyes visible through the crack in his door, "are you going to open it? It sounds as if they might break it down."

Mother's head turned to see both Jonas and me peering out of our rooms. She attempted a forced smile. "Yes, darling. I will open the door. I won't let anyone break down our door."

Excerpt from Refugee by Alan Gratz

Edit: Making your writing better by making it clearer

Use all you know about grammar, spelling, and punctuation to edit as you write.



- ✓ I checked that the names of people and places are spelled correctly.
- ✓ I ran a finger over each sentence to make sure my ending punctuation is clear and that the commas seem sensible and similar to those I see in books and articles.
- ✓ I looked at my quotes and compared the very specific punctuation to these models:
 - Introducing the source, then giving the quotation:
According to one witness, "The car came out of nowhere, and so did the brave bystander."
 - Tucking a quote into narrative/explanation:
A witness first claimed that "the car came out of nowhere," before adding, "and so did the brave bystander."
 - Leading with a quote, then adding narration/explanation:
"The man swept the dog right from under the car's wheels" was how witnesses described the incident.
- ✓ I indented or skipped lines to paragraph when the setting changes, when time changes, for a mood change, and expository paragraphs—for new ideas or examples.

Excerpt from Refugee by Alan Gratz

JOSEF

BERLIN, GERMANY—1938

CRACK! BANG!

Josef Landau shot straight up in bed, his heart racing. That sound—it was like someone had kicked the front door in. Or had he dreamed it?

Josef listened, straining his ears in the dark. He wasn't used to the sounds of this new flat, the smaller one he and his family had been forced to move into. They couldn't afford their old place, not since the Nazis told Josef's father he wasn't allowed to practice law anymore because he was Jewish.

Across the room, Josef's little sister, Ruth, was still asleep. Josef tried to relax. Maybe he'd just been having a nightmare.

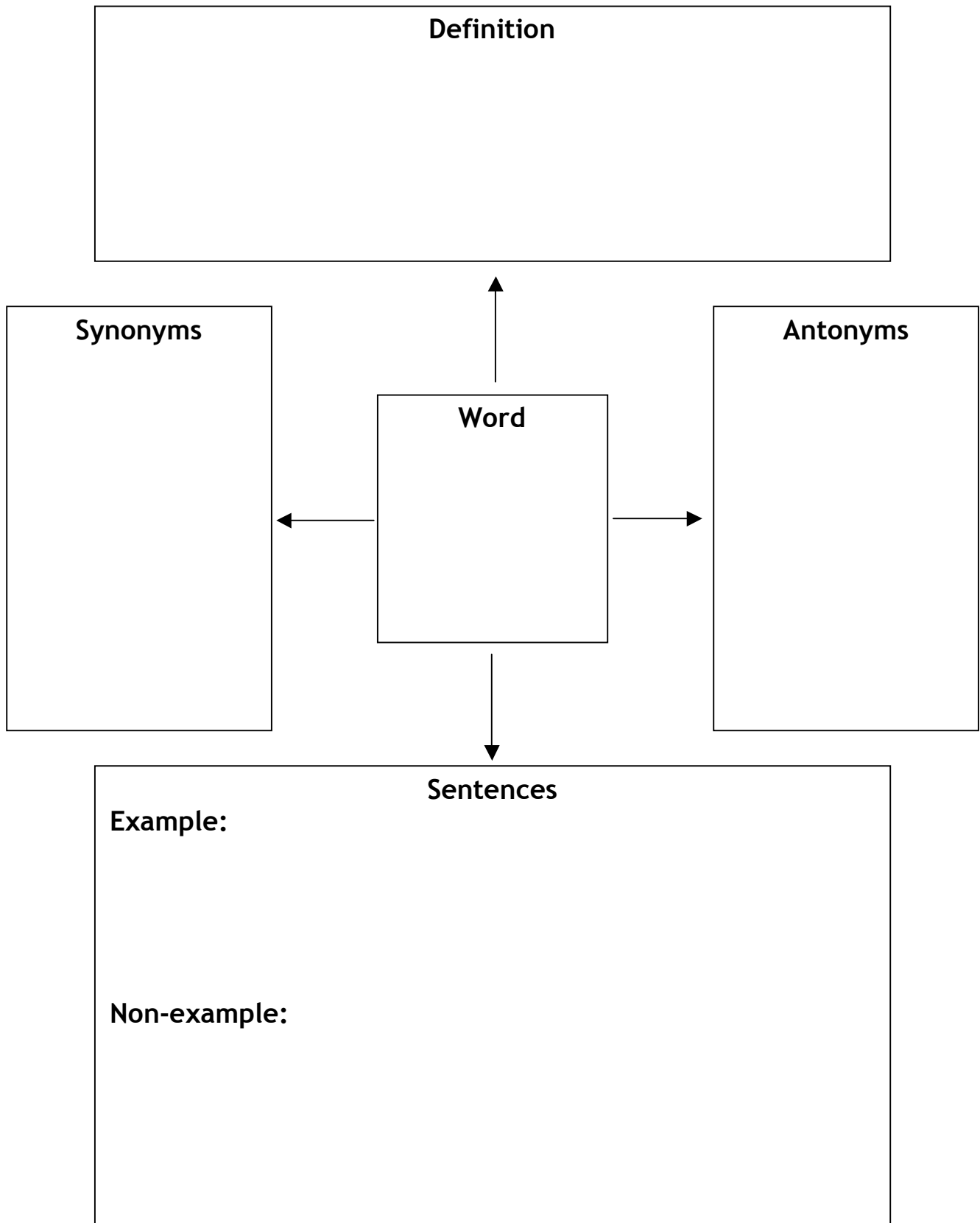
Something in the darkness outside his room moved with a grunt and a scuffle.

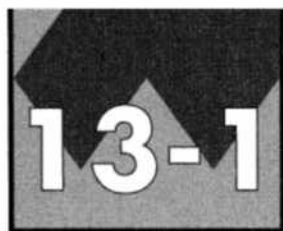
Someone was in the house!

Josef scrambled backward on his bed, his eyes wide. There was a shattering sound in the next room—crash! Ruth woke up and screamed. Screamed in sheer blind terror. She was only six years old.

"Mama!" Josef cried. "Papa!"

