FES Grade 4
Week 4

Read the history article. Then answer the questions that follow.

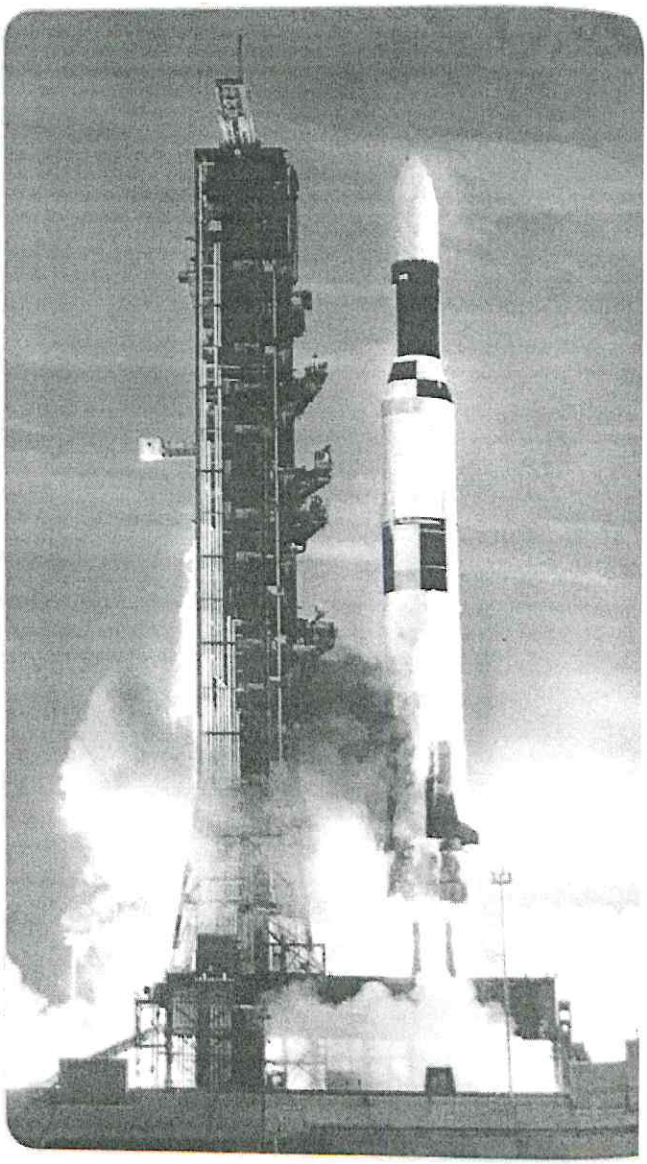
from

"And Away We Go: Rockets"

from *Kids Discover*

1 From blastoff to touchdown, a rocket is an awesome sight. The Saturn 5 rocket that sent astronauts to the moon stood 363 feet high, about the height of a 30-story building. It weighed more than six million pounds. With rocket engines, it sent a spacecraft weighing more than 100,000 pounds to a lunar landing.

2 In 1930, Robert Goddard was a Massachusetts-born scientist working almost totally alone. He was the first to set earthlings on a path out of this world and into space. Thirty-nine years after Goddard shot off his first rocket, United States astronaut Neil Armstrong took his first step on the moon. Since that time, rockets have lifted hundreds of spacecraft and satellites into orbit around Earth. They have carried space shuttles to and from the *International Space Station*. They have sent unmanned spacecraft to Mars and Jupiter. Satellites put in orbit by rockets beam back information about Earth's atmosphere and weather.



Each Saturn 5 rocket could be used only once.

3 Robert Goddard once called himself a "one-dream-man." His dream was to send a rocket into space. It began on October 19, 1899, when he was 17 years old. He climbed a ladder to trim branches from a cherry tree. As he looked up, he had a vision of traveling into space.

4 Throughout his career, Goddard worked mostly alone. He had little money or support. Rocket research was not considered a proper subject for a serious scientist. Goddard experimented with rockets in his free time. Most of his experiments took place on his aunt's Massachusetts farm.

Robert Goddard on March 16, 1926, holding the launch frame for a rocket of his own design.

Up, Up, and Away!

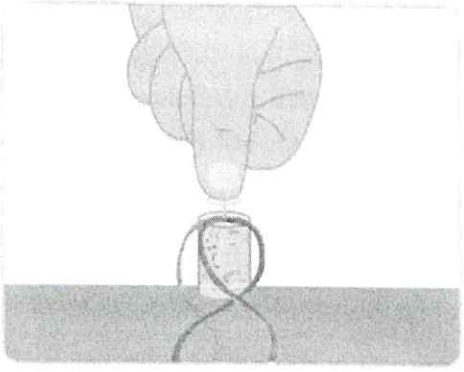
Launch a rocket in your backyard with these simple household materials.

