

# **Grade 7**

# **Assignment Bundle**

Name: \_\_\_\_\_ Class: \_\_\_\_\_

## Amigo Brothers

By Piri Thomas  
1978

*Piri Thomas (1928-2011) was a writer and poet, best known for his memoir Down These Mean Streets. Thomas was born to a Puerto Rican mother and Cuban father. During his childhood, Thomas lived in East Harlem, which became known as "Spanish Harlem." In this short story, two best friends become competitors when they must fight each other in a boxing match. As you read, take notes on what the two friends feel after they find out they will be fighting each other.*

- [1] Antonio Cruz and Felix Vargas were both seventeen years old. They were so together in friendship that they felt themselves to be brothers. They had known each other since childhood, growing up on the Lower East Side of Manhattan in the same tenement<sup>1</sup> building on Fifth Street between Avenue A and Avenue B.

Antonio was fair, lean, and lanky, while Felix was dark, short, and husky. Antonio's hair was always falling over his eyes, while Felix wore his black hair in a natural Afro style.



"Boxing Gloves" by Kristin Wall is licensed under CC BY-ND 2.0

Each youngster had a dream of someday becoming lightweight champion of the world.

Every chance they had, the boys worked out, sometimes at the Boys' Club on 10th Street and Avenue A and sometimes at the pro's gym on 14th Street. Early morning sunrises would find them running along the East River Drive, wrapped in sweat shirts, short towels around their necks, and handkerchiefs Apache style around their foreheads.

While some youngsters were into street negatives, Antonio and Felix slept, ate, rapped, and dreamt positive. Between them, they had a collection of Fight magazines second to none, plus a scrapbook filled with torn tickets to every boxing match they had ever attended, and some clippings of their own. If asked a question about any given fighter, they would immediately zip out from their memory banks divisions, weights, records of fights, knockouts, technical knockouts, and draws or losses.

- [5] Each had fought many bouts<sup>2</sup> representing their community and had won two gold-plated medals plus a silver and bronze medallion. The difference was in their style. Antonio's lean form and long reach made him the better boxer, while Felix's short and muscular frame made him the better slugger.<sup>3</sup> Whenever they had met in the ring for sparring sessions, it had always been hot and heavy.

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1. a large building that has apartments for rent  
2. a wrestling or boxing match  
3. a person who throws hard punches

Now, after a series of elimination bouts, they had been informed that they were to meet each other in the division finals that were scheduled for the seventh of August, two weeks away — the winner to represent the Boys' Club in the Golden Gloves Championship Tournament.

The two boys continued to run together along the East River Drive. But even when joking with each other, they both sensed a wall rising between them.

One morning less than a week before their bout, they met as usual for their daily workout. They fooled around with a few jabs at the air, slapped skin, and then took off, running lightly along the dirty East River's edge.

Antonio glanced at Felix, who kept his eyes purposely straight ahead, pausing from time to time to do some fancy leg work while throwing one-twos followed by uppercuts to an imaginary jaw. Antonio then beat the air with a barrage<sup>4</sup> of body blows and short devastating lefts with an overhead jaw-breaking right.

[10] After a mile or so, Felix puffed and said, "Let's stop a while, bro. I think we both got something to say to each other."

Antonio nodded. It was not natural to be acting as though nothing unusual was happening when two ace-boon<sup>5</sup> buddies were going to be blasting each other within a few short days.

They rested their elbows on the railing separating them from the river. Antonio wiped his face with his short towel. The sunrise was now creating day.

Felix leaned heavily on the river's railing and stared across to the shores of Brooklyn. Finally, he broke the silence.

"Man. I don't know how to come out with it."

[15] Antonio helped. "It's about our fight, right?"

"Yeah, right." Felix's eyes squinted at the rising orange sun. "I've been thinking about it too, panin.<sup>6</sup> In fact, since we found out it was going to be me and you, I've been awake at night, pulling punches on you, trying not to hurt you."

"Same here. It ain't natural not to think about the fight. I mean, we both are cheverote<sup>7</sup> fighters and we both want to win. But only one of us can win. There ain't no draws in the eliminations."

Felix tapped Antonio gently on the shoulder. "I don't mean to sound like I'm bragging, bro. But I wanna win, fair and square."

Antonio nodded quietly. "Yeah. We both know that in the ring the better man wins. Friend or no friend, brother or no..."

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4. a concentrated outpouring of blows

5. a term meaning "very good friends"

6. a Puerto Rican Spanish slang term meaning "buddy"

7. a Puerto Rican Spanish slang term for "the greatest"

[20] Felix finished it for him. "Brother. Tony, let's promise something right here. OK?"

"If it's fair, hermano,<sup>8</sup> I'm for it." Antonio admired the courage of a tugboat pulling a barge five times its welter-weight<sup>9</sup> size.

"It's fair, Tony. When we get into the ring, it's gotta be like we never met. We gotta be like two heavy strangers that want the same thing and only one can have it. You understand, don't cha?"

"Sí, I know." Tony smiled. "No pulling punches. We go all the way."

"Yeah, that's right. Listen, Tony. Don't you think it's a good idea if we don't see each other until the day of the fight? I'm going to stay with my Aunt Lucy in the Bronx. I can use Gleason's Gym for working out. My manager says he got some sparring partners with more or less your style."

[25] Tony scratched his nose pensively.<sup>10</sup> "Yeah, it would be better for our heads." He held out his hand, palm upward. "Deal?"

"Deal." Felix lightly slapped open skin.

"Ready for some more running?" Tony asked lamely.

"Naw, bro. Let's cut it here. You go on. I kinda like to get things together in my head."

"You ain't worried, are you?" Tony asked.

[30] "No way, man." Felix laughed out loud. "I got too much smarts for that. I just think it's cooler if we split right here. After the fight, we can get it together again like nothing ever happened."

The amigo brothers were not ashamed to hug each other tightly.

"Guess you're right. Watch yourself, Felix. I hear there's some pretty heavy dudes up in the Bronx. Suavecito,<sup>11</sup> OK?"

"OK. You watch yourself too, sabe?"<sup>12</sup>

Tony jogged away. Felix watched his friend disappear from view, throwing rights and lefts. Both fighters had a lot of psyching up to do before the big fight.

[35] The days in training passed much too slowly. Although they kept out of each other's way, they were aware of each other's progress via the ghetto grapevine.

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8. Spanish for "brother"

9. a weight in boxing in the range between 140 and 147 pounds

10. **Pensive (adjective):** engaged in deep or serious thought

11. a Puerto Rican Spanish slang term for "cool"

12. Spanish for "you know"

The evening before the big fight, Tony made his way to the roof of his tenement. In the quiet early dark, he peered over the ledge. Six stories below, the lights of the city blinked and the sounds of cars mingled with the curses and the laughter of children in the street. He tried not to think of Felix, feeling he had succeeded in psyching his mind. But only in the ring would he really know. To spare Felix hurt, he would have to knock him out, early and quick.

Up in the South Bronx, Felix decided to take in a movie in an effort to keep Antonio's face away from his fists. The flick was *The Champion* with Kirk Douglas, the third time Felix was seeing it.

The champion was getting beaten, his face being pounded into raw, wet hamburger. His eyes were cut, jagged, bleeding, one eye swollen, the other almost shut. He was saved only by the sound of the bell.

Felix became the champ and Tony the challenger.

- [40] The movie audience was going out of its head, roaring in blood lust at the butchery going on. The champ hunched his shoulders, grunting and sniffing red blood back into his broken nose. The challenger, confident that he had the championship in the bag, threw a left. The champ countered with a dynamite right that exploded into the challenger's brains.

Felix's right arm felt the shock. Antonio's face, superimposed<sup>13</sup> on the screen, was shattered and split apart by the awesome force of the killer blow. Felix saw himself in the ring, blasting Antonio against the ropes. The champ had to be forcibly restrained. The challenger was allowed to crumble slowly to the canvas, a broken bloody mess.

When Felix finally left the theater, he had figured out how to psych himself for tomorrow's fight. It was Felix the Champion vs. Antonio the Challenger.

He walked up some dark streets, deserted except for small pockets of wary-looking kids wearing gang colors. Despite the fact that he was Puerto Rican like them, they eyed him as a stranger to their turf. Felix did a fast shuffle, bobbing and weaving, while letting loose a torrent of blows that would demolish whatever got in its way. It seemed to impress the brothers, who went about their own business.

Finding no takers, Felix decided to split to his aunt's. Walking the streets had not relaxed him; neither had the fight flick. All it had done was to stir him up. He let himself quietly into his Aunt Lucy's apartment and went straight to bed, falling into a fitful sleep with sounds of the gong for Round One.

- [45] Antonio was passing some heavy time on his rooftop. How would the fight tomorrow affect his relationship with Felix? After all, fighting was like any other profession. Friendship had nothing to do with it. A gnawing doubt crept in. He cut negative thinking real quick by doing some speedy fancy dance steps, bobbing and weaving like mercury.<sup>14</sup> The night air was blurred with perpetual motions of left hooks and right crosses. Felix, his amigo brother, was not going to be Felix at all in the ring. Just an opponent with another face. Antonio went to sleep, hearing the opening bell for the first round. Like his friend in the South Bronx, he prayed for victory via a quick clean knockout in the first round.

Large posters plastered all over the walls of local shops announced the fight between Antonio Cruz and Felix Vargas as the main bout.

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13. to place or lay one thing over another

14. a heavy silvery-white metal that is liquid at ordinary temperatures

The fight had created great interest in the neighborhood. Antonio and Felix were well liked and respected. Each had his own loyal following. Betting fever was high and ranged from a bottle of Coke to cold hard cash on the line.

Antonio's fans bet with unbridled<sup>15</sup> faith in his boxing skills. On the other side, Felix's admirers bet on his dynamite-packed fists.

Felix had returned to his apartment early in the morning of August 7th and stayed there, hoping to avoid seeing Antonio. He turned the radio on to salsa music sounds and then tried to read while waiting for word from his manager.

- [50] The fight was scheduled to take place in Tompkins Square Park. It had been decided that the gymnasium of the Boys' Club was not large enough to hold all the people who were sure to attend. In Tompkins Square Park, everyone who wanted could view the fight, whether from ringside or window fire escapes or tenement rooftops.

The morning of the fight Tompkins Square was a beehive of activity with numerous workers setting up the ring, the seats, and the guest speakers' stand. The scheduled bouts began shortly after noon and the park had begun filling up even earlier.

The local junior high school across from Tompkins Square Park served as the dressing room for all the fighters. Each was given a separate classroom with desk tops, covered with mats, serving as resting tables. Antonio thought he caught a glimpse of Felix waving to him from a room at the far end of the corridor. He waved back just in case it had been him.

The fighters changed from their street clothes into fighting gear. Antonio wore white trunks, black socks, and black shoes. Felix wore sky-blue trunks, red socks, and white boxing shoes. They had dressing gowns to match their fighting trunks with their names neatly stitched on the back.

The loudspeakers blared into the open windows of the school. There were speeches by dignitaries,<sup>16</sup> community leaders, and great boxers of yesteryear. Some were well prepared; some improvised on the spot. They all carried the same message of great pleasure and honor at being part of such a historic event. This great day was in the tradition of champions emerging from the streets of the Lower East Side.

