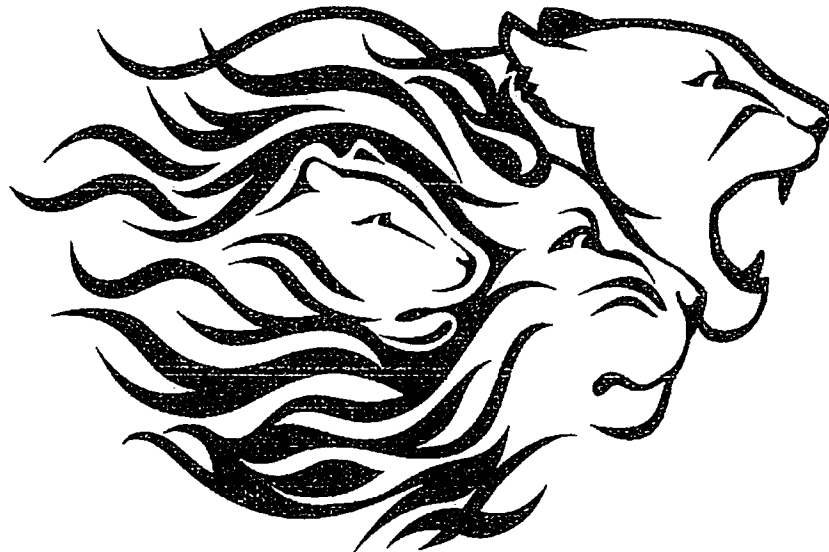




# Marshall Math Science Academy

**Summer Work Packet**

**8<sup>th</sup> grade**



# Summer Packet Rubric

## 7<sup>th</sup> Grade

	Total Points	Points Earned
ELA	7	
Science	7	
Social Studies	25	
Math	10	
	Total Points 49	Grade

# Summer Packet Rubric

## 8<sup>th</sup> Grade

	Total Points	Points Earned
ELA	7	
Science	7	
Social Studies	25	
Math	10	
	Total Points 49	Grade

## 8<sup>th</sup> grade ELA

- Your responses to the multiple-choice questions must be circled in on the bubble sheet.

ELA



Name:

Date:

### A Wonder of the Modern World

San Francisco's Golden Gate Bridge connects the city of San Francisco to northern Marin County, California. Hundreds of cars and trucks cross the bridge each day. The bridge has become a symbol of San Francisco. Its photo is on travel sites, in newspapers, and in magazines, and millions of people come to visit this landmark each year.

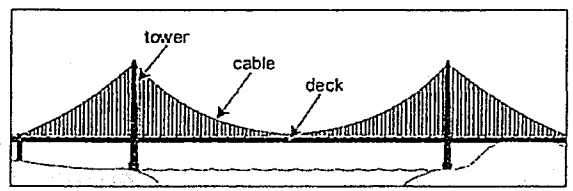
#### The Need for a Bridge

By 1920, many people who lived in San Francisco wanted to escape the city to spend time in the country. But the only quick way to get from San Francisco to northern Marin County was by ferry across the Golden Gate Strait. Driving around the strait would have taken almost a full day. A bridge seemed like the perfect solution.

However, many businesses, especially shipping companies and ferry operators, opposed the construction of a bridge. They believed their businesses would be affected negatively. Other people and organizations worried about the effects the bridge would have on the environment. The main concern at the time was how much the bridge would cost. City planners had estimated that the bridge would cost millions of dollars, which was a lot of money during a time when the country was facing many difficulties. Even so, people of San Francisco and Marin County were not willing to allow the topic to go away. Citizens voted to have the city take out a loan and use tax money to pay back the money owed. After approval of the loan, construction began on the bridge in January of 1933.

#### Building the Bridge

The Golden Gate Bridge is a suspension bridge. Two gigantic cables are attached to the land on one side of the Golden Gate Strait, rise up over the top of one tower, drape down in mid-span, and rise over the second tower. These cables connect to land on the opposite side of the strait. The entire weight of the bridge is suspended on those cables. The cables are anchored to the ground by concrete blocks, weighing about 120 million pounds each. Cars and trucks cross a surface called the deck. Vertical cables connect the deck to the massive cables overhead.