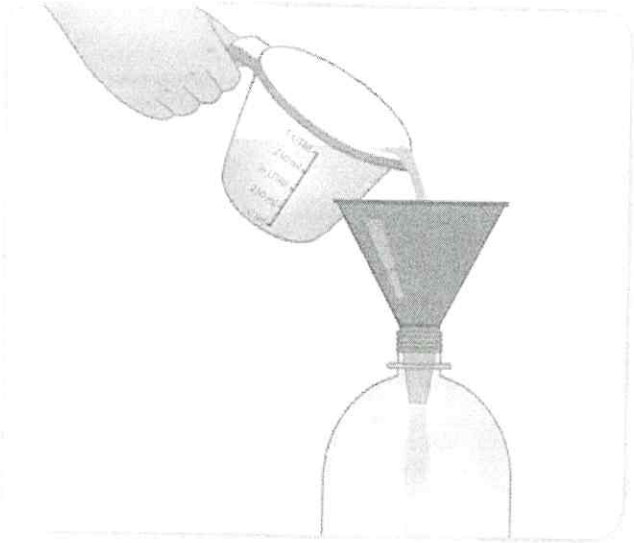
Materials:

- empty quart or liter plastic bottle
- cork
- paper towels
- 3 or 4 streamers (made from paper towels or crepe paper)
- thumbtack
- 1/2 cup water
- 1/2 cup vinegar
- 1 teaspoon baking soda

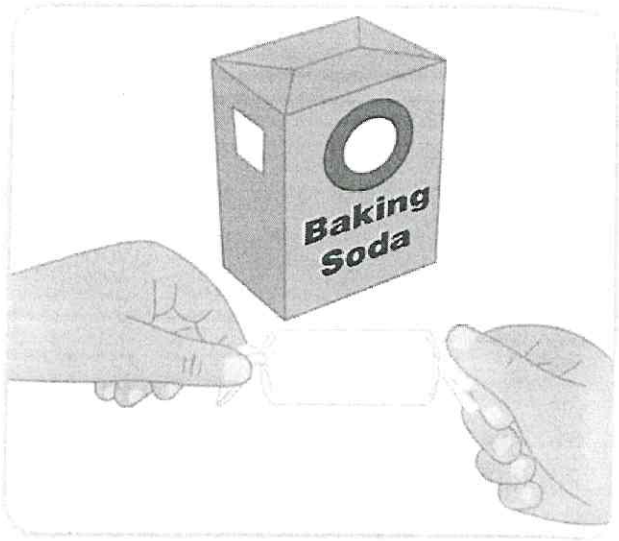
Directions:

1. Make your rocket by attaching streamers to the top of the cork with the thumbtack. Make sure the cork will fit tightly into the bottle. If it is too tight, ask an adult to help you trim the cork with a knife. If it's too loose, wrap pieces of paper towel around it until it fits snugly in the bottle top.