- [55] Interwoven with the speeches were the sounds of the other boxing events. After the sixth bout, Felix was much relieved when his trainer, Charlie, said, "Time change. Quick knockout. This is it. We're on."

Waiting time was over. Felix was escorted from the classroom by a dozen fans in white T-shirts with the word FELIX across their fronts.

Antonio was escorted down a different stairwell and guided through a roped-off path.

As the two climbed into the ring, the crowd exploded with a roar. Antonio and Felix both bowed gracefully and then raised their arms in acknowledgment.

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15. **Unbridled** (*adjective*): not held back or controlled

16. a person who holds a high rank or office

Antonio tried to be cool, but even as the roar was in its first birth, he turned slowly to meet Felix's eyes looking directly into his. Felix nodded his head and Antonio responded. And both as one, just as quickly, turned away to face his own corner.

[60] Bong — bong — bong. The roar turned to stillness.

"Ladies and Gentlemen, Señores y Señoras."

The announcer spoke slowly, pleased at his bilingual efforts.

"Now the moment we have all been waiting for — the main event between two fine young Puerto Rican fighters, products of our Lower East Side."

"Loisaida,"<sup>17</sup> called out a member of the audience.

[65] "In this corner, weighing 134 pounds, Felix Vargas. And in this corner, weighing 133 pounds, Antonio Cruz. The winner will represent the Boys' Club in the tournament of champions, the Golden Gloves. There will be no draw. May the best man win."

The cheering of the crowd shook the window panes of the old buildings surrounding Tompkins Square Park. At the center of the ring, the referee was giving instructions to the youngsters.

"Keep your punches up. No low blows. No punching on the back of the head. Keep your heads up. Understand? Let's have a clean fight. Now shake hands and come out fighting."

Both youngsters touched gloves and nodded. They turned and danced quickly to their corners. Their head towels and dressing gowns were lifted neatly from their shoulders by their trainers' nimble<sup>18</sup> fingers. Antonio crossed himself.<sup>19</sup> Felix did the same.

BONG! BONG! ROUND ONE. Felix and Antonio turned and faced each other squarely in a fighting pose. Felix wasted no time. He came in fast, head low, half-hunched toward his right shoulder, and lashed out with a straight left. He missed a right cross as Antonio slipped the punch and countered with one-two-three lefts that snapped Felix's head back, sending a mild shock coursing through him. If Felix had any small doubt about their friendship affecting their fight, it was being neatly dispelled.<sup>20</sup>

[70] Antonio danced, a joy to behold. His left hand was like a piston pumping jabs one right after another with seeming ease. Felix bobbed and weaved and never stopped boring in. He knew that at long range he was at a disadvantage. Antonio had too much reach on him. Only by coming in close could Felix hope to achieve the dreamed-of knockout.

Antonio knew the dynamite that was stored in his amigo brother's fist. He ducked a short right and missed a left hook. Felix trapped him against the ropes just long enough to pour some punishing rights and lefts to Antonio's hard midsection. Antonio slipped away from Felix, crashing two lefts to his head, which set Felix's right ear to ringing.

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17. a term derived from Puerto Rican Spanish meaning "Lower East Side"

18. **Nimble (adjective):** quick and light in movement or action

19. a ritual blessing made by members of some branches of Christianity

20. **Dispel (verb):** to make something go away or end

Bong! Both amigos froze a punch well on its way, sending up a roar of approval for good sportsmanship.

Felix walked briskly back to his corner. His right ear had not stopped ringing. Antonio gracefully danced his way toward his stool none the worse, except for glowing glove burns showing angry red against the whiteness of his midribs.

“Watch that right, Tony.” His trainer talked into his ear. “Remember Felix always goes to the body. He’ll want you to drop your hands for his overhand left or right. Got it?”

- [75] Antonio nodded, spraying water out between his teeth. He felt better as his sore midsection was being firmly rubbed.

Felix’s corner was also busy.

“You gotta get in there, fella.” Felix’s trainer poured water over his curly Afro locks. “Get in there or he’s gonna chop you up from way back.”

Bong! Bong! Round two. Felix was off his stool and rushed Antonio like a bull, sending a hard right to his head. Beads of water exploded from Antonio’s long hair.

Antonio, hurt, sent back a blurring barrage of lefts and rights that only meant pain to Felix, who returned with a short left to the head followed by a looping right to the body. Antonio countered with his own flurry, forcing Felix to give ground. But not for long.

- [80] Felix bobbed and weaved, bobbed and weaved, occasionally punching his two gloves together.

Antonio waited for the rush that was sure to come. Felix closed in and fainted<sup>21</sup> with his left shoulder and threw a right instead. Lights suddenly exploded inside Felix’s head as Antonio slipped the blow and hit him with a pistonlike left, catching him flush on the point of his chin.

Bedlam<sup>22</sup> broke loose as Felix’s legs momentarily buckled. He fought off a series of rights and lefts and came back with a strong right that taught Antonio respect.

Antonio danced in carefully. He knew Felix had the habit of playing possum when hurt, to sucker an opponent within reach of the powerful bombs he carried in each fist.

A right to the head slowed Antonio’s pretty dancing. He answered with his own left at Felix’s right eye that began puffing up within three seconds.

- [85] Antonio, a bit too eager, moved in too close, and Felix had him entangled into a rip-roaring, punching toe-to-toe slugfest that brought the whole Tompkins Square Park screaming to its feet.

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21. to make a deceptive or distracting movement

22. **Bedlam** (*noun*): a scene of uproar and confusion

Rights to the body. Lefts to the head. Neither fighter was giving an inch. Suddenly a short right caught Antonio squarely on the chin. His long legs turned to jelly and his arms flailed out desperately. Felix, grunting like a bull, threw wild punches from every direction. Antonio, groggy, bobbed and weaved, evading most of the blows. Suddenly his head cleared. His left flashed out hard and straight, catching Felix on the bridge of his nose.

Felix lashed back with a haymaker,<sup>23</sup> right off the ghetto streets. At the same instant, his eye caught another left hook from Antonio. Felix swung out, trying to clear the pain. Only the frenzied screaming of those along ringside let him know that he had dropped Antonio. Fighting off the growing haze, Antonio struggled to his feet, got up, ducked, and threw a smashing right that dropped Felix flat on his back.

Felix got up as fast as he could in his own corner, groggy but still game. He didn't even hear the count. In a fog, he heard the roaring of the crowd, who seemed to have gone insane. His head cleared to hear the bell sound at the end of the round. He was glad. His trainer sat him down on the stool.

In his corner, Antonio was doing what all fighters do when they are hurt. They sit and smile at everyone.

- [90] The referee signaled the ring doctor to check the fighters out. He did so and then gave his OK. The cold-water sponges brought clarity to both amigo brothers. They were rubbed until their circulation ran free.

Bong! Round three — the final round. Up to now it had been tic-tac-toe, pretty much even. But everyone knew there could be no draw and that this round would decide the winner.

This time, to Felix's surprise, it was Antonio who came out fast, charging across the ring. Felix braced himself but couldn't ward off the barrage of punches. Antonio drove Felix hard against the ropes.

The crowd ate it up. Thus far the two had fought with mucho corazón.<sup>24</sup> Felix tapped his gloves and commenced<sup>25</sup> his attack anew. Antonio, throwing boxer's caution to the winds, jumped in to meet him.

Both pounded away. Neither gave an inch and neither fell to the canvas. Felix's left eye was tightly closed. Claret-red<sup>26</sup> blood poured from Antonio's nose. They fought toe-to-toe.

- [95] The sounds of their blows were loud in contrast to the silence of a crowd gone completely mute. The referee was stunned by their savagery.

Bong! Bong! Bong! The bell sounded over and over again. Felix and Antonio were past hearing. Their blows continued to pound on each other like hailstones.

Finally the referee and the two trainers pried Felix and Antonio apart. Cold water was poured over them to bring them back to their senses.

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23. a forceful blow

24. Spanish for "a lot of heart"

25. **Commence** (*verb*): to begin

26. a deep purplish-red color

They looked around and then rushed toward each other. A cry of alarm surged through Tompkins Square Park. Was this a fight to the death instead of a boxing match?

The fear soon gave way to wave upon wave of cheering as the two amigos embraced.

[100] No matter what the decision, they knew they would always be champions to each other.

BONG! BONG! BONG! "Ladies and Gentlemen. Señores and Señoras. The winner and representative to the Golden Gloves Tournament of Champions is..."

The announcer turned to point to the winner and found himself alone. Arm in arm the champions had already left the ring.

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## Text-Dependent Questions

**Directions:** For the following questions, choose the best answer or respond in complete sentences.

1. PART A: Which of the following describes the theme of the short story?
  - A. Competing against friends can permanently alter a friendship.
  - B. Some friendships can't be damaged, not even by the strain of competition.
  - C. Competitions can drive people to act as they normally wouldn't.
  - D. The violent nature of sports can make it difficult to remain friends with competitors.
  
2. PART B: Which detail from the text best supports the answer to Part A?
  - A. "I just think it's cooler if we split right here. After the fight, we can get it together again like nothing ever happened." (Paragraph 30)
  - B. "When Felix finally left the theater, he had figured out how to psych himself for tomorrow's fight. It was Felix the Champion vs. Antonio the Challenger." (Paragraph 42)
  - C. "If Felix had any small doubt about their friendship affecting their fight, it was being neatly dispelled." (Paragraph 69)
  - D. "The sounds of their blows were loud in contrast to the silence of a crowd gone completely mute. The referee was stunned by their savagery." (Paragraph 95)
  
3. PART A: How do Antonio and Felix act around each other after they find out they will be fighting?
  - A. They grow suspicious of each other, afraid that one will cheat the other out of a win.
  - B. They decide to treat each other as purely competitors for the time being.
  - C. They are excited for each other, as they know they are both deserving of the win.
  - D. They show off their skills, hoping to scare the other one and keep them from competing.
  
4. PART B: Which quote from the text best supports the answer to Part A?
  - A. "They fooled around with a few jabs at the air, slapped skin, and then took off, running lightly along the dirty East River's edge." (Paragraph 8)
  - B. "Antonio then beat the air with a barrage of body blows and short devastating lefts with an overhead jaw-breaking right." (Paragraph 9)
  - C. "In fact, since we found out it was going to be me and you, I've been awake at night, pulling punches on you, trying not to hurt you." (Paragraph 16)
  - D. "When we get into the ring, it's gotta be like we never met. We gotta be like two heavy strangers that want the same thing and only one can have it." (Paragraph 22)
  
5. How does paragraph 45 contribute to readers' understanding of Antonio's perspective?
  - A. It shows that Antonio is willing to beat Felix no matter what it takes.
  - B. It expresses how confident Antonio feels in his ability to beat Felix.
  - C. It reveals that Antonio is worried about his friendship with Felix.
  - D. It reveals that Antonio is confident in the strength of his friendship with Felix.

6. What is the effect of time being described as “heavy” in paragraph 45?

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7. Re-read the passage where Felix and Antonio fight, starting at paragraph 69. How does the author build suspense during the fight?