New Vocabulary Word: _____





Study Guide

Probability

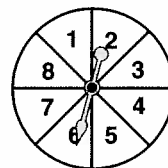
The **probability** of an event is the ratio of the number of ways the event can occur to the number of possible outcomes.

$$P(\text{event}) = \frac{\text{number of ways the event can occur}}{\text{number of possible outcomes}}$$

Examples 1 On the spinner below, there are eight equally likely outcomes. Find the probability of spinning a number less than 3.

Numbers less than 3 are 1 and 2.
There are 8 possible outcomes.

$$P(\text{less than 3}) = \frac{2}{8} \text{ or } \frac{1}{4}$$



2 Find $P(\text{greater than 10})$.

$$P(\text{greater than 10}) = \frac{0}{8} \text{ or } 0$$

3 Find $P(\text{less than 9})$.

$$P(\text{less than 9}) = \frac{8}{8} \text{ or } 1$$

Suppose you choose one of the cards shown without looking. Find the probability of each event.

1. $P(12)$

2. $P(\text{even})$

3. $P(2 \text{ digits})$

4. $P(\text{prime})$

5. $P(\text{odd})$

6. $P(\text{less than 8})$

7. $P(\text{greater than 40})$

8. $P(\text{divisible by 3})$

3	6	9	12
15	18	21	24
27	30	33	36

John has 15 baseball caps. 4 are red, 6 are blue, 3 are yellow, and 2 are white. If he chooses one without looking, find each probability.

9. $P(\text{yellow})$

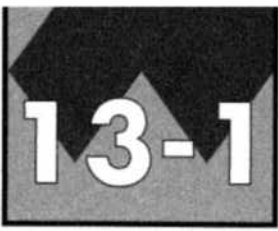
10. $P(\text{red or blue})$

11. $P(\text{black})$

12. $P(\text{white})$

13. $P(\text{red or white})$

14. $P(\text{yellow or white})$



Practice

Probability

Jared keeps his socks in random order in his top dresser drawer. There are two brown socks, eight black socks, four gray socks, and two blue socks in his drawer. Jared reaches into the drawer and, without looking, grabs one sock. Find the probability of each event.

1. $P(\text{gray})$
2. $P(\text{blue})$
3. $P(\text{black})$
4. $P(\text{white})$
5. $P(\text{brown or black})$
6. $P(\text{gray or blue})$

A set of 52 playing cards contains 4 different suits of 13 cards each. Hearts and diamonds are red; spades and clubs are black. Each suit contains cards numbered 2 through 10, a jack, queen, king, and ace. It is equally likely to choose any one card. Find the probability of each event.

7. $P(\text{red})$
8. $P(\text{clubs})$
9. $P(\text{ace})$
10. $P(\text{jack of diamonds})$
11. $P(\text{black 10})$
12. $P(\text{red king or queen})$
13. $P(\text{black 2, 3, or 4})$
14. $P(\text{red 1})$

Mrs. Phipps found 10 identical cans without labels in her cupboard. She knew that she originally had two cans of peas, five cans of corn, one can of carrots, and two cans of beets. She opens one can. Find the probability of each event.

15. $P(\text{carrots})$
16. $P(\text{corn})$
17. $P(\text{beans})$
18. $P(\text{peas})$
19. $P(\text{corn or beets})$
20. $P(\text{carrots or peas})$

Skill: Probability

A number cube is rolled once. Find each probability.

1. $P(3)$

2. $P(\text{even})$

3. $P(1, 3, \text{ or } 5)$

4. $P(0)$

5. $P(1 \text{ or } 6)$

6. $P(1 \text{ through } 6)$

A stack of 9 cards is placed face down. Each card has one letter of the word EXCELLENT. Find each probability.

7. $P(E)$

8. $P(N)$

9. $P(T \text{ or } X)$

10. $P(\text{consonant})$

There are eight blue marbles, nine orange marbles, and six yellow marbles in a bag. You draw one marble. Find each probability.

11. $P(\text{blue marble})$

12. $P(\text{yellow marble})$

13. What marble could you add or remove so that the probability of drawing a blue marble is $\frac{1}{3}$?

Skill: Probability *(continued)*

A box contains 12 slips of paper as shown.
Each slip of paper is equally likely to be drawn.
Find each probability.

red	blue	yellow	blue
yellow	red	blue	red
red	red	red	yellow

14. $P(\text{red})$

15. $P(\text{blue})$

16. $P(\text{yellow})$

17. $P(\text{red}) + P(\text{blue})$

18. $P(\text{red}) + P(\text{yellow})$

19. $P(\text{blue}) + P(\text{yellow})$

20. $P(\text{red or blue})$

21. $P(\text{red or yellow})$

22. $P(\text{blue or yellow})$

23. $P(\text{not red})$

24. $P(\text{not blue})$

25. $P(\text{not yellow})$

Additional Practice

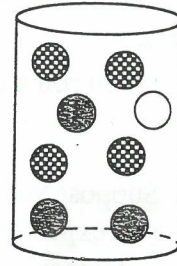
1. An ordinary six-sided number cube has the numbers from 1 through 6 on its faces.

 - a. If you roll a six-sided number cube, what are the possible outcomes?
 - b. Suppose you roll a six-sided number cube 18 times. How many times would you expect to roll a 5? What are you assuming about the possible outcomes?
 - c. Takashi and Glen are playing a game. For each turn, a number cube is rolled. If the roll is an even number, Takashi gets a point. If the roll is odd, Glen gets a point. Is this a fair game? Explain.
2. Patrick counted the cars that drove by his house over a 5-minute period. He counted a total of 27 cars.

 - a. If Patrick had counted cars for an hour, about how many would you expect him to have counted?
 - b. Suppose that at the same time of the day exactly one week later, Patrick counts cars over a 20-minute period. About how many cars would you expect him to count?
 - c. If Patrick started counting cars after school at about 3 p.m., would you expect him to count more, fewer, or about the same number of cars than if he started counting at 5 p.m.? Explain your reasoning.
3. A bag contains 20 pieces of candy. There are 8 grape pieces, 7 cherry pieces, and 5 lemon pieces.

 - a. One piece is drawn from the bag. Find the theoretical probability of drawing each flavor.
 - i. $P(\text{grape})$
 - ii. $P(\text{cherry})$
 - iii. $P(\text{lemon})$
 - b. Write each of the probabilities from part (a) as a percent.
 - i. $P(\text{grape})$
 - ii. $P(\text{cherry})$
 - iii. $P(\text{lemon})$
 - c. Suppose 2 grape pieces, 1 cherry piece and 1 lemon piece are removed from the bag. What is the theoretical probability of drawing each flavor now?
 - i. $P(\text{grape})$
 - ii. $P(\text{cherry})$
 - iii. $P(\text{lemon})$
 - d. In part (c), what is the theoretical probability of not drawing lemon?