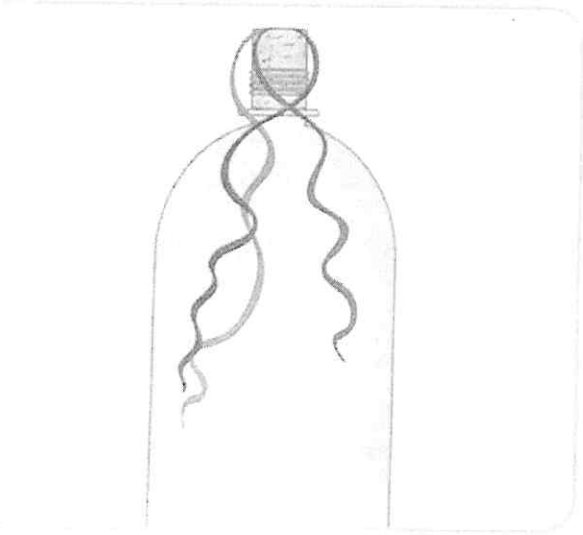




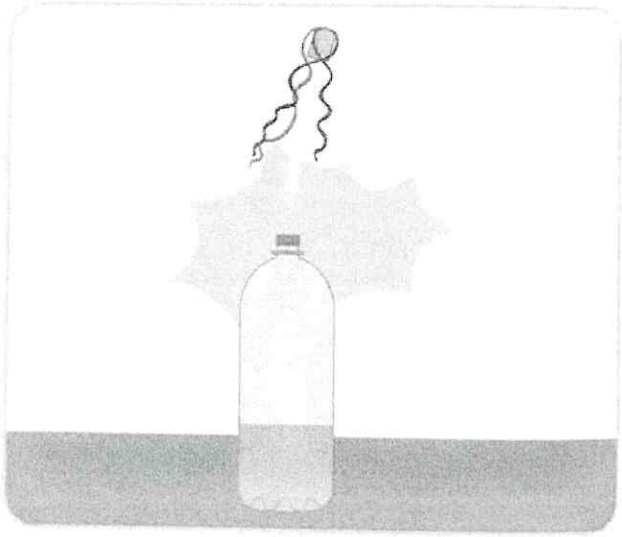
2. With the cork out of the bottle, put the water and the vinegar into the bottle.



3. Cut a 4-inch by 4-inch piece of paper towel. Wrap the baking soda in the paper towel, twisting the ends to keep the baking soda in.



4. Go outside where there is plenty of space. Drop the paper-towel-wrapped baking soda into the bottle. Fit the cork into the bottle top. Set the bottle upright away from any people.



5. WAIT. As the liquid soaks through the paper towel, the vinegar will react with the baking soda and produce carbon dioxide gas. As more and more gas forms, the pressure will build up inside the bottle. Eventually, the bottle will blow its cork. The streamers will help you trace its flight.

Think

1 Which sentence **best** explains why the last step in making a rocket is to wait?

- **A** The cork has to fit tightly into the bottle top.
- **B** It takes time for gas to build up in the bottle.
- **C** It is safer to take the bottle outside to launch.
- **D** You must wrap the baking soda in a paper towel.

2 Read this sentence from paragraph 3.

Robert Goddard once called himself a "one-dream-man."

Which **two** sentences from the text explain why Goddard said this?

- **A** "Throughout his career, Goddard worked mostly alone."
- **B** "Most of his experiments took place on his aunt's Massachusetts farm."
- **C** "It began on October 19, 1899, when he was 17 years old."
- **D** "As he looked up, he had a vision of traveling into space."
- **E** "His dream was to send a rocket into space."
- **F** "Thirty-nine years after Goddard shot off his first rocket, United States astronaut Neil Armstrong took his first step on the moon."

3 Circle the boxed words or phrases that **best** complete the sentence.

To launch the homemade rocket, vinegar and | water / baking soda | mix to form | carbon dioxide gas / baking soda | that pushes the rocket out of the bottle.

4 This question has two parts. First answer Part A. Then answer Part B.

Part A

Which sentence below **best** tells the main idea of the article?

A Robert Goddard helped build the rocket that took the astronaut Neil Armstrong to the moon.

B Robert Goddard was a scientist whose work led to the Saturn 5 rockets, which were 30 stories tall.

C Robert Goddard did most of his rocket research in his spare time on his aunt's farm in Massachusetts.

D Robert Goddard worked alone for many years to develop the rockets that led to space travel and exploration.

Part B

Which details in the chart below **best** support your answer to Part A? Draw an X next to two key details that support the main idea.

Detail from the Article	Supports the Main Idea
The Saturn 5 Rocket that sent astronauts to the moon stood 363 feet high, about the height of a 30-story building.	
Thirty-nine years after Goddard shot off his first rocket, United States astronaut Neil Armstrong took his first step on the moon.	
Satellites put in orbit by rockets beam back information about Earth's atmosphere and weather.	
Throughout his career, Goddard worked mostly alone.	

5 This question has two parts. First answer Part A. Then answer Part B.

Part A

Which statement **best** explains why Robert Goddard worked "almost totally alone"?

A Other scientists did not take rockets seriously.

B Goddard did not like working with other scientists.

C The farm was too far away from other people.

D Goddard wanted to keep his research a secret.

Part B

Which sentence from the text **best** supports the answer to Part A?

A "Throughout his career, Goddard worked mostly alone."

B "Most of his experiments took place on his aunt's Massachusetts farm."

C "Rocket research was not considered a proper subject for a serious scientist."

D "Robert Goddard once called himself a 'one-dream-man.'"

6 Underline the sentence that **best** explains why the cork blows out of the bottle.

WAIT. As the liquid soaks through the paper towel, the vinegar will react with the baking soda and produce carbon dioxide gas. As more and more gas forms, the pressure will build up inside the bottle. Eventually, the bottle will blow its cork. The streamers will help you trace its flight.