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## Discussion Questions

**Directions:** *Brainstorm your answers to the following questions in the space provided. Be prepared to share your original ideas in a class discussion.*

1. Have you ever competed against a friend? How did it make you feel? Did it affect your friendship?
2. In the context of the story, what makes a friend? How does Felix and Antonio's friendship impact their performance in the boxing match? Cite evidence from this text, your own experience, and other literature, art, or history in your answer.
3. In the context of the story, why do people succeed? Was one friend more successful than the other in the boxing match? Why or why not? Cite evidence from this text, your own experience, and other literature, art, or history in your answer.
4. In the context of the story, what is most important to the two boys' happiness? Cite evidence from this text, your own experience, and other literature, art, or history in your answer.

Name: \_\_\_\_\_ Class: \_\_\_\_\_

## Love and Friendship

By Emily Brontë  
1846

*Emily Brontë (1818-1848) was an English poet and novelist. While growing up, Brontë spent much of her time creating stories with her siblings, of whom two were also famous authors. Brontë was known for her solitary nature, and so it is interesting to consider her perspective on love and friendship. As you read, take notes on the poet's use of figurative language.*

- [1] Love is like the wild rose-briar,  
Friendship like the holly-tree  
The holly is dark when the rose-briar blooms  
But which will bloom most constantly?
- [5] The wild rose-briar is sweet in spring,  
Its summer blossoms scent the air;  
Yet wait till winter comes again  
And who will call the wild-briar fair?  
Then scorn the silly rose-wreath now
- [10] And deck thee with the holly's sheen,  
That when December blights<sup>1</sup> thy brow  
He may still leave thy garland green.



*"holly berries" by Liz West is licensed under CC BY 2.0.*

*Love and Friendship by Emily Brontë is in the public domain.*

1. **Blight (verb):** to spoil, harm, or damage

## Text-Dependent Questions

**Directions:** For the following questions, choose the best answer or respond in complete sentences.

1. In the poem, what is the most significant difference between the rose-briar and the holly-tree?
  - A. The rose-briar is considered far more beautiful than the holly-tree.
  - B. The holly-tree is more resilient during winter than the rose-briar.
  - C. The rose-briar smells sweeter in spring than the holly-tree does in winter.
  - D. The holly-tree has prickly leaves for more of the year than the rose has thorns.
  
2. PART A: Which of the following best identifies a theme of the text?
  - A. Nature has many different elements, but they are all equally important.
  - B. The best friendships and romantic relationships are grounded in trust and loyalty.
  - C. Friendships are more reliable and therefore more valuable to pursue than romantic love.
  - D. Most people will experience challenging moments in life and will need love and friendship to survive them.
  
3. PART B: Which of the following quotes best supports the answer to Part A?
  - A. "Friendship like the holly-tree / The holly is dark when the rose-briar blooms" (Lines 2-3)
  - B. "The wild rose-briar is sweet in spring, / Its summer blossoms scent the air" (Lines 5-6)
  - C. "Yet wait till winter comes again / And who will call the wild-briar fair?" (Lines 7-8)
  - D. "Then scorn the silly rose-wreath now / And deck thee with the holly's sheen" (Lines 9-10)
  
4. How does the poem's rhyme scheme contribute to the overall tone and theme?

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## Informational Writing Prompt and Checklist Grades 6-9

**Writing Prompt:** You have just read two texts about friendship. Write an informational essay explaining what it means to be a friend.

**Be sure to:**

- Plan your writing using the two texts and your responses to the two discussion questions from each text.
- Use the checklist as a guide for organizing and writing your essay.

**Writing Checklist**

<b>Introduction</b>	<input type="checkbox"/> Introduces the topic <input type="checkbox"/> Provides a thesis statement that addresses the prompt
<b>Body</b>	<input type="checkbox"/> Structures a logical progression of ideas in multiple paragraphs that support the thesis statement <input type="checkbox"/> Includes transitions to clarify relationship between and among ideas <input type="checkbox"/> Cites at least two pieces of evidence from Text 1 that most strongly supports the ideas <input type="checkbox"/> Elaborates and explains how each piece of text evidence supports the topic and ideas <input type="checkbox"/> Cites at least two pieces of evidence from Text 2 that most strongly supports the ideas <input type="checkbox"/> Elaborates and explains how each piece of text evidence supports the topic and ideas
<b>Conclusion</b>	<input type="checkbox"/> Restates key ideas <input type="checkbox"/> Ends with an effective closure for audience and purpose
<b>Entire Essay</b>	<input type="checkbox"/> Has few errors in sentence formatting, capitalization, punctuation, and spelling.

## Selecting Books for Your Child: Finding 'Just Right' Books

By: Kathleen Rogers

How can parents help their children find books that are not "too hard" and not "too easy" but instead are "just right"? Here's some advice.

### Five finger rule

1. Choose a book that you think you will enjoy.
2. Read the second page.
3. Hold up a finger for each word you are not sure of, or do not know.
4. If there are five or more words you did not know, you should choose an easier book.
5. Still think it may not be too difficult? Use the five finger rule on two more pages.

### Choose a book that is a good fit for you!

Read two or three pages and ask yourself these questions:

#### Will it be an easy, fun book to read?

- Do I understand what I am reading?
- Do I know almost every word?
- When I read it aloud, can I read it smoothly?
- Do I think the topic will interest me?

If most of your answers were "yes", this will be an easy book to read independently by yourself.

#### Will this book be too hard for me?

- Are there five or more words on a page that I don't know, or am unsure of?
- Is this book confusing and hard to understand by myself?
- When I read it aloud, does it sound choppy and slow?

If most of your answers were "yes," this book is too hard. You should wait awhile before you read this book. Give the book another try later, or ask an adult to read the book to you.

### Tips on reading with your child

- When they can't read the word, say...
- Can you sound it out?
- Fingertap it.
- Can you think of the word or movement that helps you remember that vowel sound?
- What is the first and last sound? What word would make sense?
- Does it have a pattern that you have seen in other words? (ex-an, ack)
- How does the word begin?
- You said \_\_\_\_\_. Does that make sense?
- What word would make sense that would start with these sounds?
- Put your finger under the word as you say it.

### When they want to read a book that is too hard, say...

- Let's read it together.
- This is a book you will enjoy more if you save it until you are older — or later in the year.
- [Be honest!] When people read books that are too hard for them, they often skip important parts. You will have more fun with this book if you wait until you can read it easily.

Rogers, K. (2008). Selecting Books for Your Child: Finding 'Just Right' Books. Retrieved November 7, 2008, from [www.readingtogether.org](http://www.readingtogether.org).

# HERE'S THE IMPACT OF READING 20 MINUTES PER DAY!

A student who reads

20:00

minutes per day

A student who reads

5:00

minutes per day

A student who reads

1:00

minute per day

will be exposed to  
**1.8 MILLION**  
words per year  
and scores in  
**90th PERCENTILE**  
on standardized tests

will be exposed to  
**282,000**  
words per year  
and scores in  
**50th PERCENTILE**  
on standardized tests

will be exposed to  
**8,000**  
words per year  
and scores in  
**10th PERCENTILE**  
on standardized tests

Source: Nagy, Anderson and Herman, 1987

 SCHOLASTIC

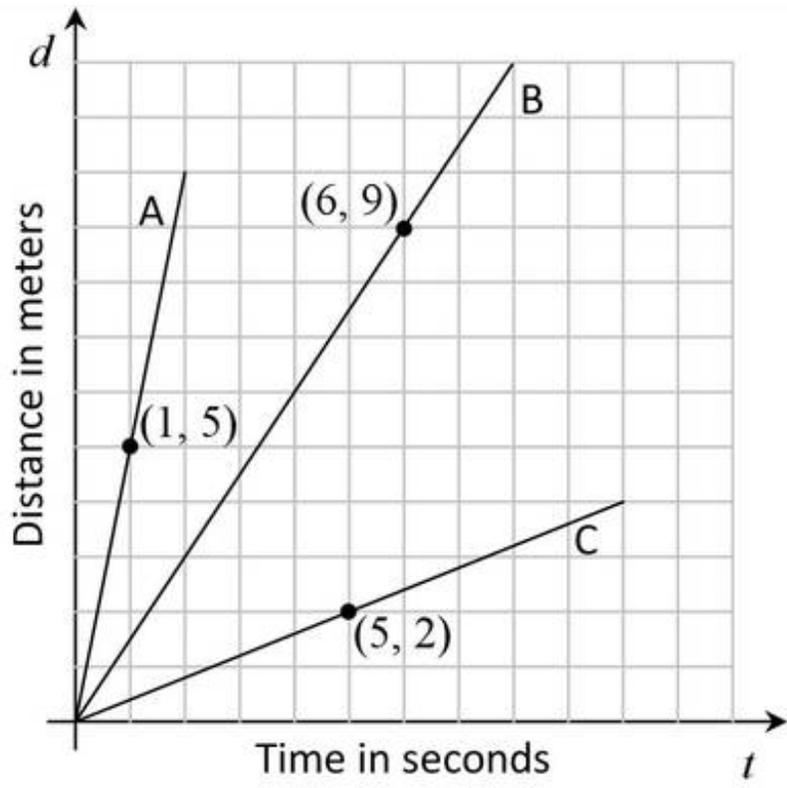


## 7.RP Robot Races

### Task

Carli's class built some solar-powered robots. They raced the robots in the parking lot of the school. The graphs below are all line segments that show the distance  $d$ , in meters, that each of three robots traveled after  $t$  seconds.

- Each graph has a point labeled. What does the point tell you about how far that robot has traveled?
- Carli said that the ratio between the number of seconds each robot travels and the number of meters it has traveled is constant. Is she correct? Explain.
- How fast is each robot traveling? How did you compute this from the graph?



7.RP Robot Races  
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# Adding and Subtracting Positive and Negative Fractions and Decimals *continued*

Problems	Student Answers
5 $5.9 - 7.3 - 10.2$	11.6
6 $-5\frac{5}{6} - (-2\frac{1}{3}) + 5\frac{1}{6}$	$1\frac{2}{3}$
7 $11.5 - 5.4 - 4.7$	-1.4
8 $-11\frac{1}{8} - 12\frac{1}{4} - (-21\frac{1}{2})$	$2\frac{1}{8}$

- 9 How does estimating an addition or subtraction problem help you know if an answer is reasonable?

# Multiplying Negative Rational Numbers

► Find the product of the rational numbers. The answers are mixed up at the bottom of the page. Cross out the answers as you complete the problems.

1  $2 \times -\frac{7}{4}$

---

2  $-\frac{1}{3} \times -\frac{6}{5}$

---

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

---

4  $-2\frac{1}{3} \times \frac{5}{4}$

---

5  $-\frac{3}{7} \times -1\frac{2}{3}$

---

6  $-3\frac{5}{7} \times -2\frac{1}{2}$

---

7  $0.75 \times -\frac{4}{3}$

---

8  $-0.2 \times -\frac{2}{5}$

---

9  $-0.35 \times -1\frac{3}{7}$

---

10  $2.5 \times -3\frac{4}{5}$

---

11  $0.2 \times -0.45$

---

12  $-0.25 \times -1.4$

---

13  $-2.3 \times 6.8$

---

14  $-3.9 \times 5\frac{5}{9}$

---

15  $-4.2 \times -6\frac{2}{7}$

---

## Answers

$-21\frac{2}{3}$

$-15.64$

$-9\frac{1}{2}$

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

$-2\frac{11}{12}$

$-1$

$-\frac{3}{10}$

$-0.09$

$\frac{2}{25}$

$0.35$

$\frac{2}{5}$

$\frac{1}{2}$

$\frac{5}{7}$

$9\frac{2}{7}$

$26\frac{2}{5}$

# Dividing Negative Rational Numbers

► Find each quotient.