Additional Practice (continued)



4. A can contains eight chips. Three chips are gray, four are checkered, and one is white.
- What is the probability of drawing a white chip?
 - What is the probability of drawing a checkered chip?
 - What is the probability of drawing a gray chip?
 - What is the probability of *not* drawing a white chip?
 - What is the probability of *not* drawing a gray chip?
5. A bucket contains 24 blocks. Some are blue, some are green, some are red, and some are yellow. The theoretical probabilities of drawing a blue, green, or red block are:
- $$P(\text{blue}) = \frac{1}{12}, P(\text{green}) = \frac{1}{8}, P(\text{red}) = \frac{1}{3}.$$
- How many blue blocks are in the bucket?
 - How many green blocks are in the bucket?
 - How many red blocks are in the bucket?
 - How many yellow blocks are in the bucket?
 - What is the probability of drawing a yellow block?
 - What is the probability of *not* drawing a yellow block?
6. If you roll two number cubes and add the results, which is more likely, getting an even sum or getting an odd sum? Explain.
7. If you roll one number cube and add the numbers on the top and bottom faces, which is more likely, getting an even sum or getting an odd sum? Explain.
8. If you roll one number cube, is it more likely that the number rolled is a prime number or a non-prime number? Explain.

13-4 Study Guide

Finding Outcomes

One way to show all of the possible outcomes is to organize data in a *tree diagram*.

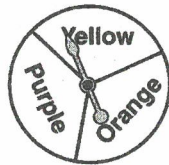
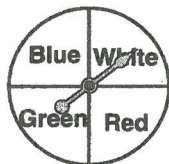
Example Ernie can order a small, medium, or large pizza with thick or thin crust. How many possible ways can he order?

Size	Crust	Outcomes
Small	Thick	→ Small, Thick
	Thin	→ Small, Thin
Medium	Thick	→ Medium, Thick
	Thin	→ Medium, Thin
Large	Thick	→ Large, Thick
	Thin	→ Large, Thin

There are 6 ways Ernie can order.

For each situation, draw a tree diagram to show the sample space.

1. Spin each spinner once.



2. José, Kara, and Beth are running for class president. Tony, Lou, and Fay are running for vice-president.

3. You can buy toothpaste in small, medium, or large size and regular or mint flavor.

4. Toss a dime and a quarter.

7. Melissa is designing a birthday card for her sister. She has a blue, a yellow, a pink, and a green sheet of paper. She also has a black, a red, and a purple marker. Suppose Melissa chooses one sheet of paper and one marker at random.
- Make a tree diagram to find all the possible color combinations.
 - What is the probability that Melissa chooses pink paper and a red marker?
 - What is the probability that Melissa chooses blue paper? What is the probability she does *not* choose blue paper?
 - What is the probability that she chooses a purple marker?
8. Lunch at Casimer Middle School consists of a sandwich, a vegetable, and a fruit. Today there is an equal number of each type of sandwich, vegetable, and fruit. The students don't know what lunch they will get. Sol's favorite lunch is a chicken sandwich, carrots, and a banana.

Casimer Middle School Lunch Menu		
<u>Sandwiches</u>	<u>Vegetables</u>	<u>Fruit</u>
Chicken	Carrots	Apple
Hamburger	Spinach	Banana
Turkey		

- Make a tree diagram to determine how many different lunches are possible. List all the possible outcomes.
- What is the probability that Sol gets his favorite lunch? Explain your reasoning.
- What is the probability that Sol gets at least one of his favorite lunch items? Explain.

Probability and Independent Events

If the outcome of one event does not affect the outcome of a second event, the two events are **independent**.

The probability of two independent events, A and B, is equal to the probability of event A times the probability of event B.

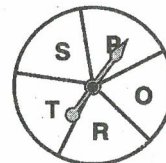
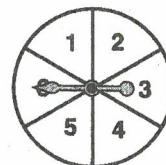
$$P(A \text{ and } B) = P(A) \times P(B)$$

Example Suppose you spin each of these two spinners. What is the probability of spinning an even number and a vowel?

$$P(\text{even}) = \frac{1}{2} \begin{array}{l} \leftarrow \text{number of ways to spin even} \\ \leftarrow \text{number of possible outcomes} \end{array}$$

$$P(\text{vowel}) = \frac{1}{5} \begin{array}{l} \leftarrow \text{number of ways to spin a vowel} \\ \leftarrow \text{number of possible outcomes} \end{array}$$

$$P(\text{even, vowel}) = \frac{1}{2} \times \frac{1}{5} \text{ or } \frac{1}{10}$$



The two spinners shown above are spun. Find the probability of each event.

1. $P(6, P)$
2. $P(\text{less than 4, consonant})$
3. $P(\text{odd, S})$
4. $P(5, \text{consonant})$
5. $P(\text{greater than 8, T})$
6. $P(\text{less than 7, vowel})$

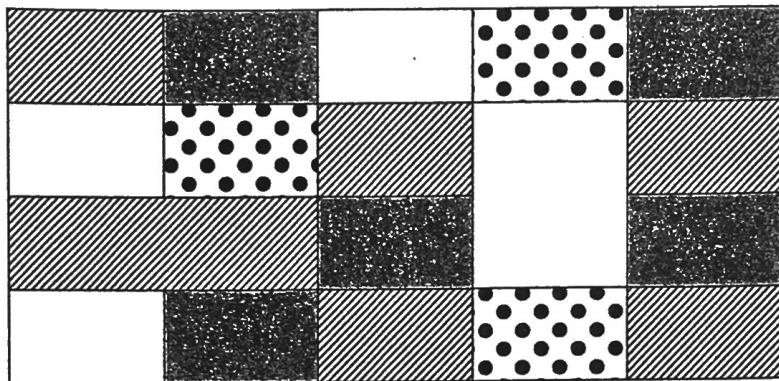
A quarter and a dime are tossed. Find the probability of each event.

7. $P(T, H)$
8. $P(\text{both the same})$
9. $P(T, T)$

Suppose you write each letter of your first and last names on a separate index card and select one letter from each name without looking. Find the probability of each event.