7 This question has two parts. First answer Part A. Then answer Part B.

Part A

The first instruction in "Up, Up, and Away!" is to attach streamers to the top of the cork. Why are the streamers important?

- **A** They bring liquid into the bottle.
- **B** They help people follow the flight of the cork.
- **C** They make the cork fit tightly into the bottle top.
- **D** They react with the baking soda and vinegar to make gas.

Part B

Which sentence from the text **best** supports the answer to Part A?

- **A** "The streamers will help you trace its flight."
- **B** "As the liquid soaks through the paper towel, the vinegar will react with the baking soda and produce carbon dioxide gas."
- **C** "Make your rocket by attaching streamers to the top of the cork with the thumbtack."
- **D** "Make sure the cork will fit tightly into the bottle."

8 In paragraph 2, what is the meaning of the word earthlings?

- **A** animals
- **B** people
- **C** objects
- **D** rockets

9 Which sentence **best** summarizes the first paragraph of the article?

A Seeing a rocket is awesome because it is 363 feet tall and weighs more than six million pounds.

B With rocket engines, the Saturn 5 rocket sent a 100,000-pound spacecraft to make a lunar landing.

C The Saturn 5 rocket, which was tall and heavy, sent a spacecraft and astronauts to the moon.

D Thanks to Robert Goddard, the Saturn 5 rocket was able to take human beings into space.

10 The sentence below is from Step 1 of "Up, Up, and Away!"

Make sure the cork will fit tightly into the bottle.

Which answer **best** explains what would happen if the cork didn't fit tightly?

A The bottle would explode.

B The gas would leak out and relieve the pressure.

C The loose cork would keep the gas in the bottle.

D The cork would fall off.

NAME: Grade 4 Math Week 4 DATE: _____

Math Weekly Review

1. **List all the factors of 20.** 4.OA.4

_____

2. There are 12 party favors in a package. How many packages are needed for 24 kids if each child gets 6 favors? 4.OA.3

_____

Operations & Algebra

1. **Write 5,662 in expanded form.** 4.NBT.2

_____

_____

2. **Write <, >, or = to make the statements true.** 4.NBT.2

68,866 ____ 68,688

3. **Write the number one thousand six hundred twelve.** 4.NBT.2

_____

Numbers Base Ten

1. **True or False? The numbers 0.25 and 3/12 are equivalent.** 4.NF.1

$\frac{25}{100}$ $\frac{3}{12}$

_____

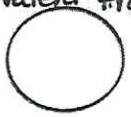
2. **Label 6/16 on the number line below.** 4.NF.1

equivalent fraction

3. **Divide the circle into fourths.** 4.NF.1

Shade 12/16.

equivalent fraction



Numbers Fractions

1. **Find the elapsed time.** 4.MD.2

Start: 11:11 A.M.

End: 1:01 P.M.

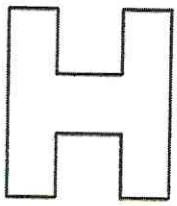
_____

2. Isaac drew a shape that has three sides. Each side is 64 mm long. What is the perimeter of the shape? 4.MD.3

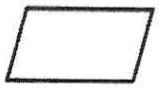
_____

Measurement

1. **Draw the lines of symmetry on the figure to the right.** 4.G.3



2. **Name the quadrilateral.** 4.G.2

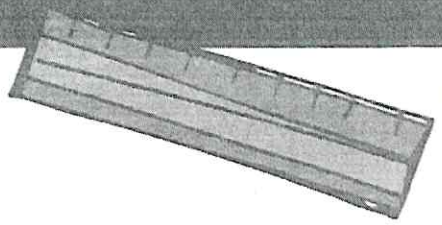


_____

Geometry

MEASUREMENT Conversions

Length

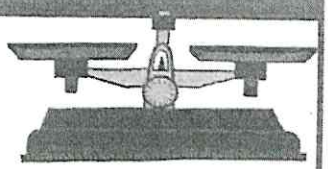


1 cm **length of a staple**
1 meter=100 cm
1 kilometer=1,000 meters

1 inch
1 foot=12 inches
1 yard=3 feet, 36 inches

Mass

1 gram **mass of a paperclip**
1 kilogram=1,000 grams

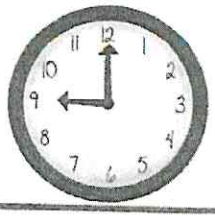


Weight

1 ounce **slice of bread**
1 pound=16 ounces

Time

1 second
1 minute=60 seconds
1 hour=60 minutes



Name: Date: 4.MD.1

Relative Sizes of Measurement

Directions: Use the word bank below to help decide which unit of measure would be used in each situation.