1  $-5 \div \frac{5}{7}$

\_\_\_\_\_

2  $-\frac{8}{9} \div \frac{2}{3}$

\_\_\_\_\_

3  $\frac{3}{10} \div -\frac{6}{7}$

\_\_\_\_\_

4  $-2\frac{3}{4} \div 11$

\_\_\_\_\_

5  $-4\frac{2}{7} \div -\frac{15}{16}$

\_\_\_\_\_

6  $-1\frac{4}{7} \div -3\frac{2}{3}$

\_\_\_\_\_

7  $-8 \div 6.4$

\_\_\_\_\_

8  $-\frac{3}{2} \div 0.5$

\_\_\_\_\_

9  $-3\frac{1}{3} \div 1.2$

\_\_\_\_\_

10  $9.28 \div -3.2$

\_\_\_\_\_

11  $0.056 \div -0.004$

\_\_\_\_\_

12  $-0.28 \div 0.07$

\_\_\_\_\_

13 Explain the steps you used to solve problem 11.

# Writing Rational Numbers as Repeating Decimals

► Write each number as a repeating decimal.

1  $\frac{1}{9}$

---

2  $-\frac{2}{11}$

---

3  $\frac{7}{11}$

---

4  $\frac{1}{3}$

---

5  $2\frac{4}{9}$

---

6  $-\frac{13}{6}$

---

7  $-1\frac{5}{6}$

---

8  $\frac{13}{99}$

---

9 When the denominator of a proper fraction is 99, what do you notice about the repeating digit(s) in its decimal form?

Number Correct: \_\_\_\_\_

**Addition of Decimals – Round 1**

**Directions:** Evaluate each expression.

1.	$5.1 + 6$	
2.	$5.1 + 0.6$	
3.	$5.1 + 0.06$	
4.	$5.1 + 0.006$	
5.	$5.1 + 0.0006$	
6.	$3 + 2.4$	
7.	$0.3 + 2.4$	
8.	$0.03 + 2.4$	
9.	$0.003 + 2.4$	
10.	$0.0003 + 2.4$	
11.	$24 + 0.3$	
12.	$2 + 0.3$	
13.	$0.2 + 0.03$	
14.	$0.02 + 0.3$	
15.	$0.2 + 3$	
16.	$2 + 0.03$	
17.	$5 + 0.4$	
18.	$0.5 + 0.04$	
19.	$0.05 + 0.4$	
20.	$0.5 + 4$	
21.	$5 + 0.04$	
22.	$0.5 + 0.4$	

23.	$3.6 + 2.1$	
24.	$3.6 + 0.21$	
25.	$3.6 + 0.021$	
26.	$0.36 + 0.021$	
27.	$0.036 + 0.021$	
28.	$1.4 + 42$	
29.	$1.4 + 4.2$	
30.	$1.4 + 0.42$	
31.	$1.4 + 0.042$	
32.	$0.14 + 0.042$	
33.	$0.014 + 0.042$	
34.	$0.8 + 2$	
35.	$0.8 + 0.2$	
36.	$0.08 + 0.02$	
37.	$0.008 + 0.002$	
38.	$6 + 0.4$	
39.	$0.6 + 0.4$	
40.	$0.06 + 0.04$	
41.	$0.006 + 0.004$	
42.	$0.1 + 9$	
43.	$0.1 + 0.9$	
44.	$0.01 + 0.09$	

Number Correct: \_\_\_\_\_

Improvement: \_\_\_\_\_

**Addition of Decimals – Round 2**

**Directions:** Evaluate each expression.

1.	$3.2 + 5$	
2.	$3.2 + 0.5$	
3.	$3.2 + 0.05$	
4.	$3.2 + 0.005$	
5.	$3.2 + 0.0005$	
6.	$4 + 5.3$	
7.	$0.4 + 5.3$	
8.	$0.04 + 5.3$	
9.	$0.004 + 5.3$	
10.	$0.0004 + 5.3$	
11.	$4 + 0.53$	
12.	$6 + 0.2$	
13.	$0.6 + 0.02$	
14.	$0.06 + 0.2$	
15.	$0.6 + 2$	
16.	$2 + 0.06$	
17.	$1 + 0.7$	
18.	$0.1 + 0.07$	
19.	$0.01 + 0.7$	
20.	$0.1 + 7$	
21.	$1 + 0.07$	
22.	$0.1 + 0.7$	

23.	$4.2 + 5.5$	
24.	$4.2 + 0.55$	
25.	$4.2 + 0.055$	
26.	$0.42 + 0.055$	
27.	$0.042 + 0.055$	
28.	$2.7 + 12$	
29.	$2.7 + 1.2$	
30.	$2.7 + 0.12$	
31.	$2.7 + 0.012$	
32.	$0.27 + 0.012$	
33.	$0.027 + 0.012$	
34.	$0.7 + 3$	
35.	$0.7 + 0.3$	
36.	$0.07 + 0.03$	
37.	$0.007 + 0.003$	
38.	$5 + 0.5$	
39.	$0.5 + 0.5$	
40.	$0.05 + 0.05$	
41.	$0.005 + 0.005$	
42.	$0.2 + 8$	
43.	$0.2 + 0.8$	
44.	$0.02 + 0.08$	

Number Correct: \_\_\_\_\_

**Subtraction of Decimals – Round 1**

**Directions:** Evaluate each expression.

1.	$55 - 50$	
2.	$55 - 5$	
3.	$5.5 - 5$	
4.	$5.5 - 0.5$	
5.	$88 - 80$	
6.	$88 - 8$	
7.	$8.8 - 8$	
8.	$8.8 - 0.8$	
9.	$33 - 30$	
10.	$33 - 3$	
11.	$3.3 - 3$	
12.	$1 - 0.3$	
13.	$1 - 0.03$	
14.	$1 - 0.003$	
15.	$0.1 - 0.03$	
16.	$4 - 0.8$	
17.	$4 - 0.08$	
18.	$4 - 0.008$	
19.	$0.4 - 0.08$	
20.	$9 - 0.4$	
21.	$9 - 0.04$	
22.	$9 - 0.004$	

23.	$9.9 - 5$	
24.	$9.9 - 0.5$	
25.	$0.99 - 0.5$	
26.	$0.99 - 0.05$	
27.	$4.7 - 2$	
28.	$4.7 - 0.2$	
29.	$0.47 - 0.2$	
30.	$0.47 - 0.02$	
31.	$8.4 - 1$	
32.	$8.4 - 0.1$	
33.	$0.84 - 0.1$	
34.	$7.2 - 5$	
35.	$7.2 - 0.5$	
36.	$0.72 - 0.5$	
37.	$0.72 - 0.05$	
38.	$8.6 - 7$	
39.	$8.6 - 0.7$	
40.	$0.86 - 0.7$	
41.	$0.86 - 0.07$	
42.	$5.1 - 4$	
43.	$5.1 - 0.4$	
44.	$0.51 - 0.4$	

Number Correct: \_\_\_\_\_

Improvement: \_\_\_\_\_

**Subtraction of Decimals – Round 2**

**Directions:** Evaluate each expression.

1.	$66 - 60$	
2.	$66 - 6$	
3.	$6.6 - 6$	
4.	$6.6 - 0.6$	
5.	$99 - 90$	
6.	$99 - 9$	
7.	$9.9 - 9$	
8.	$9.9 - 0.9$	
9.	$22 - 20$	
10.	$22 - 2$	
11.	$2.2 - 2$	
12.	$3 - 0.4$	
13.	$3 - 0.04$	
14.	$3 - 0.004$	
15.	$0.3 - 0.04$	
16.	$8 - 0.2$	
17.	$8 - 0.02$	
18.	$8 - 0.002$	
19.	$0.8 - 0.02$	
20.	$5 - 0.1$	
21.	$5 - 0.01$	
22.	$5 - 0.001$	

23.	$6.8 - 4$	
24.	$6.8 - 0.4$	
25.	$0.68 - 0.4$	
26.	$0.68 - 0.04$	
27.	$7.3 - 1$	
28.	$7.3 - 0.1$	
29.	$0.73 - 0.1$	
30.	$0.73 - 0.01$	
31.	$9.5 - 2$	
32.	$9.5 - 0.2$	
33.	$0.95 - 0.2$	
34.	$8.3 - 5$	
35.	$8.3 - 0.5$	
36.	$0.83 - 0.5$	
37.	$0.83 - 0.05$	
38.	$7.2 - 4$	
39.	$7.2 - 0.4$	
40.	$0.72 - 0.4$	
41.	$0.72 - 0.04$	
42.	$9.3 - 7$	
43.	$9.3 - 0.7$	
44.	$0.93 - 0.7$	

Number Correct: \_\_\_\_\_

**Multiplication of Decimals – Round 1**

**Directions:** Evaluate each expression.

1.	$5 \times 1$	
2.	$5 \times 0.1$	
3.	$5 \times 0.01$	
4.	$5 \times 0.001$	
5.	$4 \times 2$	
6.	$4 \times 0.2$	
7.	$4 \times 0.02$	
8.	$4 \times 0.002$	
9.	$3 \times 3$	
10.	$3 \times 0.3$	
11.	$3 \times 0.03$	
12.	$0.1 \times 0.8$	
13.	$0.01 \times 0.8$	
14.	$0.1 \times 0.08$	
15.	$0.01 \times 0.08$	
16.	$0.3 \times 0.2$	
17.	$0.03 \times 0.2$	
18.	$0.3 \times 0.02$	
19.	$0.03 \times 0.02$	
20.	$0.2 \times 0.2$	
21.	$0.02 \times 0.2$	
22.	$0.2 \times 0.02$	

23.	$5 \times 3$	
24.	$5 \times 0.3$	
25.	$0.5 \times 3$	
26.	$0.5 \times 0.3$	
27.	$9 \times 2$	
28.	$9 \times 0.2$	
29.	$0.9 \times 2$	
30.	$0.9 \times 0.2$	
31.	$4 \times 4$	
32.	$4 \times 0.4$	
33.	$0.4 \times 0.4$	
34.	$0.8 \times 0.6$	
35.	$0.8 \times 0.06$	
36.	$0.8 \times 0.006$	
37.	$0.08 \times 0.006$	
38.	$0.7 \times 0.9$	
39.	$0.07 \times 0.9$	
40.	$0.007 \times 0.9$	
41.	$0.007 \times 0.09$	
42.	$1.2 \times 0.3$	
43.	$1.2 \times 0.03$	
44.	$1.2 \times 0.003$	