10. $P(\text{vowel, vowel})$
11. $P(\text{consonant, vowel})$
12. $P(M, E)$

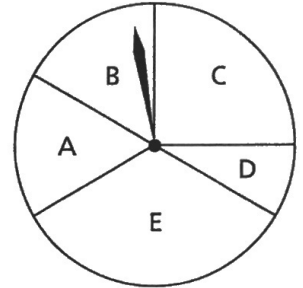
2. Irene randomly tosses a cube onto the grid below.



- What is the probability of the cube landing on a striped rectangle? Express your answer as a percent.
- What is the probability of the cube landing on a white rectangle? Express your answer as a percent.
- What is the probability of the cube landing on a gray rectangle? Express your answer as a percent.
- What is the probability of the cube landing on a dotted rectangle? Express your answer as a percent.
- What is the probability of the cube not landing on a white rectangle? Express your answer as a percent.
- What is the probability of the cube not landing on a striped rectangle? Express your answer as a percent.
- Irene proposed the following game: If the cube lands on a striped square or a dotted square, Irene wins; if the cube lands on a white square or a gray square, Irene's sister wins. Is this a fair game? Explain your reasoning.

4. a. If a letter is randomly selected from the letters A, B, C, D, and E, what is the probability that the letter will be B? Explain.

b. If a letter is selected by spinning the spinner at the right, what is the probability that the letter will be B? Explain.



c. Are your answers to parts (a) and (b) the same? Explain.

d. If the spinner is spun once, what is the probability that it will not land in region C? Explain.

e. If the spinner is spun once, what is the probability that it will land in region D? Explain.

f. If the spinner is spun 100 times, how many times would you expect it to land in region E? Explain.

5. The faces of one six-sided number cube are labeled 1, 1, 1, 2, 2, 3, and the faces of a second cube are labeled 0, 1, 2, 2, 2, 3. The two cubes are rolled, and the results are added.

a. What is the probability of rolling a sum of 1?

b. What is the probability of rolling a sum of 6?

c. What is the probability of rolling a sum of 4?

d. What is the probability of rolling a sum that is not 1 or 6? Explain.

Ready® Mathematics

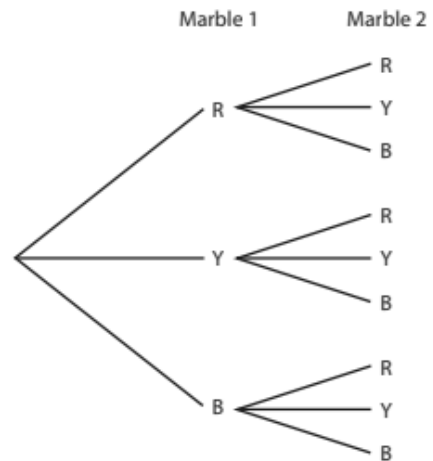
Lesson 33 Quiz

Solve the problems.

- 1** Kailynn has a bag with an equal number of red, yellow, and blue marbles. She makes a tree diagram to show the sample space if she randomly selects two marbles out of the bag.

What is the probability that both marbles selected are different colors?

Answer: _____



- 2** A coin is tossed three times.

Draw a line from each outcome to its probability.

three heads	$\frac{1}{2}$
exactly two tails	$\frac{3}{8}$
first two tosses are heads	$\frac{1}{4}$
at least two tails	$\frac{1}{8}$

- 3** Andy is randomly selecting an outfit to wear to school. He can choose from 4 shirts: blue striped, red striped, black striped, or white. He can choose from 3 pairs of shorts: tan, blue, or plaid.

Determine whether each statement is *True* or *False*.

- a. There are 7 possible outcomes in the sample space. True False
- b. The probability that Andy chooses a striped shirt and a pair of blue shorts is $\frac{1}{4}$. True False
- c. There are 3 ways to choose a red striped shirt and a pair of plaid shorts. True False
- d. The probability that Andy chooses a striped shirt and a pair of tan or plaid shorts is $\frac{1}{2}$. True False

Lesson 33 Quiz *continued*

- 4** A cereal company puts a toy car, a toy bus, or a toy airplane in each of its boxes. The company says 20% of the boxes will contain a car, 40% a bus, and 40% an airplane.

Jeffrey designs a simulation to explore how likely it is to collect all three toys if he buys three boxes of cereal. He assigns digits as follows:

- 0, 1 = Car
- 2, 3, 4, 5 = Bus
- 6, 7, 8, 9 = Airplane

Then he generates the following sets of random numbers for his simulation.

4, 6, 8	9, 8, 1	3, 7, 1	2, 7, 4	3, 8, 5
3, 0, 0	5, 1, 7	9, 2, 0	5, 5, 0	5, 2, 1
3, 0, 6	7, 7, 9	4, 2, 5	4, 7, 6	4, 6, 0

Based on the results of the simulation, what is the probability that Jeffrey will collect all three toys if he buys three boxes of cereal?

Answer: _____

- 5** At a restaurant, a children's meal gives a choice of four entrées: burger (B), chicken (C), pizza (P), or spaghetti (S), and two sides: apple (A) or fries (F).

Part A

Which sample space represents all the ways a child could choose one entrée and one side for his or her meal?

- A** BA, BF, CA, CF, PA, PF, SA, SF
- B** BA, CA, PA, SA
- C** BF, CF, PF, SF
- D** B, C, P, S, A, F

Part B

The restaurant decides to add another choice for the entrée and another choice for the side on the children's menu. The additional entrée choice is grilled cheese and the additional side choice is mixed vegetables. What is the probability that a child will choose pizza or spaghetti with mixed vegetables for his or her meal?