minutes	hours	grams	kilograms
liters	milliliters	centimeters	kilometers

1. The amount of time it takes to brush your teeth. _____
2. The amount of soda in a can. _____
3. The length of a piece of paper. _____
4. The amount of time it takes to watch a movie. _____
5. The weight of an apple. _____
6. The amount of water in a bathtub. _____
7. The distance to the grocery store. _____
8. The weight of a pony. _____

Name: Date: 4.MD.1

Measurement Conversions

Directions: Complete each conversion chart.

1 cup	8 fl. ounces
3	
	32
11	

1 liter	1,000 milliliters
2	
	4,000
6	

1 pound	16 ounces
3	
4	
5	

1 kilogram	1,000 grams
3	
	5,000
7	

1 foot	12 inches
3	
6	
9	

1 meter	100 centimeters
5	
8	
10	

1 minute	60 seconds
	120
4	
5	

1 hour	60 minutes
2	
	360
8	

Converting Measurements

Name_____ 4.MD.1 Date _____

1. Jane's cat weighs 7 pounds 11 ounces. How many ounces is that in all?

A. 18 ounces
B. 112 ounces
C. 123 ounces
D. 142 ounces

2. At a farmers market there were packages of strawberries and each weighed 1 kilogram. How many grams did the strawberries weigh in all?

A. 500
B. 5,000
C. 600
D. 6,000

Kilograms	Gram
1	1,000
2	
3	
4	
5	
6	

3. It took Amy 4 hours and 35 minutes to complete her homework. How many minutes is that in all?

A. 275 minutes
B. 240 minutes
C. 75 minutes
D. 39 minutes

4. Sally's sunflower plant is 8 feet 9 inches tall. How many inches is that in all?

A. 96 inches
B. 105 inches
C. 17 inches
D. 89 inches

5. Jeremy's paper airplane flew 7 feet 9 inches. Macey's paper airplane flew 87 inches. Macey said her airplane flew further. Is she correct? Explain your answer.

How many inches is Jeremy's paper airplane?
→ Hint: convert feet to inches and add the extra 9 inches.

Name: Date: 4.MD.2

Word Problems: Measurement

Directions: For each word problem, write an equation and/or draw a picture or model. Then solve.

1. Brandon is driving to visit a friend that lives 29.2 miles away. If he stops to get gas after 18.4 miles, how many miles will he have left to go?

2. Natalie has 2 hours to run her errands. She spends 45 minutes at the grocery store and 30 minutes getting her car washed. How much time does she have left to get lunch?

3. Bill's baseball bag weighs 4 pounds. If he takes out a pair of cleats that weigh 6 ounces, how much will his bag weigh?

4. Kimberly is making strawberry lemonade for her class. She mixes 2½ liters of lemonade and 1½ liters of strawberry juice. How many liters of strawberry lemonade will Kimberly have?

Problem Solving and Measurement

Name_____ 4.MD.2 Date _____

1. Casey has 4 feet of ribbon that she wants to split equally between 6 friends. How many inches of ribbon will each friend get?

A. 4 inches
B. 6 inches
C. 8 inches
D. 10 inches

2. Marvin picked 9 kilograms of apples. he gave his friend 875 grams of apples. How many grams of apples did he have left?

A. 25 grams
B. 1,125 grams
C. 8,125 grams
D. 9,875 grams

3. Mrs. Swanson bought 4 pounds of strawberries. They cost $1.65 a pound. If she paid with a $10 dollar bill how much change would she receive?

A. $ 6.60
B. $ 4.60
C. $ 4.40
D. $ 3.40

4. It took Jacob 3 hours to complete his homework. He split that time equally between 5 assignments. How many minutes did he spend on each assignment?