Number Correct: \_\_\_\_\_

Improvement: \_\_\_\_\_

**Multiplication of Decimals – Round 2**

**Directions:** Evaluate each expression.

1.	$9 \times 1$	
2.	$0.9 \times 1$	
3.	$0.09 \times 1$	
4.	$0.009 \times 1$	
5.	$2 \times 2$	
6.	$2 \times 0.2$	
7.	$2 \times 0.02$	
8.	$2 \times 0.002$	
9.	$3 \times 2$	
10.	$0.3 \times 2$	
11.	$0.03 \times 2$	
12.	$0.7 \times 0.1$	
13.	$0.07 \times 0.1$	
14.	$0.7 \times 0.01$	
15.	$0.07 \times 0.01$	
16.	$0.2 \times 0.4$	
17.	$0.02 \times 0.4$	
18.	$0.2 \times 0.04$	
19.	$0.02 \times 0.04$	
20.	$0.1 \times 0.1$	
21.	$0.01 \times 0.1$	
22.	$0.1 \times 0.01$	

23.	$3 \times 4$	
24.	$3 \times 0.4$	
25.	$0.3 \times 4$	
26.	$0.3 \times 0.4$	
27.	$7 \times 7$	
28.	$7 \times 0.7$	
29.	$0.7 \times 7$	
30.	$0.7 \times 0.7$	
31.	$2 \times 8$	
32.	$2 \times 0.8$	
33.	$0.2 \times 0.8$	
34.	$0.6 \times 0.5$	
35.	$0.6 \times 0.05$	
36.	$0.6 \times 0.005$	
37.	$0.06 \times 0.005$	
38.	$0.9 \times 0.9$	
39.	$0.09 \times 0.9$	
40.	$0.009 \times 0.9$	
41.	$0.009 \times 0.09$	
42.	$1.1 \times 0.5$	
43.	$1.1 \times 0.05$	
44.	$1.1 \times 0.005$	

# 7.NS Distances Between Houses

## Task

Aakash, Bao Ying, Chris and Donna all live on the same street as their school, which runs from east to west.

- Aakash lives  $5\frac{1}{2}$  blocks to the west.
  - Bao Ying lives  $4\frac{1}{4}$  blocks to the east.
  - Chris lives  $2\frac{3}{4}$  blocks to the west.
  - Donna lives  $6\frac{1}{2}$  blocks to the east.
- a. Draw a picture that represents the positions of their houses along the street.
  - b. Find how far is each house from every other house?
  - c. Represent the relative position of the houses on a number line, with the school at zero, points to the west represented by negative numbers, and points to the east represented by positive numbers.
  - d. How can you see the answers to part (b) on the number line? Using the numbers (some of which are positive and some negative) that label the positions of houses on the number line, represent these distances using sums or differences.



# 7.NS, 7.RP, 7.EE Drill Rig

## Task

A water well drilling rig has dug to a height of  $-60$  feet after one full day of continuous use.

- Assuming the rig drilled at a constant rate, what was the height of the drill after 15 hours?
- If the rig has been running constantly and is currently at a height of  $-143.6$  feet, for how long has the rig been running?



7.NS, 7.RP, 7.EE Drill Rig  
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# Simulating Physical and Chemical Weathering at Home



How does rock weather the ages? Learn about these physical and chemical processes with a little sweet science! Credit: George Retseck

## **Introduction**

Have you ever visited a canyon or cave and wondered how those formations came to be? Or observed smooth stones by a river or beach? These results are due to a process called weathering. Weathering, or the wearing-away of rock by exposure to the elements, not only creates smooth rocks as well as caves and canyons, but it also slowly eats away at other hard objects, including some statues and buildings. Try this process out on a sugar cube and feel how powerful weathering can be.

## **Background**

Rock might seem permanent, but it is actually constantly being broken down. We often do not notice this process because it happens so slowly. As soon as rock is exposed to the elements it can start being broken down through the process of weathering. Scientists categorize this processes into two groups: physical weathering and chemical weathering.

In this activity you will model physical and chemical weathering with sugar cubes—so you can see it happen before your eyes.

## **Materials**

At least four sugar cubes	Clay (optional)
Water	Spray bottle (optional)
Dark colored paper or countertop	Frosting (optional)
Glass	Nail file (optional)
Dropper	Tray or large dish with sides
Work area that can get wet	(optional)
Towel for cleaning up (optional)	

## **Procedure**

Think of a few ways you can break or pulverize your rock (sugar cube) with mechanical weathering.

Try it out with one of your sugar cubes!

*Did you crush it, smash it or apply another force on it? Can you list examples of how rocks get smashed or crushed in nature?*

Now take two new sugar cubes, and grind one against the other over a dark colored piece of paper or countertop. *What happens? Do you see sugar dust on the paper or countertop? What is happening to your rock (sugar cube)?*

Try rounding the edges of your sugar cube this way. *Does it work?*

Look back at what is left of your sugar cube. *What does it look like? Is it still sugar?*

Now take a new sugar cube. *What are some ways you could break down your rock (sugar cube) with chemical weathering?*

In this activity we'll use water drops to simulate rain. Place the sugar cube in a glass.

Fill your dropper with water, and squeeze a few drops on the sugar cube. Look and feel to observe what happens.

*What do you think will happen if you drop more water on the sugar cube? What do you think would happen if you drop 10 or 100 (or more) drops on the sugar cube? Will it still be a sugar cube? Will it still be sugar?*

Drop more water on your sugar cube. *Where does the sugar go? Can you make the cube disappear completely?*

**Extra:** Place a few sugar cubes in a glass. Cover them with clay. The sugar cubes represent a layer of rock, and the clay represents topsoil. Make a few holes or a crack in the clay so rainwater can seep into the ground and reach the layer of rock. Spray water over your glass, representing rain coming down over your piece of land. *What do you think will happen to your layer of rock? Might caves form? How does this process depend on having different types of materials in the ground?*

**Extra:** Make a sugar-cube sculpture or structure. To glue cubes together, wet one side of the cube and press it against another cube. If you need stronger glue, frosting can do the trick. Make sure your sculpture has some details and sharp edges. A nail file can help you sculpt the cubes. *What do you think will happen to your sculpture when it is exposed to rain?* Place your sculpture on a tray or dish with sides, and use a spray bottle to let it rain over your sculpture. First a little—then more. What happens? Look carefully at the details and edges: Do they change? What will happen eventually after a lot of rain? This is exactly what acidic rain can do to some statues and buildings over time.

### **Observations and Results**

Was breaking a sugar cube by smashing, crushing or grinding it easy? Rock breaks down in a similar way—but a lot more slowly—in nature in this process of physical or mechanical weathering. Forces in nature, such as gravity, wind and even the push of freezing water or plant roots, impact rocks. These forces eventually wear the rock down. The result is smaller pieces of rock—just like you were left with smaller pieces of sugar.

What about your chemical weathering test? Did the sugar cube become weak and eventually dissolve in the drops of water? That happens to some types of rock, too. Some minerals in rock react with liquids or gasses, creating new substances, which are often weaker—and sometimes even dissolve in water. After you applied enough water you probably did not have any sugar cube left as it was carried away with the water. In a similar way rocks can dissolve and be washed away, forming caves.

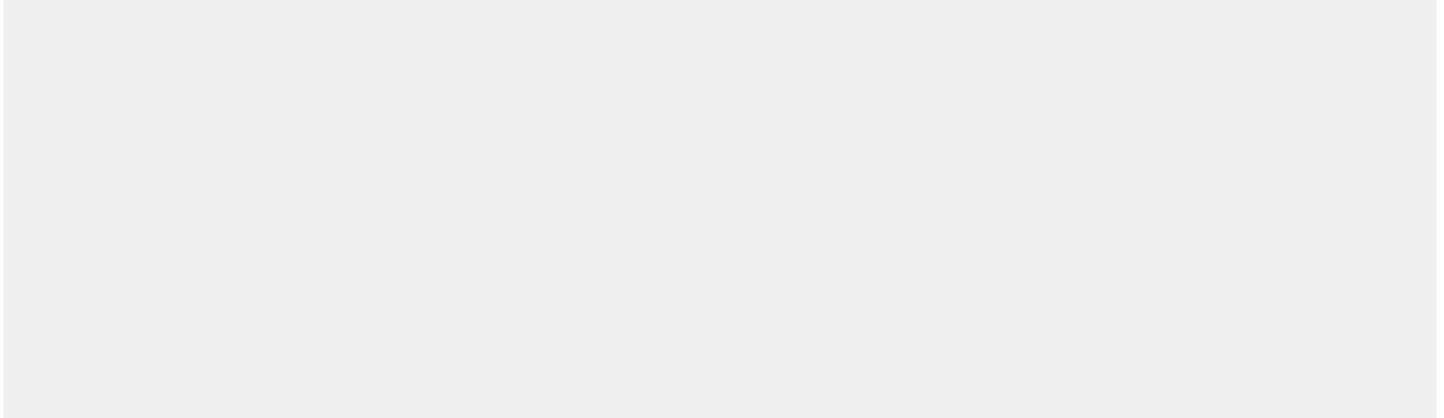
## Assignment #2

How did the Grand Canyon form?

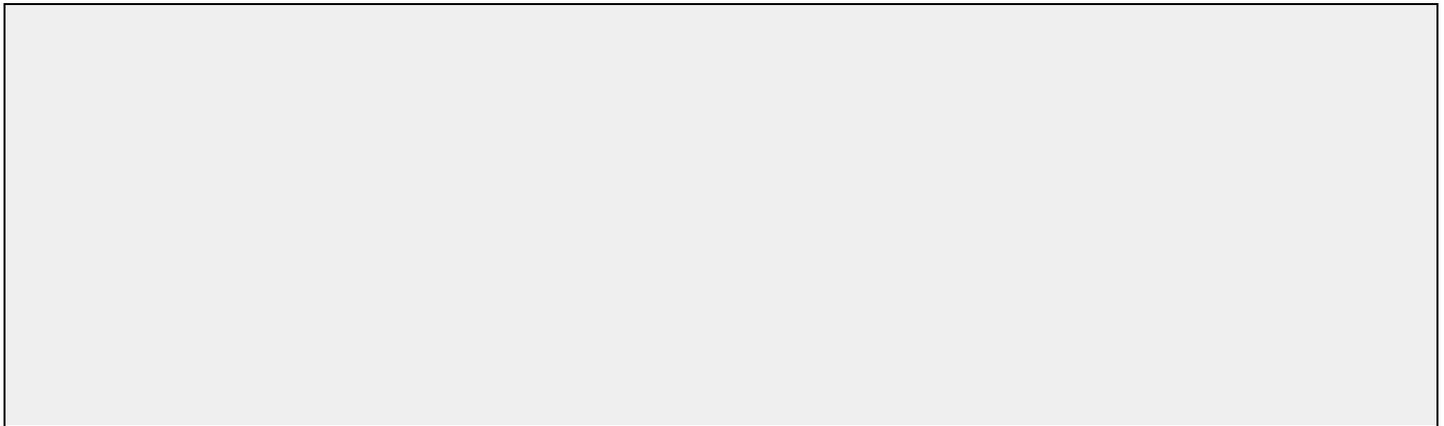
### Part 1

Have you ever seen one of the 7 natural wonders of the world? Today we're going to explore one... the Grand Canyon! Watch the Grand Canyon Video (<https://bit.ly/2V7iUZP>) to see why it's considered a world wonder!