Answer: _____

7.SP – Tetrahedral Dice

Task

Many games use dice which are six-sided and fair (meaning each face on the die is equally likely to land face up). Many games also use the sum of two dice rolled at the same time to determine movement of game pieces. However, not all dice are six-sided. Imagine a game in which two fair four-sided (tetrahedral) dice are rolled simultaneously. These dice are in the shape of a pyramid, and when a die is rolled, the outcome is determined by the side that lands face down. Suppose that for these two dice, the possible values (corresponding to the four sides of the die) that can be obtained from each die are as follows:

Die #1: 1, 2, 3, or 4

Die #2: 2, 4, 6, or 8

- a. A certain game determines the movement of players' game pieces based on the SUM of the numbers on the face down sides when two dice are rolled. There are 10 distinct sum values that can occur, and some of those sums occur more often than others.
 - i. Using an organized list, table, tree diagram, or method of your choosing, develop a list of all 16 possible outcomes (for example, Die #1 = 1 and Die #2 = 2 for a sum of 3; Die #1 = 1 and Die #2 = 4 for a sum of 5; and so on).
 - ii. From your work in part i, determine the 10 **distinct sum values** that are possible and calculate the probability of obtaining each sum value. Note: as mentioned above, some values will occur more frequently than others.
 - iii. Using your work in part ii, answer the following questions:
 - What is the probability of obtaining a sum of 5?
 - What is the probability of obtaining a sum that is more than 5?
 - What is the probability of obtaining a sum that is at most 5?
 - What is the probability of obtaining a sum that is at least 5?
 - What is the probability of obtaining a sum that is no less than 5?

b. Now consider the case where the DIFFERENCE in the numbers on the face down sides when two dice are rolled is important to the game. Unless the two die values are the same (in which case the difference is 0), the difference for purposes of this game will always be computed as the larger number value rolled minus the smaller number value rolled. In this way, the difference value for any roll of the two dice will always be positive or 0.

i. Using an organized list, table, tree diagram, or method of your choosing, develop a list of all 16 possible outcomes (for example, Die #1 = 1 and Die #2 = 2 for a difference of 1; Die #1 = 1 and Die #2 = 4 for a difference of 3; and so on).

ii. From your work in part i, determine the 8 distinct difference values that are possible and calculate the probability of obtaining each difference value. Note: as mentioned above, some values will occur more frequently than others.

iii. Using your work in part e, answer the following questions:

What is the probability of obtaining a difference of 5?

What is the probability of obtaining a difference that is more than 5?

What is the probability of obtaining a difference that is less than or equal to 5?



7.SP - Tetrahedral Dice

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7.SP Waiting Times

Task

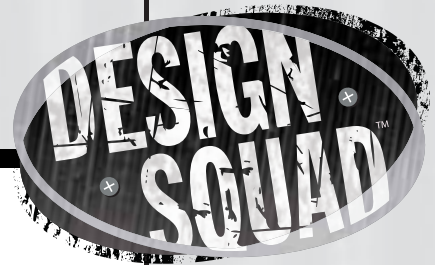
Suppose each box of a popular brand of cereal contains a pen as a prize. The pens come in four colors, blue, red, green and yellow. Each color of pen is equally likely to appear in any box of cereal. Design and carry out a simulation to help you answer each of the following questions.

- a. What is the probability of having to buy at least five boxes of cereal to get a blue pen? What is the mean (average) number of boxes you would have to buy to get a blue pen if you repeated the process many times?
- b. What is the probability of having to buy at least ten boxes of cereal to get a full set of pens (all four colors)? What is the mean (average) number of boxes you would have to buy to get a full set of pens if you repeated the process many times?



7.SP Waiting Times
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ZIP LINE



YOUR CHALLENGE

Design and build something that can carry a Ping-Pong ball from the top of a zip line string to the bottom in four seconds (or less!).

BRAINSTORM & DESIGN

Look at your materials and think about the questions below. Then sketch your ideas on a piece of paper or in your design notebook.

1. Using these materials, what can you design that can carry a Ping-Pong ball down a zip line?
2. How will your Ping-Pong ball carrier stay on the zip line as it goes from the top to the bottom?
3. What kinds of materials should be in contact with the zip line so that the carrier slides quickly?

BUILD, TEST, EVALUATE & REDESIGN

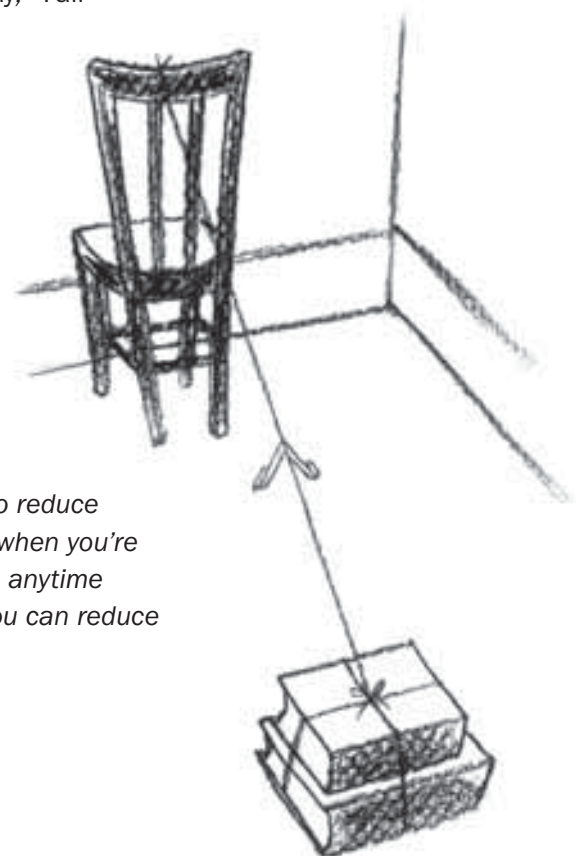
Use the materials to build your Ping-Pong ball carrier. Then make a zip line. Run the line between the back of a chair and a stack of books. Make sure the high end is about two feet above the low end. Test the carrier by putting it on the line. When you test, your design may not work as planned. The design process is all about “if at first you don’t succeed, then try, try again.” On *Design Squad*, we say, “Fail fast—succeed sooner!” Study the problems and then redesign. For example, if your Ping-Pong ball carrier:

- keeps dropping the ball—*Check that it has a big enough place to hold the ball.*
- stops partway down—*Make sure there’s nothing blocking your carrier where it touches the line.*
- doesn’t balance well—*Adjust the weights. Add weights or move them so they are farther below the zip line. Doing this changes the carrier’s **center of gravity**, the point within an object where all parts are in balance with one another. See how changing the numbers and positions of washers affects the carrier’s balance.*
- takes longer than four seconds to travel the zip line—*Find ways to reduce friction. Yes, there’s **friction**—the force that resists motion—even when you’re dealing with something as smooth as fishing line. You’ll find friction anytime things rub together. Experiment with different materials to see if you can reduce friction and speed up the Ping-Pong ball carrier.*

as built on TV™
pbs.org/designsquad

MATERIALS (per person)

- chipboard (from a cereal box or back of a notepad)
- 2–4 small paper cups (i.e., 3-ounce)
- Ping-Pong ball
- 4 plastic straws
- scissors
- single-hole hole punch
- 4 feet of smooth line (e.g., fishing line or unwaxed dental floss)
- tape (duct or masking)
- 4 standard, flat steel washers (1 inch in diameter or larger)
- 4 wooden skewers



TAKE IT TO THE NEXT LEVEL

- Slow down! Build a carrier that takes ten seconds to travel the length of the zip line.
- Piggyback time. Make a carrier that can hold several Ping-Pong balls at the same time.
- Blast off! Find a way to launch the Ping-Pong ball when the carrier gets to the end of the zip line.
- On your mark. Get set. Go! Set up two zip lines and race different ball carriers.