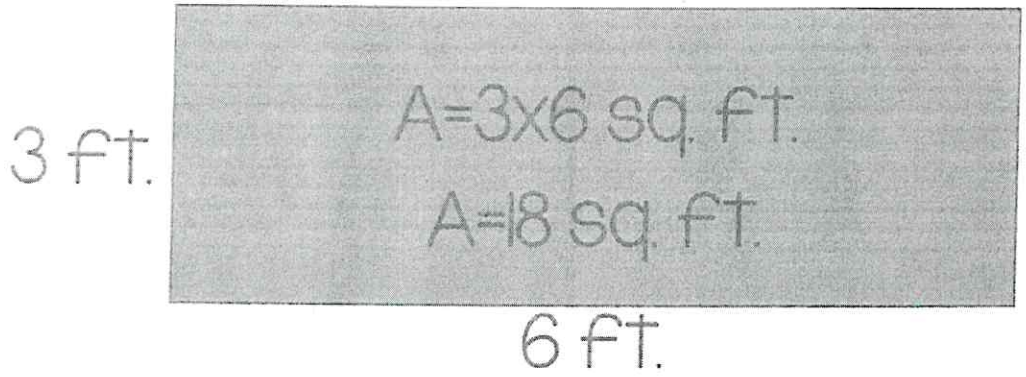
A. 36 minutes
B. 15 minutes
C. 8 minutes
D. 35 minutes

5. Lemonade costs $1.25 a quart. Tim bought 2 gallons. How much did he spend on the lemonade altogether?

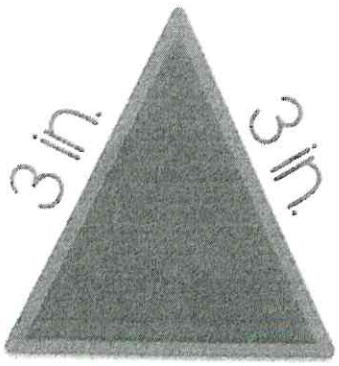
How many quarts of lemonade did Tim buy?
→ Hint: Convert gallons to quarts.

FINDING AREA and perimeter

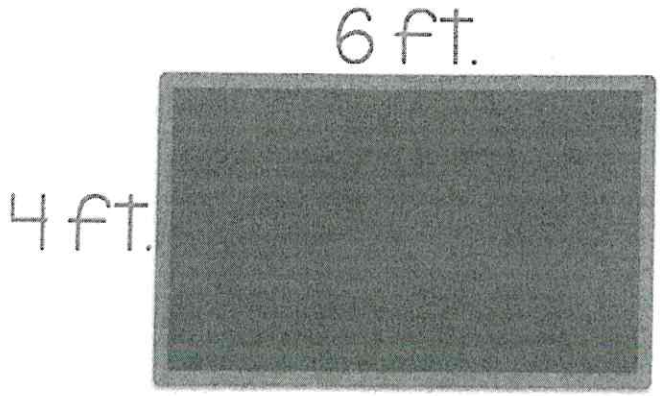
To find the area of rectangles, multiply length by width.



To find the perimeter of a figure, add all of the sides together.



P=3+3+3=9 in.



P=6+6+4+4=20 ft.

Name: Date: 4.MD.3

Word Problems: Area & Perimeter

Directions: For each word problem, write an equation and draw a picture to solve.

Bella needs to buy a custom frame for her artwork. The length of the picture she painted is 12 inches and the width is 9 inches. How many square inches of glass will she need?

Picture:

Equation: _____

Solution: _____

The area of Caleb's garden is 120 square feet. If the length of his garden is 10 feet, what is the width of his garden?

Picture:

Equation: _____

Solution: _____

Julia is putting up a fence around her garden. How much fencing will she need if the length of the fence is 8 feet and the width is 12 feet?

Picture:

Equation: _____

Solution: _____

Steven bought a new rug for his bedroom. The perimeter of the rug is 30 feet and the length is 8 feet. What is the width of his new rug?

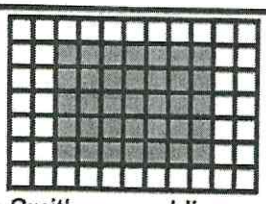
Picture:

Equation: _____

Solution: _____

Area and Perimeter

Name_____ 4.MD.3 Date _____

1. 

The Smiths are adding a patio in their backyard. The diagram above represents the portion of the backyard the patio will cover. What is the area of the patio?

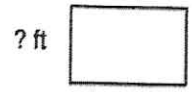
A. 77m² B. 35m² C. 24m² D. 70 m²

2. The fourth grade is building a fence around a garden they started in science class. They used 44 feet of fencing to surround the rectangular garden. Which of the dimensions below could be the length and width of their garden?

A. length 10 feet, width 12 feet
B. length 4 feet, width 11 feet
C. length 20 feet, width 24 feet
D. length 12 feet, width 12 feet

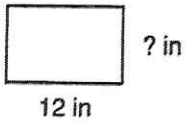
3. Alice is buying wallpaper to cover one of the walls of her room. The area of the wall she is covering is 84 square feet. The width of the wall is 7 feet. What is the length of the wall?