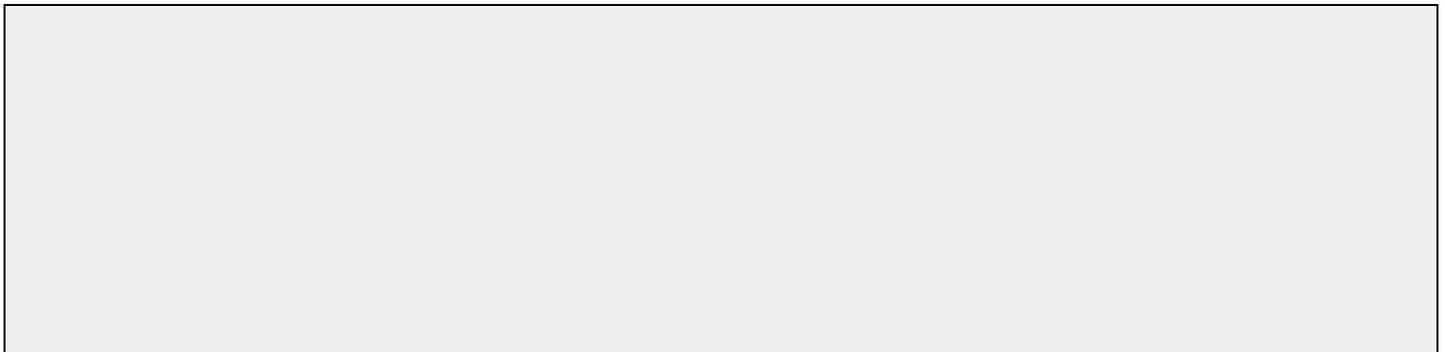
Write at least three observations from the video in the box below.



What are your initial ideas about how the Grand Canyon and other canyons like this form? It's ok if you aren't sure, just share your best ideas so far.



Write one or more questions about the video in the box below.



## Assignment #2

From what type of rock is the Grand Canyon composed?

### Part 2

In order to better understand what kind of weathering broke apart the rock from which the Grand Canyon was formed, it's important to establish what we know about the kind of rocks the Grand Canyon is made from.

- Read Page 1 of the *Grand Canyon Rocks!* article.
- Describe each of the three types of rock using information from the article:
  - Igneous rocks:
  - Sedimentary rocks:
  - Metamorphic rocks:
- Look at the images of the Grand Canyon below. Do you see any clues about what classification of rock the Grand Canyon might be made of? Use what you know about characteristics of different rock classifications and the article information to make an evidence-based claim.



[https://commons.wikimedia.org/wiki/File:USA\\_09855\\_Grand\\_Canyon\\_Luca\\_Galuzzi\\_2007.jpg](https://commons.wikimedia.org/wiki/File:USA_09855_Grand_Canyon_Luca_Galuzzi_2007.jpg)



<https://pixabay.com/images/search/rock%20layers/>

<b>Is the Grand Canyon made of igneous rock, metamorphic rock, or sedimentary rock?</b>	<b>What evidence from the images above supports your claim?</b>
I think the Grand Canyon is composed of....	The evidence that supports my claim is....

- Read pages 2-4 of the *Grand Canyon Rocks!* Article to learn more about the types of rocks found at the Grand Canyon and complete the table below with information about each type of rock.

Rock Name	Time Period Formed?	Environment Description	Types of Fossils Found
<p><b>Precambrian Basement Rocks</b></p> <p>Rock Type: <i>Igneous &amp; Metamorphic</i></p>	<p><i>1.8 billion years ago</i></p>	<p><i>Molten rock flowed as magma through cracks of metamorphic rock</i></p>	<p><i>Hard to find due to heat and pressure during formation</i></p>
<p><b>Bright Angel Shale</b></p> <p>Rock Type: _____</p>			
<p><b>Redwall Limestone</b></p> <p>Rock Type: _____</p>			
<p><b>Supai Group</b></p> <p>Rock Type: _____</p>			
<p><b>Hermit Shale</b></p> <p>Rock Type: _____</p>			
<p><b>Coconino Sandstone</b></p> <p>Rock Type: _____</p>			
<p><b>Kaibab Limestone</b></p> <p>Rock Type: _____</p>			

- Does this information support your earlier answer about the type of rock that composes the Grand Canyon?

# Grand Canyon Rocks!



**How did Grand Canyon form?** By studying **geology** we learn about the Earth's history and how places change over time. What plants or animals lived in your town 150 million years ago? The ancient remains of plants and animals preserved in the rock, called **fossils**, tell stories about the past. Take a look at the chart of common fossils at Grand Canyon on the back page.

## Think About It

THE OLDEST PANCAKE IN A STACK IS ALWAYS AT THE BOTTOM. THE ROCKS AT GRAND CANYON ARE A LOT LIKE PANCAKES. WHERE DO YOU FIND THE OLDEST ROCKS AT GRAND CANYON?



## Vocabulary:

**Fossils:** the hardened remains or imprints of plants or animals preserved in rock

**Geology:** the study of the origin, history and structure of the earth

## Cool Canyon Facts

River length: 277 miles

Canyon width: 10 miles

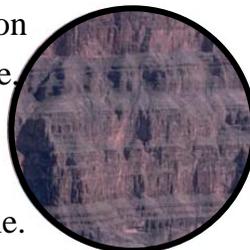
Canyon depth: 1 mile

Rocks come in all colors, shapes, and sizes. They can be very different, but to make sense of what is around us, **geologists** put rocks in groups according to how they form. The three families of rock are: **igneous**, **sedimentary** and **metamorphic**. Natural forces create and destroy rock, changing them over time in the rock cycle.

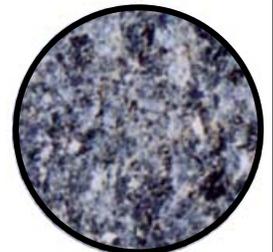


**Igneous rocks** are formed when rock is super-heated and becomes molten (liquid). There are two kinds of molten rock: magma (found beneath the Earth's surface) and lava (found on the Earth's surface). The molten rock cools and hardens on or beneath the Earth's surface forming a variety of igneous rock. Two examples are granite and basalt.

**Sedimentary rocks** are made of smaller pieces (like sand or mud), called sediments, that pile into layers. As pressure on the sediment increases over time, minerals act like glue, cementing them into solid rock. The three main types of sedimentary rocks at Grand Canyon are sandstone, shale (or mudstone), and limestone.

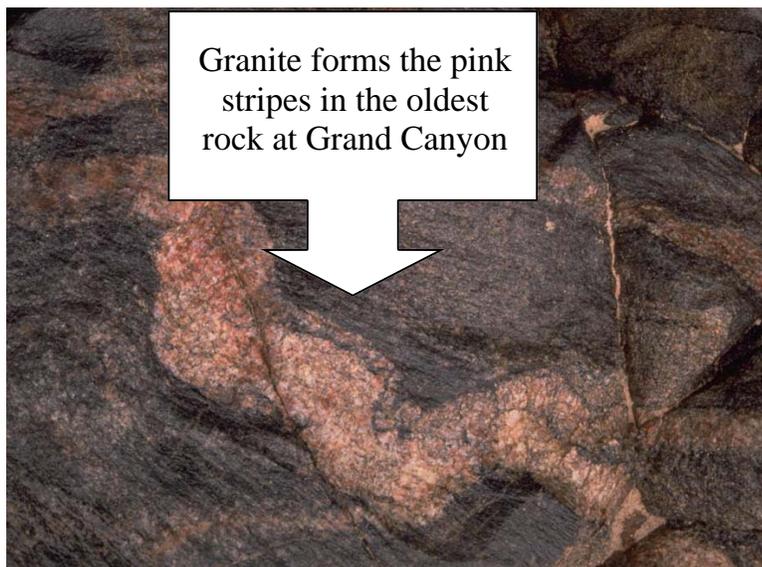


**Metamorphic rocks** are rocks that have been changed under great heat and pressure. The original rock can be sedimentary, igneous, or even metamorphic. The original rock is changed into something new, just as a caterpillar "metamorphoses" into a butterfly.



## Precambrian Basement Rocks

The basement rock formed 1.8 billion years ago when the North American continent collided with an ancient chain of volcanic islands, much like today's Hawaiian Islands. Intense heat and pressure from the collision formed the metamorphic rock called Vishnu Schist. From deep under the earth's surface, molten rock flowed up as magma between the cracks of the Vishnu Schist. As the flowing magma cooled and hardened, it formed igneous rock called Zoroaster Granite. Because of the extreme heat and pressure that folded and changed the metamorphic rock, it is hard to find any fossils in the basement rocks.



What rock family does the Bright Angel Shale belong to?

## Bright Angel Shale

If you came to Grand Canyon area 515 million years ago when the Bright Angel Shale was forming, everything was covered by a very muddy, warm, shallow sea. Trilobites, brachiopods, crinoids and worm-like creatures that burrowed in the sea-floor thrived in the nutrient-rich water. This greenish-colored shale forms the broad, flat area known as the Tonto Platform in Grand Canyon.

## Redwall Limestone

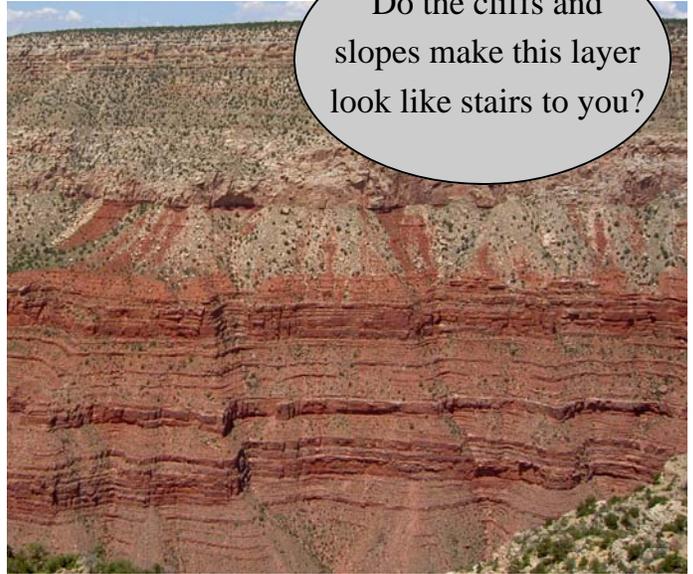
About 340 million years ago, North America lay close to the equator when the Redwall Limestone formed. Grand Canyon was covered by a shallow, warm, clear and well-lit sea where many crinoids lived. Fossils in the rock tell us that corals, cephalopods, bryozoans, and brachiopods lived here. While the limestone itself is gray in color, the surfaces of the exposed cliffs are stained red by iron in rock eroding from the layers above with rain and snow melt.