MAKE IT ONLINE

Travel by blimp, anyone?

Build a jet-propelled blimp that can travel across a large room. Make it out of 2 balloons, 2 straws, and some clay and tape. See how on Make Magazine's project page at makezine.com/designsquad.



ENGINEERING IN ACTION

Ever want to zip up the side of a building like Batman or Spiderman? Now this superpower can be yours, thanks to engineer Nate Ball, host of *Design Squad*, and his friends. For a contest, they designed and built a climbing device that could carry a person 50 feet up the side of a building in less than five seconds. After months of work, the team tested their climber by lifting a 150-pound load of tires. Nate recalls, "After a few seconds, there was an awful sound. The gearbox exploded. The tires smashed to the ground with a huge crash." After analyzing the ruined climber, they made lots of changes and ended up winning third prize in the contest. Ultimately, they patented the climber and started a company to sell it. Today, soldiers, firefighters, and rescue workers around the world use the team's climber to fly up buildings. Now, those are *real* superheroes.



Watch the **DESIGN SQUAD Backyard Thrill Ride** episode on PBS or online at pbs.org/designsquad.



Major funding for *Design Squad* is provided by the Corporation for Public Broadcasting and the Intel Foundation. Additional funding is provided by the National Council of Examiners for Engineering and Surveying, United Engineering Foundation (ASCE, ASME, AIChE, IEEE, AIME), Noyce Foundation, Northrop Grumman Foundation, the IEEE, and the Intel Corporation.

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Name _____

Ecosystems: Interactions, Energy, and Dynamics - Yellowstone Park, USA

“Yellowstone National Park is a nearly 3,500-sq.-mile wilderness recreation area atop a volcanic hot spot. Mostly in Wyoming, the park spreads into parts of Montana and Idaho too. Yellowstone features dramatic canyons, alpine rivers, lush forests, hot springs and gushing geysers, including its most famous, Old Faithful. It's also home to hundreds of animal species, including bears, wolves, bison, elk and antelope.”

<https://www.nps.gov/yell/index.htm>



Bison



Wolf



Lamar Valley, Yellowstone Park

“Bison are the largest grazing mammals in Yellowstone National Park. They are obligate herbivores, a grazer of grasslands and sedges in the meadows, the foothills, and even the high-elevation, forested plateaus of Yellowstone. Bison males, called bulls, can weigh upwards of 1,800 pounds. Females (cows) average about 1,300 pounds. Both stand approximately six feet tall at the shoulder, and can move with surprising speed to defend their young or when approached too closely by people. Bison breed from mid-July to mid-August, and bear one calf in April and May. Some wolf predation of bison is documented in Canada and has recently been observed in Yellowstone. Bison live an average lifespan of 20–25 years in the wild.”

https://en.wikipedia.org/wiki/List_of_animals_of_Yellowstone



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“In Yellowstone, fungi are mostly observed as mushrooms, puffballs, or bracket fungi on trees during certain parts of the year. Mushrooms and puffballs are of special interest because some are edible. Although park rules prohibit people from collecting and removing any mushrooms from the park without a permit, deer, elk, bear, squirrels, voles and insects are among the many animals that eat the fruiting bodies.”

“In addition to the mushrooms that sprout out of bison dung in the park are tiny, dung-loving fungi that go unnoticed by most people. On hands and knees, the researcher Michael Foos found *Pilobolus*, the only fungus in Zygomycota recorded in the park, on herbivore dung

everywhere in Yellowstone (Foos 1989). This fungus, whose name literally means “hat thrower,” shoots its spore packet out of the “zone of repugnance” (a scientific term for a bison paddy or elk duds) onto vegetation at a g-force of 20,000 to 180,000, one of the fastest flights in nature (Yafetto et al. 2008). If eaten by a grazing ungulate, the spores travel through the animal’s digestive tract and land back in the manure, ready to do their job of reducing the pile.”

Excerpts from “What Do We Know in Yellowstone about Fungi in Yellowstone National Park” by Cathy L. Cripps and Leslie Eddington; Yellowstone Science, Volume 20, Issue 1 2012

1. From the texts and photos above list producers and consumers in Yellowstone National Park.

Producers	Consumers	Decomposers

2. From the texts and photos above list non-living components of Yellowstone National Park Ecosystem.





Herd of bison and lone wolf in Lamar Valley, Yellowstone Park - <https://imgur.com/gallery/wo2j8m8>

3. Above is a photograph a tourist captured in the Lamar Valley of Yellowstone Park. The wolf photographed in this ecosystem had been named “Dot” by local onlookers. On the next page develop a model to answer these questions. How could the material in the buffalo dung cycle to Dot? What energy is required and how does the energy flow? Your model must include the following components and relationships.

COMPONENTS	RELATIONSHIPS BETWEEN COMPONENTS
Producers Consumers Decomposers Non-living Matter Energy	Energy into and out of the system Energy Flow Matter Cycling (cycling of atoms)



Dot

Bison
Dung



4. How does your model show that the atoms found in the bison dung may eventually be found in Dot?

5. How does your model show how energy flows into, out of and within the ecosystem?

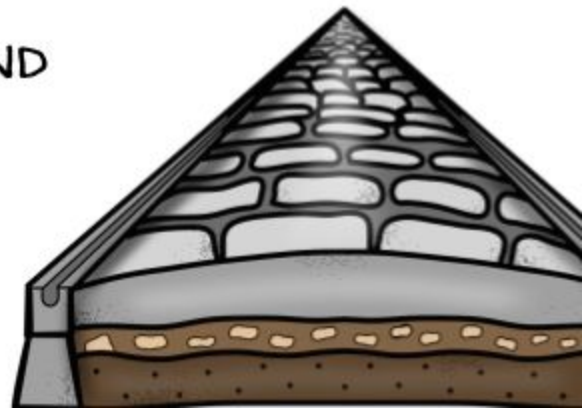


ANCIENT ROMAN ARCHITECTURE: THE INFORMATION

STATION 4: ROADS

THE ROMANS BUILT OVER 400,000 KILOMETERS OF ROAD ALL OVER THEIR EMPIRE. THEY BUILT 29 LARGE MILITARY HIGHWAYS. THE ROMANS NEEDED ROADS TO MOVE SOLDIERS, WEAPONS, GOODS, AND SUPPLIES TO ALL PARTS OF THE EMPIRE. ROMAN ROADS ALSO ALLOWED FOR EASY AND INCREASED TRADE.