### Constructing the Piers

The first task in building the bridge was to construct piers. The steel towers would rest on the concrete piers. The north pier, built on land, was assembled quickly. But the south pier took a long time to complete because it needed to be placed in the water. Deep-sea divers searched for a good site for the base. The water was dark in places, and the powerful tides delayed the divers from finding a location for the pier. Eventually, after the divers' hard work, a site was found.

A temporary dock for operations was built on the site the deep-sea divers found. From the dock, workers set off small charges in the bottom of the bay. A charge is the amount of dynamite used in a single explosion or blast. Then the workers exploded larger charges to clear away dirt and debris. The goal was to create a firm foundation in the bedrock<sup>1</sup> at the bottom of the bay.

Next, workers lowered a steel base into the water. This base would be the tower's foundation. They then built a mold around the foundation. The mold was made of steel and wood. It extended from the bedrock to the water's surface. Workers added steel bars to the mold to reinforce it, or make it stronger. Finally, they pumped water out of the mold. Now they had an empty mold extending from the surface of the water to the foundation many feet below. They poured concrete into the empty mold. After it dried, they removed the wood and steel sides of the mold. The tower would rest on this sturdy cement pier.

### Making the Anchors

The next step was to make the giant concrete anchors, one on each shore, that would hold the cables in place. Workers made massive forms out of wood and steel. They built a maze of steel rods inside each form to reinforce the concrete.

When the forms were complete, long chutes flowed concrete into the wooden forms, one layer at a time. Workers walked across each layer of concrete sludge and packed it down with shovels. This action removed air bubbles. Once the workers began pouring cement, they could not stop, or the cement would not set correctly. The work was exhausting. Three groups of workers put in eight-hour shifts day and night until the work was completed.

### Building the Towers

Meanwhile, steel mills in Pennsylvania forged tons of steel. These mills shipped the steel to California. This steel would be used to build the giant towers. Each tower had two parallel legs, set 90 feet apart. As the towers rose, they tapered toward the center. The towers at each end of the bridge were joined together at six places by struts and crossbars. The legs rested on steel plates fastened to the concrete piers. On the top of the each tower, a steel block called a saddle would hold the cables in place.

A crane helped workers move the huge girders<sup>2</sup> into place. Workers used concrete to fasten the bottom portion of the tower to the pier. Then they connected the massive steel panels that formed the body of the tower. These panels were connected with steel rivets, a special kind of bolt. Workers used over 600,000 rivets to connect the pieces together.

### Attaching the Cables

Stringing the cables came next. Each of the main cables looks like one big wire. However, there are actually over 25,000 individual wires in each cable. Each of the wires is about the size of a large pencil lead. Cranes lifted the strands to the top of the bridge towers. Workers on the top of the tower placed the wires into a special pattern to make bundles. They did this by hand, one wire at a time. Then a special pulley carried the bundles across the gate at the top of the tower.

Once all the wires were in place, workers built a platform of wooden pallets. They used this platform to weave the bundles together. They did this first by hand and then with machines. After the wires were bound together, workers wrapped them in a cocoon of steel thread. Finally, they painted the cables and attached them to the concrete anchors on each side of the bridge.

### Laying the Deck

Once the cables were in place, workers built the deck, or roadway. They attached the road to the cables using vertical support ropes. These ropes were made of steel. After more than four years of backbreaking work, the bridge was finally finished.

### The Bridge Makes History

Workers took pride in this great project. So did the people of northern California. From 1937 until 1964, The Golden Gate Bridge was the longest suspension bridge in the world. In 1964, the Verrazano-Narrows Bridge in New York took over that record. Today, the longest suspension bridge in the world is located in Japan. The Golden Gate Bridge ranks ninth longest bridge in the world. It may not be the world's longest suspension bridge anymore, but it remains an amazing accomplishment, one of the wonders of the modern world.