A. 15 feet
B. 11 feet
C. 12 feet
D. 9 feet

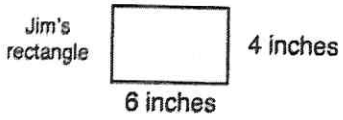


4. Mrs. Kimber is outlining the outside of a present with ribbon. She used 54 inches of ribbon in all. The width of the present is 12 inches. What is the length?

A. 30 inches
B. 42 inches
C. 20 inches
D. 15 inches

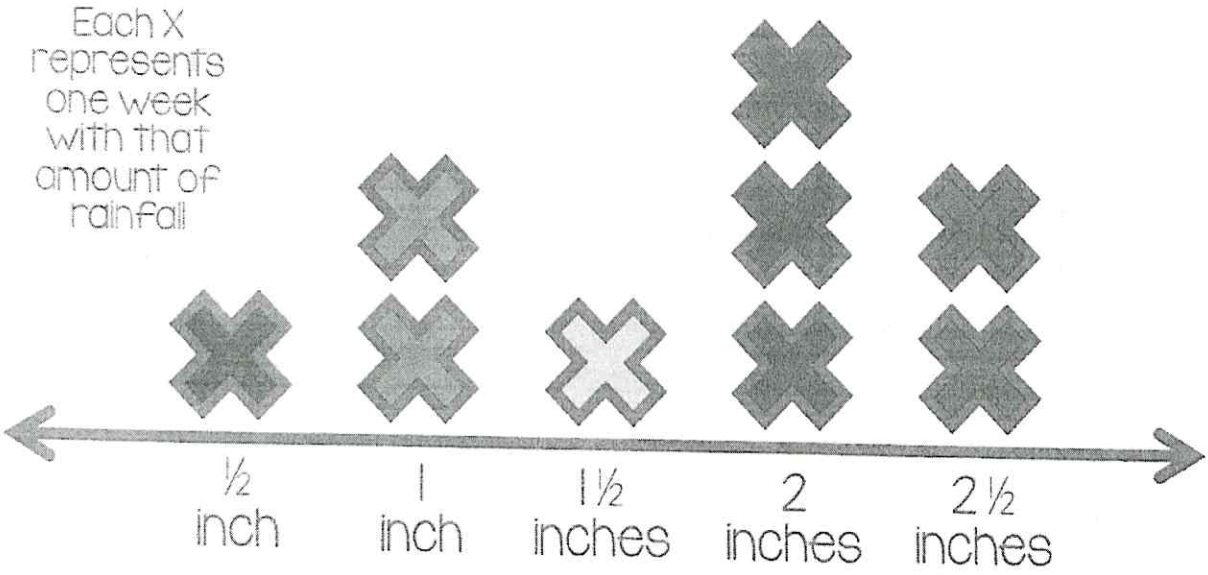


5. Jim drew a rectangle with an area of 24 in² and a perimeter of 20 inches. He said that a rectangle with an area of 24 in² will always have a perimeter of 20 inches. Is he correct? Explain your answer.



LINE PLOTS

Line plots show how frequently something occurs by displaying data on a number line.



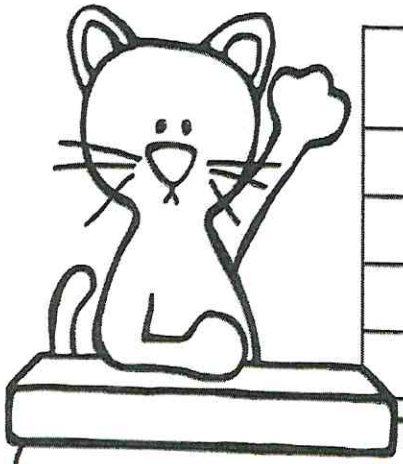
Inches of rain each week

- There was one week where there was a half inch of rain and 1 ½ inches of rain.
- 2 inches of rain was the most frequently weekly rain fall.
- It rained 1 inch during two different weeks.

Name: Date: 4.MD.4

Line Plots

The students in Mrs. Vogel's class measured the lengths of their hands to the nearest ½ inch. Use the tally chart to complete the line plot. Then answer the questions that follow.