THE ROMAN ARMY PLANNED AND BUILT ALL THE ROADS. THEY COULD CREATE STRAIGHT ROADS BY USING AN INSTRUMENT CALLED A GROMA. ROADS WERE BUILT WITH DITCHES ON THE SIDE TO HELP WITH DRAINAGE. ROMAN ROADS WERE DIFFERENT ALL THROUGHOUT THE EMPIRE. SOME WERE SIMPLE AND OTHERS WERE COMPLEX. MOST WERE BUILT WITH STONE, CEMENT MIXED WITH BROKEN STONE AND SAND, AND A LAYER OF CURVED ROCKS. THIS LAYER ALLOWED RAIN TO DRAIN AND STOPPED THE ROADS FROM BECOMING MUDDY. THE TOP LAYER OF THE ROADS USUALLY WAS A TIGHT LAYER OF STONES.



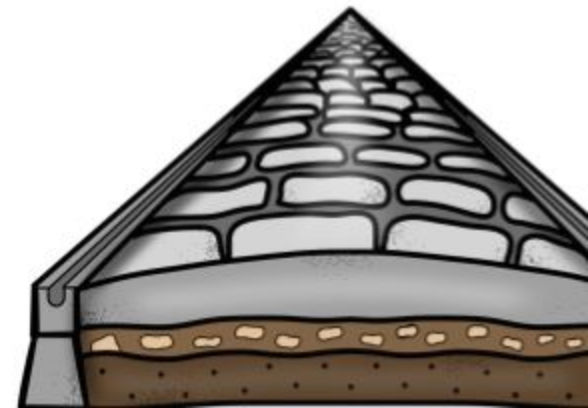
ANCIENT ROMAN ARCHITECTURE: THE VISUALS

STATION 4: ROADS

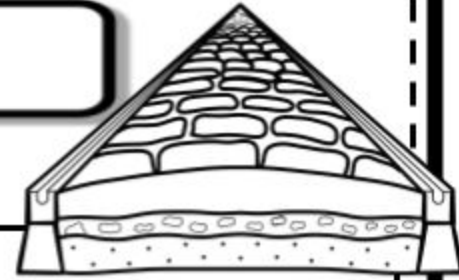
WHEN USING GOOGLE MAPS, MAKE SURE YOU MOVE THE MOUSE AROUND. THE PICTURE IS A 360 DEGREE VIEW.

CLICK HERE TO GO TO ANCIENT ROME ARCHITECTURE: THE VISUALS:

<https://bit.ly/ancientromearch>



STATION 4: ROADS



NAME _____

THE INFORMATION:

WHY DID THE ROMANS BUILD ROADS?

 Type Here

WHY DID ROMAN ROADS HAVE MORE THAN ONE LAYER?

 Type Here

THE VISUALS:

GOOGLE MAPS: VIA DELL'ABBONDANZA IN POMPEII

TRAVEL ALONG THE ROAD IN POMPEII BY CLICKING FORWARD. DESCRIBE WHAT YOU SEE ALL AROUND YOU.

 Type Here

GOOGLE MAPS: ALCANTARA BRIDGE

HOW DOES THE ROAD ON THE BRIDGE LOOK DIFFERENT THAN THE ROAD IN POMPEII?

 Type Here

VIDEO:

WHAT WAS THE VIA APPIA?

 Type Here

DESCRIBE WHAT A GROMA LOOKS LIKE AND HOW IT WORKS.

 Type Here

DESCRIBE THE LAYERS OF THE ROAD.

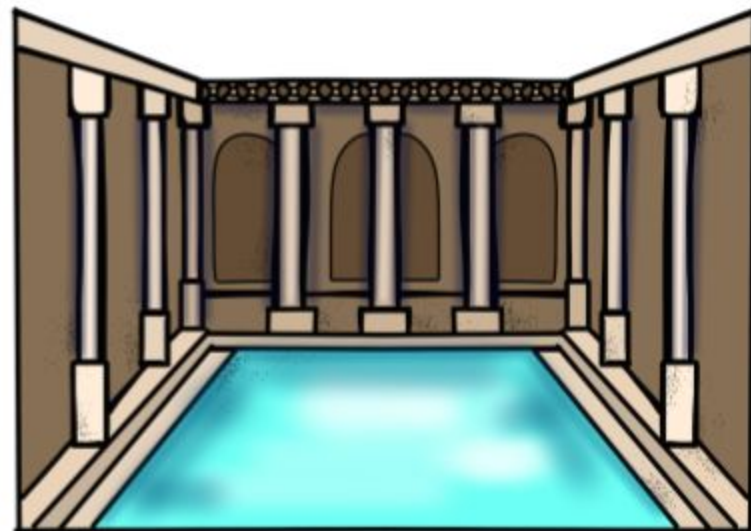
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ANCIENT ROMAN ARCHITECTURE: THE INFORMATION

STATION 5: BATHS

THE ROMAN BATHS WERE AN EVERYDAY PART OF LIFE. ROMAN HOUSES WERE SUPPLIED WATER THROUGH LEAD PIPES. THE WATER, THOUGH, WAS TAXED SO ROMANS USED LITTLE WATER. INSTEAD, THEY PAID TO USE THE BATHS. THE ROMAN BATHS WERE IMPORTANT FOR PERSONAL HYGIENE BUT WERE ALSO AN IMPORTANT GATHERING PLACE FOR ROMANS. THE BATHS INCLUDED COLD, WARM, AND HOT BATHS, SAUNAS, EXERCISE AREAS, SWIMMING POOLS, AND GYMNASIUMS.