<sup>1</sup>bedrock—the solid rock under the ground that supports the earth above it

<sup>2</sup>girders—large beams used for building bridges

1. Read the sentences from the passage.

"Its photo is on travel sites, in newspapers, and in magazines, and millions of people come to visit the landmark each year."

"Even so, people of San Francisco and Marin County were not willing to allow the topic to go away."

How do the sentences help develop the central ideas of the passage?

(A)

They explain the increase of traffic caused by publishing pictures of the bridge in a variety of media.

(B)

They discuss the need for the bridge to be built and the processes that were taken to accomplish the task.

(C)

They describe how citizens convinced the city to build the bridge and how it was to be financed.

(D)

They emphasize the determination the citizens had to have a bridge built and the affect it has had on people.

2. Which evidence from the passage **best** shows that there was opposition to the construction of a suspension bridge across the Golden Gate Strait?

(A)

"... many people who lived in San Francisco wanted to escape the city to spend time in the country.

(B)

"Driving around the strait would have taken almost a full day."

(C)

"Other people and organizations worried about the effects the bridge would have on the environment."

(D)

"City planners had estimated that the bridge would cost millions of dollars, . . ."

3. Which sentence from the passage best supports the idea that the cables of a suspension bridge must be strong?

(A)

“These cables connect to land on the opposite side of the strait.”

(B)

“The entire weight of the bridge is suspended on those cables.”

(C)

“Vertical cables connect the deck to the massive cables overhead.”

(D)

“Each of the wires is about the size of a large pencil lead.”

4. Based on the Latin root “tempor,” what does the word “temporary” mean as it is used in the passage?

(A)

a dock that is in existence now

(B)

a dock used for a limited time

(C)

a dock that has been modified

(D)

a dock moved to a new location

5. This question has two parts. Answer Part One and then answer Part Two.

**Part One**

How do the sentences in the last paragraph of the section "Constructing the Piers" develop a key idea of the passage?

- (A) They use compare and contrast to show that the bridge was larger than other bridges of the time.
- (B) They use sequence to explain the steps taken to build the base for the towers of the bridge.
- (C) They use problem and solution to show why a bridge was necessary in the area.
- (D) They use description to help the reader picture cars driving on the bridge.

**Part Two**

Which words in the paragraph support the answer in Part One? Choose one answer.

- (A) Next, then, Finally
- (B) lowered, built, added
- (C) steel, water, concrete
- (D) stronger, empty, sturdy

6. Read the sentence from the passage.

"After the wires were bound together, workers wrapped them in a cocoon of steel thread."

What does the use of the word "cocoon" indicate about the wires?

- (A)  
They had a safe, protective covering.
- (B)  
They had a shiny, silvery appearance.
- (C)  
They were made of natural materials.
- (D)  
They were attractive to insects.



Name			
Date		Period	ELA

ABCD

ABCD

1 ○○○○

2 ○○○○

3 ○○○○

4 ○○○○

5 ○○○○

6 ○○○○

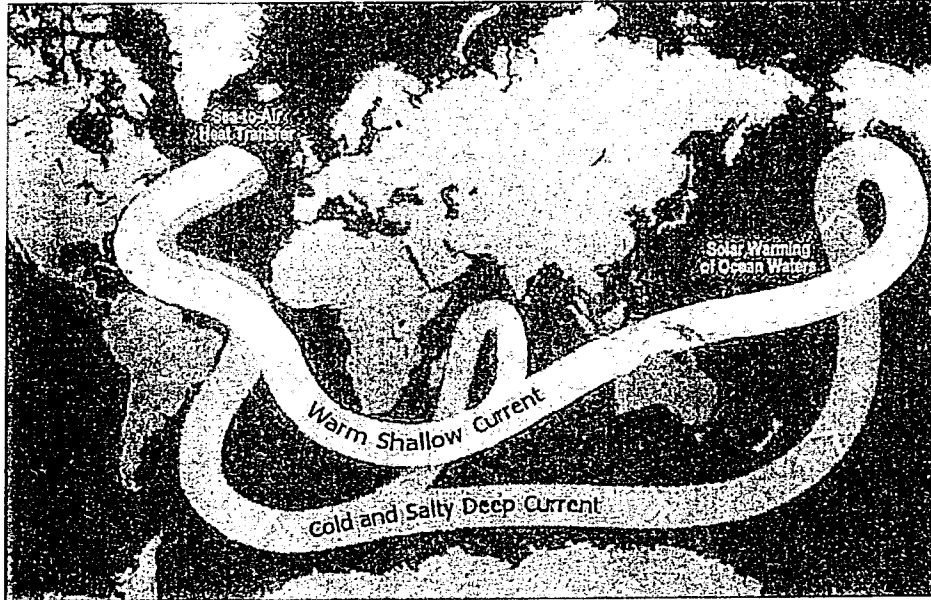
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## 8<sup>th</sup> grade Science