Length of Hands	Number of Students
4	IIII
4½	𝍸
5	𝍸 I
5½	III

Lengths of Students' Hands in Inches

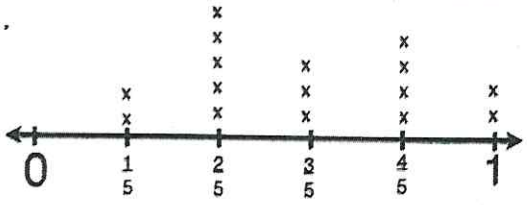
What is the difference in the length of the longest hands and the shortest?

Mikey's hand is 4½ inches long. How much shorter is his hand than the students with the longest hands?

Line Plots

Name_____ 4.MD.4 Date _____

1.

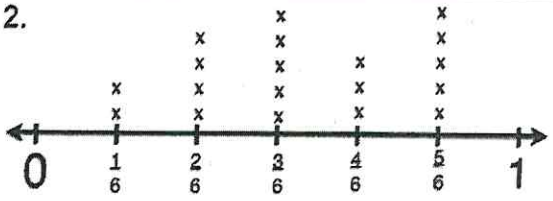


Fraction of a Meter of Growth

Mrs. Green's class measured the amount their sunflowers grew last week and then recorded the data on the line plot. How many sunflowers grew more than $\frac{1}{2}$ of a meter?

A. 9 B. 8 C. 6 D. 4

2.

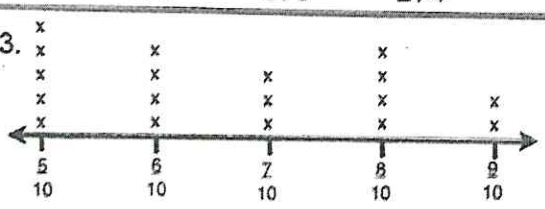


Fraction of a Minute

Marvin timed how quickly he completed some math problems and recorded the data on a line plot. How many problems did he complete in $\frac{1}{2}$ a minute or less?

A. 5 B. 9 C. 11 D. 12

3.

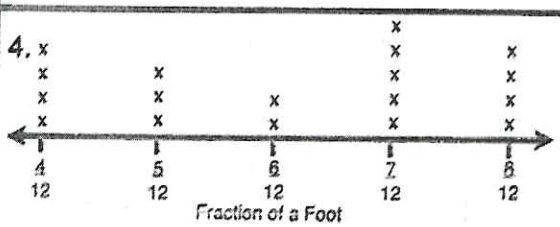


Fraction of a Liter

Jane measured the fraction of a liter of water that her hamster drank for several days. How many days did the hamster drink $\frac{1}{2}$ of a liter of water?

A. 5 B. 9 C. 11 D. 12

4.



Fraction of a Foot

Ali is sorting her craft supplies by length and she recorded the length of the ribbons on a line plot. She needs ribbons that are $\frac{6}{12}$ of a foot or greater. How many of her ribbons can she use?

A. 7 B. 11 C. 9 D. 13

Measurement and Data Review

Name_____ MD Review Date _____

6. Joan is covering the front of her scrapbook with fabric. The area of the cover is 162 square inches. If the length of her scrapbook is 9 inches, what is the width?

4.MD.3

A. 153 inches
B. 18 inches
C. 17 inches
D. 1,458 inches

9 inches

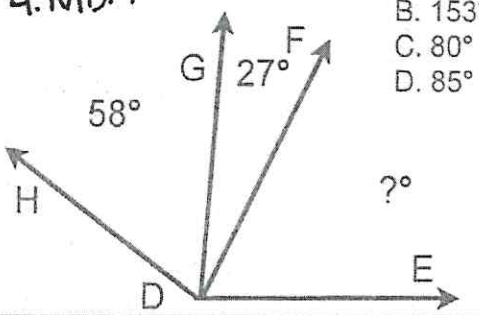
? inches

$A = 162 in^2$

7. Chandler drew the figure below. The measure of <HDE is 138°. What is the measure of <FDE?

4.MD.7

A. 53°
B. 153°
C. 80°
D. 85°



8. Max caught a fish that weighed 19 pounds 11 ounces. How many ounces is that in all? 4.MD.2

A. 30 ounces
B. 304 ounces
C. 315 ounces
D. 130 ounces

9. Alison bought 3 bottles of water that cost $1.25 each. She paid with a $20 bill. How much change did she get back? 4.MD.2

A. $ 16.25
B. $ 17.75
C. $ 18.25
D. $ 14.75

10. The Jacobsons are building a rectangular fence around a pond. The perimeter of the fence is 70 feet. The width of the fence is 16 feet. What is the length of the fence? Explain your answer. 4.MD.3

P = 70 feet

16 feet

? feet