THE BATHS REQUIRED SOME AMAZING ENGINEERING. A FURNACE HAD TO HEAT THE WATER AND THE FLOORS. ALSO, THE BATHS NEEDED A CONSTANT SUPPLY OF WATER FROM THE AQUEDUCTS. THE BATHS WERE SUCH AN IMPORTANT PART OF LIFE THEY WERE OFTEN DECORATED WITH MARBLE COLUMNS, MOSAICS, AND STATUES.



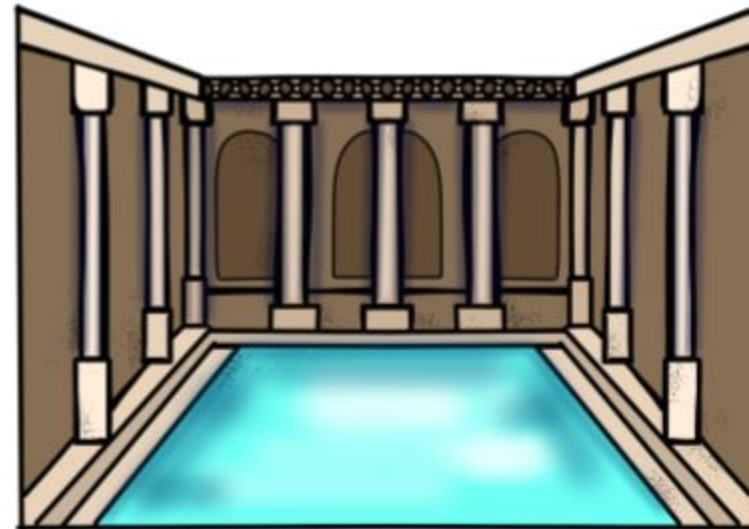
ANCIENT ROMAN ARCHITECTURE: THE VISUALS

STATION 5: BATHS

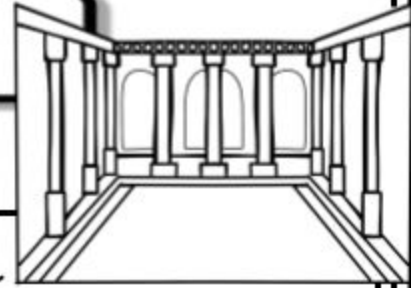
WHEN USING GOOGLE MAPS, MAKE SURE YOU MOVE THE MOUSE AROUND. THE PICTURE IS A 360 DEGREE VIEW.

CLICK HERE TO GO TO ANCIENT ROMAN ARCHITECTURE: THE VISUALS:

<https://bit.ly/ancientromearch>



STATION 5: THE BATHS



NAME _____

THE INFORMATION:

WHY DID THE ROMANS USE PUBLIC BATHS?

 Type Here

DESCRIBE THE DIFFERENT THINGS A ROMAN COULD EXPERIENCE AT THE PUBLIC BATHS?

 Type Here

THE VISUALS:

GOOGLE MAPS: ROMAN BATHS IN BATH, UK
INVESTIGATE THE TWO 360 DEGREE VIEWS OF THE ROMAN BATHS IN BATH, UK. WHAT TYPE OF ARTISTIC AND ARCHITECTURAL ACHIEVEMENTS DO YOU SEE?

 Type Here

VIDEO:

WHAT DO THEY CALL THE WATER SOURCE FOR THESE SPECIFIC BATHS?

 Type Here

THE BATHS IN BATH ARE A TEMPLE TO WHICH GODDESS?

 Type Here

WHAT IS THE CONSTANT TEMPERATURE OF THE WATER IN THE BATHS (IN CENTIGRADE)?

 Type Here

GREATEST ARCHITECTURAL OR ENGINEERING ACCOMPLISHMENT

THINK ABOUT THE FIVE ARCHITECTURAL AND ENGINEERING ACCOMPLISHMENTS OF THE ROMANS. IN YOUR OPINION, WHICH WAS THE MOST IMPORTANT ACCOMPLISHMENT FOR THE ROMANS. CITE EVIDENCE FROM THE READING AND VIDEOS TO SUPPORT YOUR CLAIM.

THE MOST IMPORTANT ARCHITECTURAL OR ENGINEERING ACCOMPLISHMENT OF THE ROMANS WAS.....

 Type Here

CITE EVIDENCE.

 Type Here

CITE EVIDENCE.

 Type Here

CITE EVIDENCE.

 Type Here

Congratulations!

This is awarded to (insert architectural or engineering accomplishment)

 Type Here





1st
Place

For being the most important architectural or engineering accomplishment of the Roman Empire. You have been awarded this because:

 Type Here

ESL at Home 6-8 Weeks II-12

Use notebook paper to complete these activities. Do one each day!

Monday	Tuesday	Wednesday	Thursday	Friday
<p>Pick a character from a book. Write 3 different messages that character would post on social media! Can include pictures!</p>   	<p>Find 10 random food items of your choice in your house. Line them up in alphabetical order. A-Z.</p> <p>Example: Crackers, Apple, Banana</p> <p style="text-align: center;">↓</p> <p>Apple, Banana, Crackers</p>	<p>Write a letter to students that will be in 6th grade next year. What do they need to know to be a successful middle schooler or 6th grader?</p> <p>Make sure you share with your teacher!</p>	<p>Create a poster on a piece of paper to persuade others about conservation. It can be about recycling, saving an endangered species, etc.</p> 	<p>Write your own math problem and solve it. Then, write to explain how you solved it.</p> <p>Example: $5/8 + 7/11 =$</p> <p>First, _____. Next, _____. Last, _____.</p>

Monday	Tuesday	Wednesday	Thursday	Friday
<p>Rewrite part of a fiction story from a different point of view. Does the story change? What would we learn about different characters? Be creative!</p>	<p>Use things around your house to create an invention to launch items into the air using force. How do you get items to go farther? Less distance? Higher? Sketch and label your invention.</p>	<p>Practice reading aloud to someone in your family. Then, ask your family member questions about the text to see if they were listening!</p>	<p>Find 5 things in your home that have acute angles. Find 5 things in your home that have obtuse angles. Find 5 things in your home with lines that are parallel.</p> <p>Sketch and label these items!</p>	<p>Write your opinion on distance learning. How do you feel about learning from home? Do you like it/dislike it? Why? Write three reasons.</p> <p>I like/dislike distance learning. First, _____ because _____. Another reason I _____ is because _____. Finally, _____.</p>