- Your responses to the multiple-choice questions must be circled in on the bubble sheet.

# Water Is Everything!

by ReadWorks



Water is vital for our existence. Not only do we drink it for survival, the majority of the human body is also composed of water. The earth's weather patterns are closely linked to water too, as they are determined by the complex patterns of changes and movement of water in the atmosphere. Since the ocean covers 70% of the earth's surface, it plays a major role determining what happens in the environment. One of its most important roles is distributing the heat around the world; it soaks up energy in the form of heat, and releases it more evenly across the earth.

## Water and Temperature

Since the ocean is so effective at absorbing heat, the first few meters of the ocean's surface hold as much heat as the earth's entire atmosphere. But how does water control the earth's weather? First, it's important to know that the temperature of the water in the ocean and its salt content affect the water's density. So the saltier or the colder the water, the denser it is. Denser water sinks to the bottom of the ocean, while less dense water floats at the surface. The temperature of water is closely related to ocean currents, since the former affects the latter.

## Ocean Currents

Simply put, ice triggers the movement of ocean currents. As water freezes in the North and South Poles, the water surrounding the ice becomes saltier and colder, since the salt leaves the water upon

freezing. The ice then cools the water surrounding it. The cold, salty water then sinks due to its increased density. Once it gets to the bottom of the ocean floor, it has to move somewhere, so it travels horizontally to spread out over the surface of the earth. This is cold current. Warm water replaces it on the surface and moves to the North. This motion is called the global conveyor belt. The global conveyor belt is a global-wide current that circulates cold and warm water around the earth. So, the warm water that replaces the cold on the surface travels northward, increasing the temperature of the Atlantic Ocean. That's why countries that border the Atlantic Ocean are relatively warmer than landlocked countries during the wintertime.

However, the cold water doesn't always stay at the bottom of the ocean. Instead, it comes up at different places around the globe called upwelling. Since the ocean floor contains many nutrients important for survival, the cold water that rises to the surface brings these nutrients with it, attracting all forms of life. Usually every level of the food chain is present at these upwellings, making them great spots for fishing. In fact, upwellings are common in areas where winds blow water away from the surface. In coastal areas, sometimes winds (called longshore winds) blow perpendicular to the land over the ocean, pushing the warm water away from the coast. This allows the cold water at the bottom to rise up and replace the warmer water. Therefore, some coastal areas are effective places to fish due to the upwelling that attracts more fish to the area.

## The Global Conveyor Belt

As previously mentioned, the global conveyor belt describes the current that runs throughout the earth's waters, driven by the cold waters at the poles. The "belt" starts in the North Atlantic Ocean, where the cold water that surrounds the ice sinks, and starts to flow around the world. A current is created as warm water rushes to the surface to replace the sinking cold water. The cold, dense water moves southward in between the continents toward South America and Africa-and as it passes the equator, the water warms. As the water passes Antarctica, it is re-cooled by the ice near the South Pole. It continues to move on from there and splits into two paths: one that veers off toward the Indian Ocean, and the other toward the Pacific Ocean. These two paths gradually warm up as they travel northward, causing them to rise to the surface (which, as we know, is called an upwelling). The currents eventually return to the North Atlantic, where the journey begins again. Although the path of the global conveyor belt can be quickly explained, the actual travel time occurs very slowly-the waters travel at slow speeds when compared to tidal currents.