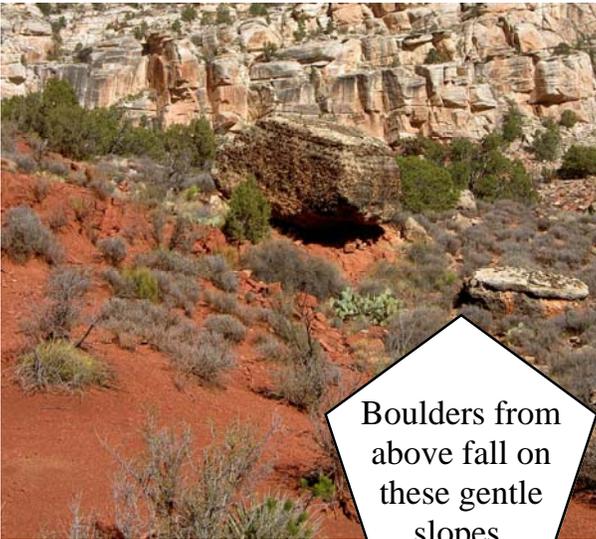
This limestone layer is 500 feet thick and creates the tallest cliff in Grand Canyon.

## Supai Group

How do you feel about a trip to the beach? About 300 million years ago, the Grand Canyon area was covered by rapidly changing coastlines as sea levels rose and fell. The Supai group has limestone, sandstone, and shale in it, sharing the story of beaches, dunes, and sometimes oceans that were found here. The ocean environments left behind fossils of brachiopods, while the land environments left various plant fossils for geologists to find. Both environments contained multiple types of burrowing creatures.



Do the cliffs and slopes make this layer look like stairs to you?



Boulders from above fall on these gentle slopes.

## Hermit Shale

Are you ready to go wading through the mud? 280 million years ago The Grand Canyon area was covered by a broad coastal plain fed by multiple slowly meandering streams. The environment was prime habitat for an abundance of ferns and conifers, along with reptiles and insects, including dragonflies with three-foot wingspans. This layer consists of siltstones, mudstones, and fine grained sandstones rich in iron that create a gentle, red slope in most parts of Grand Canyon National Park.



## Coconino Sandstone

Have you ever wanted to visit the Sahara desert? 275 million years ago the Grand Canyon area was covered with coastal dune-fields that reached as far north as present day Monument Valley, and as far south as Sedona. The ocean lay to the west. Reptiles, spiders, scorpions, and other insects dwelled on the sand dunes of this extensive desert, leaving their tracks fossilized in the sandstone. This sandstone layer creates a broad, light-colored



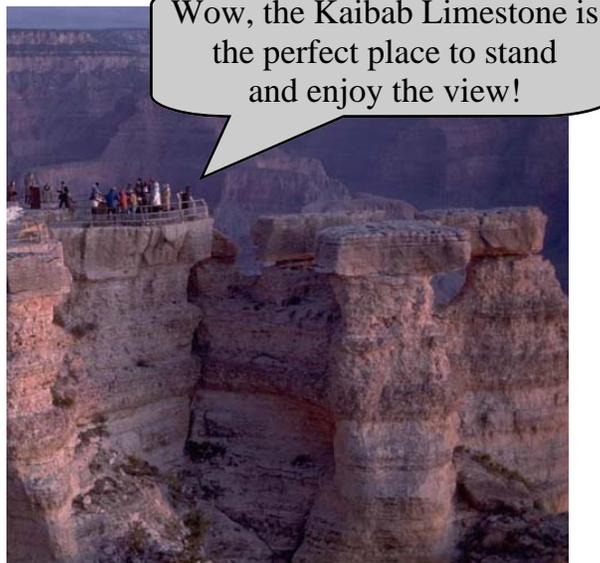
This striking white cliff earns the name "bathtub ring" of Grand Canyon.

cliff a few hundred feet below the rim of Grand Canyon. Cross-bedding (lines that run at steep angles to one-another) can be seen in the rock, giving evidence to the sand dunes that once covered the area.

## Kaibab Limestone

270 million years ago North America was the western part of the super-continent Pangaea. The Grand Canyon region was once again covered by a shallow, warm, and well-lit clear sea with a sandy/muddy floor. The coast was nearby and to the northeast. Brachiopods and sponges dominated these waters. Other species included crinoids, corals, bryozoans, cephalopods, sharks and fish.

This limestone is the youngest rock found at Grand Canyon National Park.



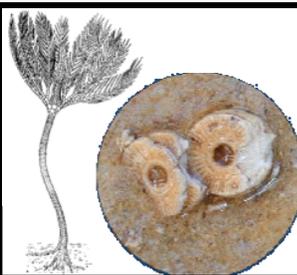
Wow, the Kaibab Limestone is the perfect place to stand and enjoy the view!

Are any of these fossils found in your backyard?

**Fossils of Grand Canyon** Here are some of the more common fossils found in the sedimentary layers of Grand Canyon...

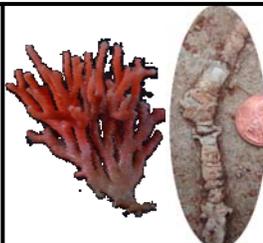


**Brachiopods**– A variety of shells lived in clear ocean waters.



**Crinoids**– Tiny disks made the stem and arms of this animal, that was rooted to the sea floor.

**Bryozoans**– These are apartment complexes for microscopic (that's really small!) animals.



**Ferns**– These fossils are the imprints of where leaves fell into the mud thousands of years ago.

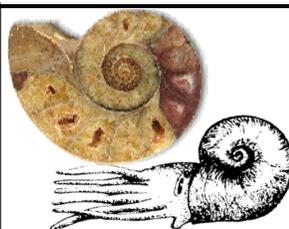


**Burrows of animals**– Worms and trilobites dug tunnels in the soft muddy sediment under the sea floor.



**Sponges**– Sea sponges are one of the most common fossils in the youngest layer at Grand Canyon.

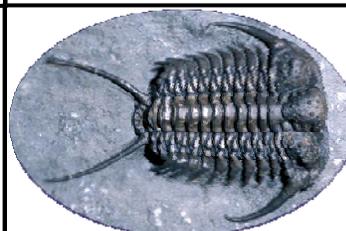
**Cephalopods**– These creatures roamed the sea and are related to the squid in today's oceans.



**Tracks**– Reptiles and other animals left their mark in the mud and sand where they lived.



**Coral**– This predator was rooted to the sea floor. Descendants of this animal still live in today's oceans.



**Trilobites**– These segmented animals could be the size of your thumb or a dinner plate!

### Assignment #3

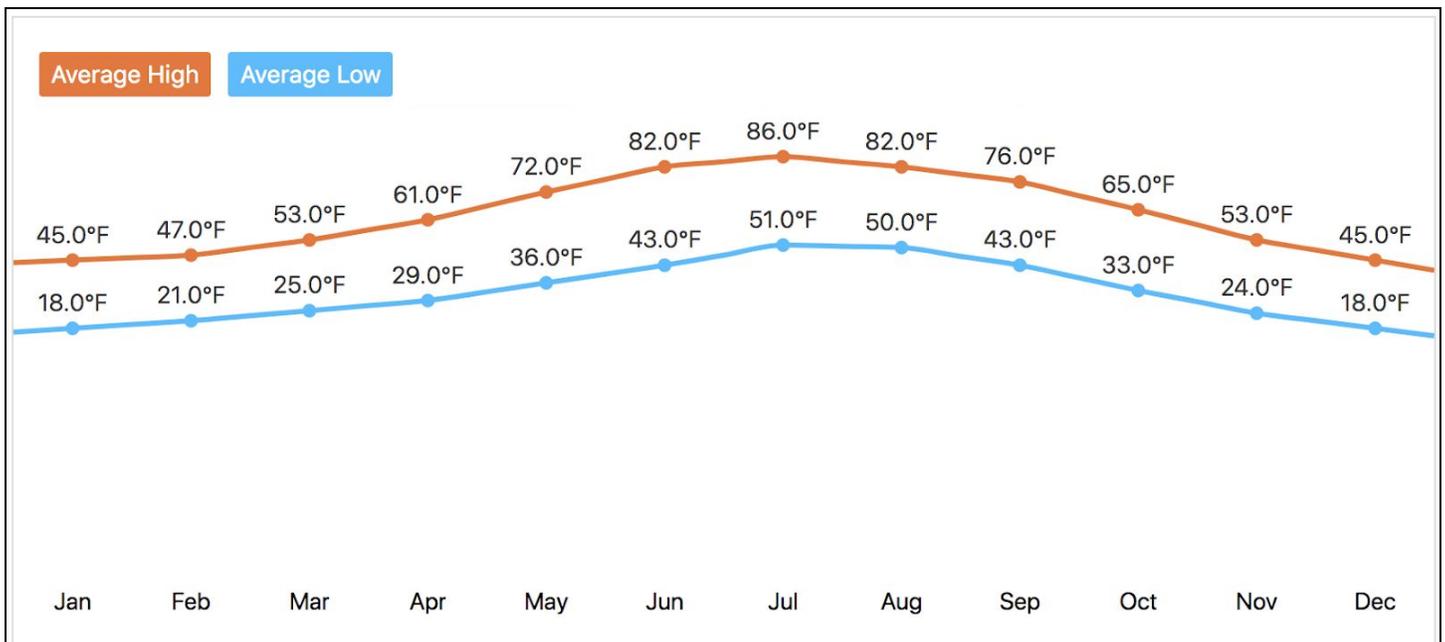
What type of weathering contributed to the formation of the Grand Canyon?

#### Part 1

#### Grand Canyon Climate

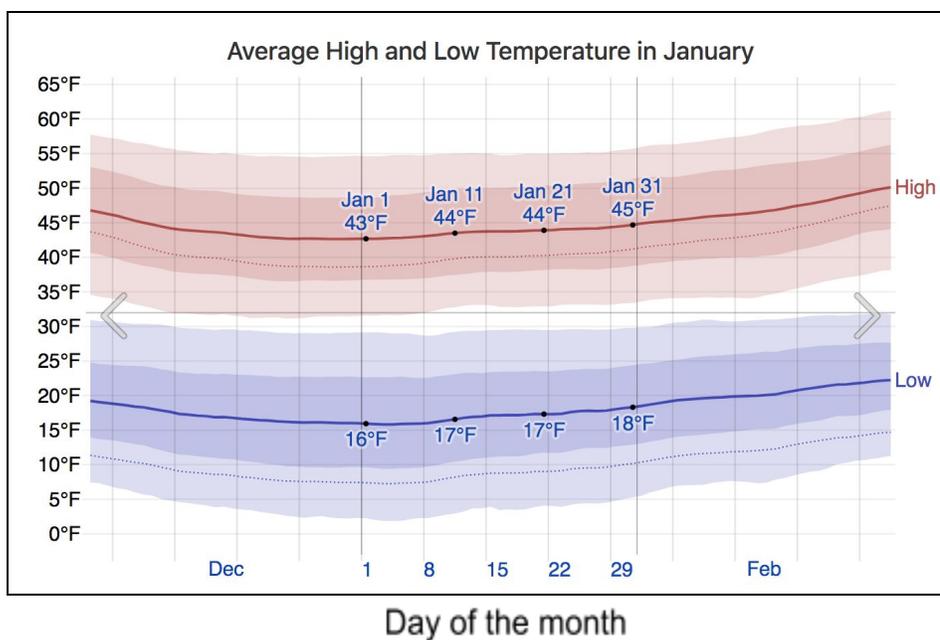
1. Examine the graph below. During which month is there the biggest difference between the average low temperature and the average high temperature? How much is the difference?