## Ocean Currents and Climate

The effect that ocean currents have on the earth's climate is still being studied by scientists around the world, but we know a few things for sure. The ocean plays a huge role in redistributing heat around the globe, like we previously explained. However, there are certain ocean currents, like the Gulf Stream (which is part of the global conveyor belt) that have a direct effect on the climates of countries they pass. The Gulf Stream travels past the Caribbean and Florida, carrying warm water, then turns off to the right toward Europe-specifically England and Ireland. That's why the northeastern part of the United States and Canada has a cooler climate; the Gulf Stream doesn't bring warm water to its shores, causing colder temperatures. And since the direction of currents is always affected by wind direction (like we previously described with upwellings), climate is indirectly

affected by wind as well.

## Global Warming

Scientific evidence has shown that the earth has warmed since 1880. Global warming is caused mainly by an increase in carbon dioxide levels in the atmosphere. The increased temperatures have caused many of the ice caps in the North and South Poles to melt, disrupting the global conveyor belt. Even though the phenomenon is called "global warming," it is more accurately described as climate change-if the ice caps melt, there will be less dense water to move around the globe. And if there's less dense (and therefore cold) water to circulate around the earth, the Gulf Stream will be slowed down. This will result in a cooling of the Caribbean and Western Europe. Thus, global warming can in fact result in colder temperatures in some areas.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. Cold water rises from the bottom of the ocean to the surface of the ocean at different places around the globe. What is this process called?

- A. global warming
- B. climate change
- C. upwelling
- D. cold water current

2. How does the author describe the global conveyor belt?

- A. the cooling of the Caribbean and Western Europe
- B. the role the ocean plays in redistributing heat around the globe
- C. a globe-wide current that circulates cold and warm water around the earth
- D. cold water rising from the bottom of the ocean to the surface of the ocean at different places around the globe

3. Ocean currents have an effect on the earth's climate.

What evidence from the passage supports this conclusion?

- A. Some ocean currents, like the Gulf Stream, have a direct effect on the climates of the countries they pass.
- B. The gradual increase of the earth's temperature has been a topic of much debate.
- C. Cold water does not always stay at the bottom of the ocean.
- D. As water freezes in the North and South Poles, the water surrounding the ice becomes saltier and colder.

4. Based on the passage, why is the global conveyor belt important?

- A. It helps the ocean absorb heat from the countries which it surrounds.
- B. It circulates the warm and cold water that regulate the temperature of the earth.
- C. It helps the polar ice caps stay frozen. This ice triggers the movement of ocean currents.
- D. It is the cause of upwellings that provide nutrients to various forms of life in the ocean.

5. What is this passage mostly about?

- A. the effects of global warming on the future of the planet
- B. the human need to stay hydrated
- C. the excellent fishing on the Gulf Stream
- D. the role of the ocean's currents in maintaining the earth's temperature

6. Read the following sentences from the passage: "Water is **vital** for our existence. Not only do we drink it for survival, the majority of the human body is also composed of water."

As used in the passage, what does the word "**vital**" mean?

- A. unimportant
- B. essential
- C. additional
- D. minor

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

When ice freezes, the water around it becomes saltier and colder. \_\_\_\_\_, its density increases.

- A. Therefore
- B. On the other hand
- C. In contrast
- D. Especially

Name \_\_\_\_\_ Date \_\_\_\_\_ Grade \_\_\_\_\_

## Science Answer Sheet

### PLEASE NOTE

- Use only a no. 2 pencil
- Example: (A) (B) (C) (D)
- Erase changes COMPLETELY.

1 (A) (B) (C) (D)

2 (A) (B) (C) (D)

3 (A) (B) (C) (D)

4 (A) (B) (C) (D)

5 (A) (B) (C) (D)

6 (A) (B) (C) (D)

7 (A) (B) (C) (D)



# 8<sup>th</sup> Grade Social Studies

\_\_\_\_\_/25pts





\_\_\_\_ **Step 2:** Read the primary source description of life in Birmingham Alabama in 1963, written by Dr. Martin Luther King. His description of segregation and injustice was followed by civil disobedience that led to Dr. King's arrest. From jail Dr. King wrote the infamous "Letter from a Birmingham Jail" where he called on white clergy to follow their religious teachings and support those protesting against segregation and injustice.

While reading, **circle** any words that are unfamiliar to you or that you don't fully understand. **Highlight or underline** textual evidence that may support making a connection to the theme "**Triumph and Tragedy in History**". (2pts) \_\_\_\_\_

### **Birmingham in the 1960's**

The following is King's description of Birmingham in 1963.

Clayborne Carson, ed., *The Autobiography of Martin Luther King, Jr.* (New York: Warner Book, 1998)

If you had visited Birmingham before the third of April in the one hundredth-anniversary year of the Negro's emancipation, you might have come to a startling conclusion. You might have concluded that here was a city which had been trapped for decades in a Rip Van Winkle slumber; a city whose fathers had apparently never heard of Abraham Lincoln, Thomas Jefferson, the Bill of Rights, the Preamble to the Constitution, The Thirteenth, Fourteenth, and Fifteenth Amendments, or the 1954 decision of the United States Supreme Court outlawing segregation in the public schools.

If your powers of imagination are great enough to enable you to place yourself in the position of a Negro baby born and brought up to physical maturity in Birmingham, you would picture your life in the following manner:

You would be born in a Jim Crow hospital to parents who probably lived in a ghetto. You would attend a Jim Crow school. You would spend your childhood playing mainly in the streets because the "colored" parks were abysmally inadequate. When a federal court order banned park segregation, you would find that Birmingham closed down its parks and gave up its baseball team rather than integrate them.

If you went shopping with your mother or father, you would trudge along as they purchased at every counter except one, in the large or small stores. If you were hungry or thirsty, you would have to forget about it until you got back to the Negro section of town, for in your city it was a violation of the law to serve food to Negroes at the same counter with whites.

If your family attended church, you would go to a Negro church. If you attended your own Negro church and wanted to play safe, you might select a church that didn't have a pastor with a reputation for speaking out on civil rights. If you wanted to visit a church attended by white people, you would not be welcome. For although your white fellow citizens would insist that they were Christians, they practiced segregation as rigidly in the house of God as they did in the theater.

If you wanted to contribute to and be a part of the work of the National Association for the Advancement of Colored People, you would not have been able to join a local branch. In the state of Alabama, segregationist authorities had been successful in enjoining the NAACP from performing its civil rights work by declaring it a "foreign corporation" and rendering its activities illegal.

If you wanted a job in this city-one of the greatest iron- and steel producing centers in the nation-you had better settle on doing menial work as a porter or laborer. If you were fortunate enough to get a job, you could expect that promotions to a better status or more pay would come, not to you, but to a white employee regardless of your comparative talents.

If you believed your history books and thought of America as a country whose governing officials-whether city, state, or national selected by the governed, you would be swiftly disillusioned when you tried to exercise your right to register and vote. Your race, constituting two-fifths of the city's population, would have made up one-eighth of its voting strength.

You would be living in a city where brutality directed against Negroes was an unquestioned and unchallenged reality. One of the city commissioners, a member of the body that ruled municipal affairs, would be Eugene "Bull" Connor, a racist who prided himself on knowing how to handle the Negro and keep him in his "place." As commissioner of public safety, Bull Connor, entrenched for many years in a key position in the Birmingham power structure, displayed as much contempt for the rights of the Negro as he did defiance for the authority of the federal government.

You would have found a general atmosphere of violence and brutality in Birmingham. Local racists intimidated, mobbed, and even killed Negroes with impunity. One of the more vivid examples of the terror of Birmingham was the castration of a Negro man, whose mutilated body had then been abandoned on a lonely road. No Negro home was protected from bombings and burnings. From the year 1957 through January 1963, while Birmingham was still claiming that its Negroes were "satisfied," seventeen unsolved bombings of Negro churches and homes of civil rights leaders occurred.