**Grand Canyon Average Monthly High and Low Temperatures**

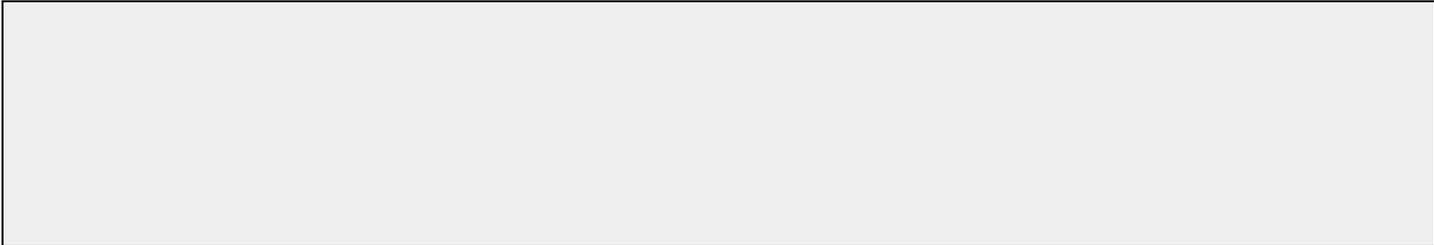


2. One of the coldest months in the Grand Canyon is January. Examine the graph of January temperatures in the Grand Canyon below.

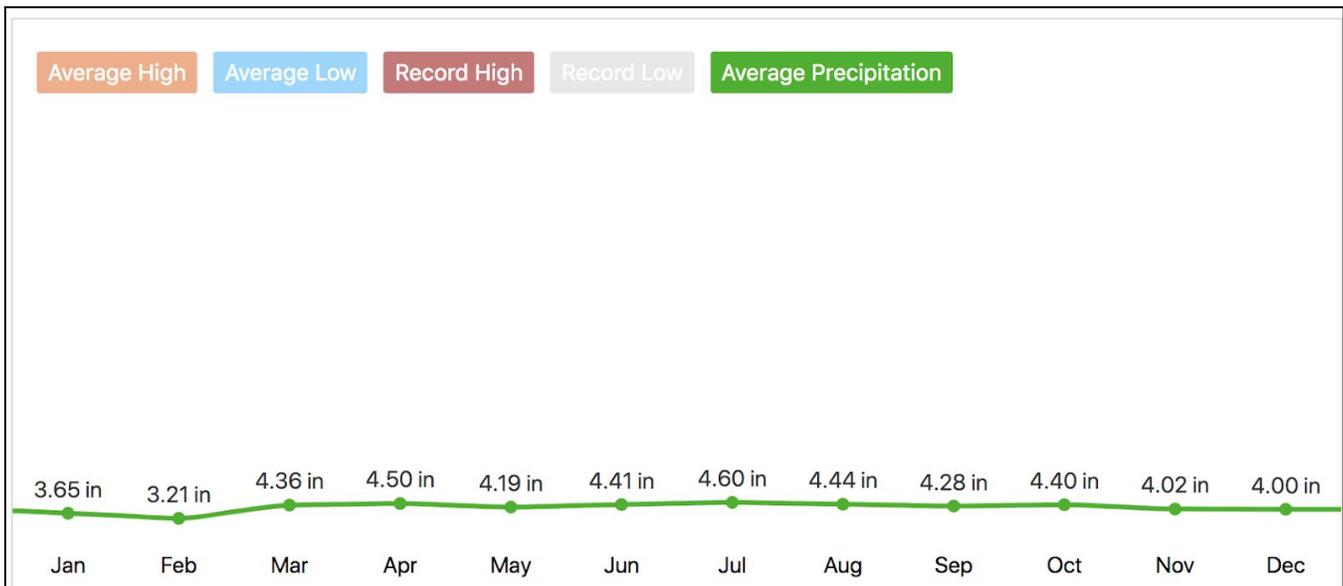
Does the Grand Canyon ever experience temperature below and above freezing (32 degrees F) on the same day? Be sure to cite evidence from the graph.



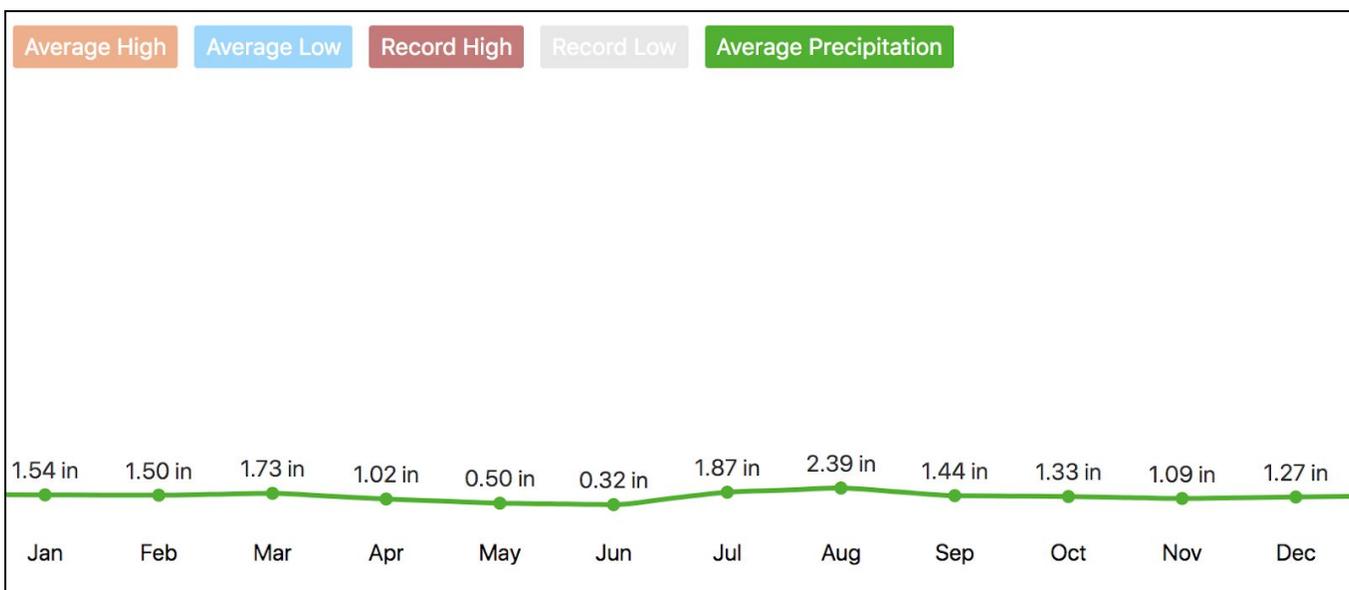
3. Examine the graphs below. Does it rain or snow (precipitation) at the Grand Canyon? How does the precipitation in the Grand Canyon compare to the precipitation in New York City?



**Grand Canyon Average Monthly Precipitation**



**New York City Average Monthly Precipitation**



Summarize your observations, thoughts, and questions from **Part 1: Grand Canyon Climate**, in the space provided below.

<b>See</b> What are some of your observations?	<b>Think</b> What does each observation make you think about the Grand Canyon formation?	<b>Wonder</b> What questions do you have about each observation?

**Part 2**

- Read the text, *Weathering*.
    - As you read, use a yellow highlighter (or underline) to highlight ideas that you think connect to what you learned about the Grand Canyon's climate and might offer clues about the type of weathering that may have broken apart rock to form the Grand Canyon. Use green to highlight (or circle) ideas you don't understand or have questions about.
- 1) What ideas from the text do you think connect to what you learned about the Grand Canyon's climate? Be sure to explain why you think they connect.

- 2) What questions do you have about the text?

- Now that you have read about the types of physical and chemical weathering, make an evidence-based claim below about at least one type of physical weathering and one type of chemical weathering you think could have broken apart rock to form the Grand Canyon.

### Physical Weathering Claim

Claim	Evidence Consider rock and mineral composition and climate at the Grand Canyon.	Reasoning How does the evidence connect to the description of the physical weathering you claimed?
The type of physical weathering I think may have broken apart rock to form the Grand Canyon is...		

### Chemical Weathering Claim

Claim	Evidence Consider rock and mineral composition and climate at the Grand Canyon.	Reasoning How does the evidence connect to the description of the chemical weathering you claimed?
The type of chemical weathering I think may have broken apart rock to form the Grand Canyon is...		

# Weathering

Rocks gradually wear away. This is called weathering. Two types of weathering are:

- physical weathering
- chemical weathering

## Physical weathering

Physical weathering is caused by physical changes such as: changes in temperature, freezing and thawing, and the effects of wind, rain and waves. Here is a description of each of the three types of physical weathering:

- **Temperature changes**  
When a rock gets hot it expands a little, and when a rock gets cold it contracts a little. If a rock is heated and cooled many times, cracks form and pieces of rock fall away. This type of physical weathering happens a lot in deserts, because it is very hot during the day but very cold at night.
- **Wind, rain and waves**  
Wind, rain and waves can all cause weathering. The wind can blow tiny grains of sand against a rock. These wear the rock away and weather it. Rain and waves can also wear away rock over long periods of time.
- **Freeze-thaw**  
Water expands slightly when it freezes into ice. This is why water pipes sometimes burst in the winter. You might have seen a demonstration of this sort of thing at school - a jar filled to the brim with water eventually shatters after it is put into a freezer.

The formation of ice can also break rocks. If water gets into a crack in a rock and then freezes, it expands and pushes the crack further apart. When the ice melts later, water can get further into the crack. When the rock freezes again, it expands and makes the crack even bigger.

This process of freezing and thawing can continue until the crack becomes so big that a piece of rock falls off.

## Chemical weathering

The weathering of rocks by chemicals is called chemical weathering. Some types include:

- **Rainwater**  
Rainwater is naturally slightly acidic because **carbon dioxide** from the air dissolves in it. Minerals in rocks may react with the rainwater, causing the rock to be weathered.
  - Some types of rock are easily weathered by chemicals. For example, **limestone** and **chalk** are made of a mineral called calcium carbonate. When acidic rainwater falls on limestone or chalk, a chemical reaction happens. New soluble substances are formed in the reaction. These are washed away and the rock is weathered.



Chemical weathering can hollow out caves and make cliffs fall away.

- Some types of rock are **not** easily weathered by chemicals. For example, **granite** and **gabbro** are hard rocks that are weathered only slowly. Still some of their minerals do react with the acids in rainwater to form new, weaker substances that crumble and fall away.

- **Acid Rain**

When fossil fuels such as coal, oil and natural gas are burned, **carbon dioxide** and **sulphur dioxide** escape into the air. These dissolve in the water in the clouds and make the rainwater more acidic than normal. When this happens, we call the rain '**acid rain**'.

Acid rain makes chemical weathering happen more quickly. Buildings and statues made from rock are damaged as a result. This is worse when the rock is limestone rather than granite.



**Statues damaged by acid rain**