In Connor's Birmingham, the silent password was fear. It was a fear not only on the part of the black oppressed, but also in the hearts of the white oppressors. Certainly Birmingham had its white moderates who disapproved of Bull Connor's tactics. Certainly Birmingham had its decent white citizens who privately deplored the maltreatment of Negroes. But they remained publicly silent. It was a silence born of fear-fear of social, political, and economic reprisals. The ultimate tragedy of Birmingham was not the brutality of the bad people, but the silence of the good people.

In Birmingham, you would be living in a community where the white man's long-lived tyranny had cowed your people, led them to abandon hope, and developed in them a false sense of inferiority. You would be living in a city where the representatives of economic and political power refused to even discuss social justice with the leaders of your people.

You would be living in the largest city of a police state, presided over by a governor-George Wallace-whose inauguration vow had been a pledge of "segregation now, segregation tomorrow, segregation forever!" You would be living, in fact, in the most segregated city in America.

\_\_\_\_ **Step 3 Vocabulary:** Write down at least five words you didn't have a great understanding of when reading the text. Next, use a dictionary or the internet to look up the word and write the definition of the word that aligns with how it was used in the text. **(5pts)** \_\_\_\_

<b>Word</b>	<b>Text Related Definition</b>
1.	
2.	
3.	
4.	
5.	







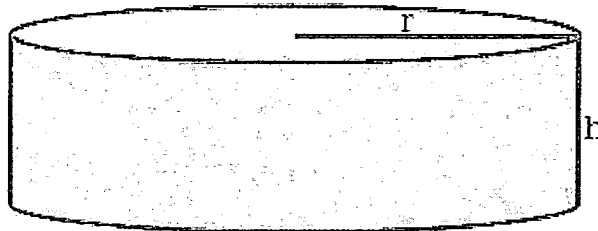
8<sup>th</sup> grade Math

1. Solve the following inequality for  $x$ .

$$\frac{1}{4}x + 3 \geq -\frac{3}{4}x + 11$$

- A.  $x \geq 14$
  - B.  $x \leq 14$
  - C.  $x \leq 8$
  - D.  $x \geq 8$
- 

2.



*Note: figure not drawn to scale.*

If  $r = 11$  units and  $h = 8$  units, what is the volume of the cylinder shown above? Use 3.14 for  $\pi$ .

$$V_{\text{cylinder}} = \pi r^2 h$$

- A. 200.96 cubic units
  - B. 2,210.56 cubic units
  - C. 276.32 cubic units
  - D. 3,039.52 cubic units
- 

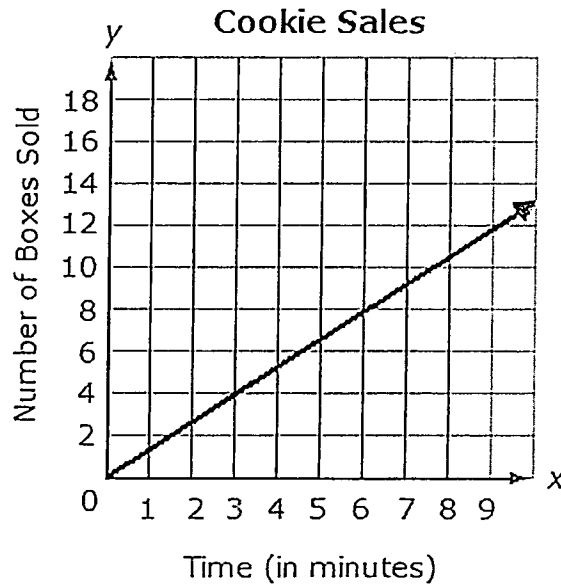
3. Which of the following is an irrational number?

- A.  $\frac{8}{9}$
  - B. 2.2
  - C.  $\sqrt{38}$
  - D.  $\sqrt{121}$
-

4. Mrs. Winston is planning to purchase blank T-shirts for her choir class. She has \$390.07 to spend. For every T-shirt purchased, there is an 8% tax on the purchase price. If each blank T-shirt is priced at \$12.80, what is the maximum number of T-shirts she can purchase?

- A. 28
  - B. 30
  - C. 26
  - D. 27
- 

5. Lola is selling boxes of cookies for a fundraiser. The graph below shows the time it took Lola to make her first few sales. Based on the data in the graph, which of the following best represents the rate at which she was selling? [Round, if necessary.]



- A. 0.75 boxes per minute
  - B. 2 boxes per minute
  - C. 1.3 boxes per minute
  - D. 1 box per minute
-

6. Which of the following best describes the equation below?

$$2(x + 7) + 8x = 10x - 14$$

- A. infinite real solutions
  - B. exactly one real solution,  $x = -1$
  - C. no real solutions
  - D. exactly one real solution,  $x = 3\frac{1}{2}$
- 

7. Clayton is plowing a wheat field. There are a total of 320 acres to be plowed. If he can plow 4 acres per hour, which equation would represent  $A$ , the number of acres left to plow, after Clayton has plowed for  $h$  hours?

- A.  $A = 320 + 4h$
  - B.  $A = 4 + 320h$
  - C.  $A = 4 - 320h$
  - D.  $A = 320 - 4h$
- 

8. Ramielle goes to the art store to buy paint brushes and a gallon of paint. Each paint brush costs \$2.90. A gallon of paint costs \$18.29. If Ramielle spends a total of \$32.79 at the store, how many paint brushes does she buy? Assume tax is included in the given price.

- A. 3
  - B. 6
  - C. 4
  - D. 5
- 

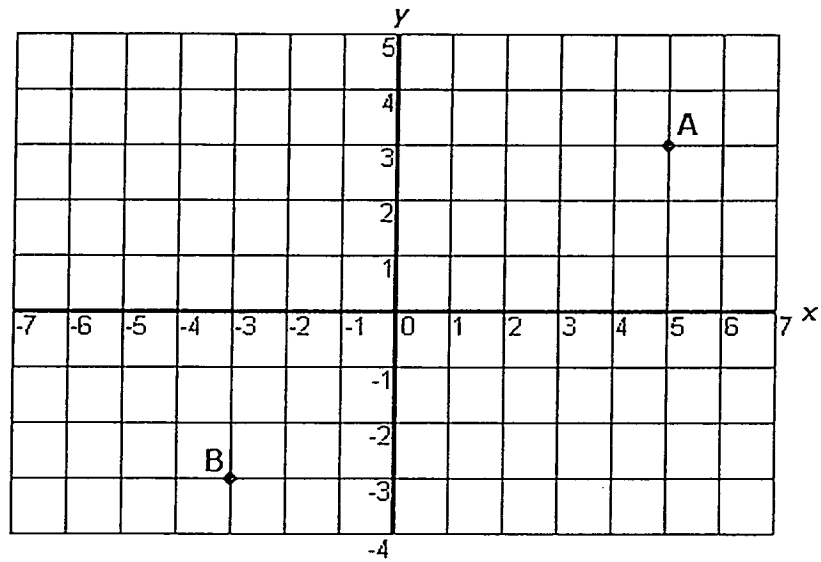
9. Which value of  $x$  makes the following equation true?

$$3(x - 4) - 14 = 2(x - 7) + 6$$

- A. 11
- B. 14
- C. 18
- D. 25

---

10.



Find the distance between A and B.

- A.  $2\sqrt{7}$  units
  - B. 10 units
  - C. 12 units
  - D.  $\sqrt{14}$  units
-

# Math

Name



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- 1 (A) (B) (C) (D) (E)
- 2 (A) (B) (C) (D) (E)
- 3 (A) (B) (C) (D) (E)
- 4 (A) (B) (C) (D) (E)
- 5 (A) (B) (C) (D) (E)
- 6 (A) (B) (C) (D) (E)
- 7 (A) (B) (C) (D) (E)
- 8 (A) (B) (C) (D) (E)
- 9 (A) (B) (C) (D) (E)
- 10 (A) (B) (C) (D) (E)



math summer packet (7446)

