

GRADE 6
Mathematics

Administered May 2019

RELEASED

STAAR GRADE 6 MATHEMATICS REFERENCE MATERIALS



AREA

Triangle

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

Rectangle or parallelogram

$$A = bh$$

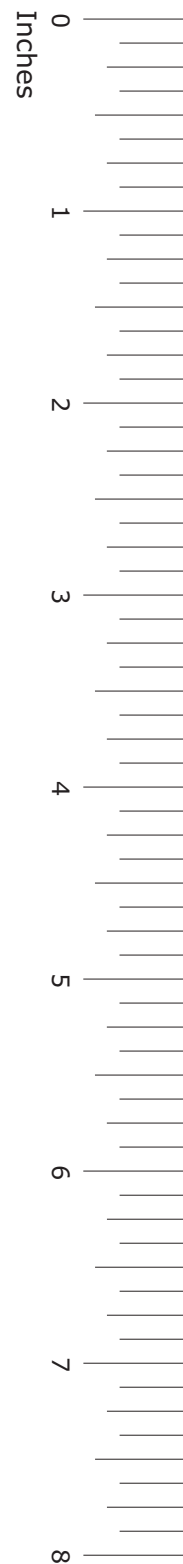
Trapezoid

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

VOLUME

Rectangular prism

$$V = Bh$$



STAAR GRADE 6 MATHEMATICS REFERENCE MATERIALS

LENGTH

Customary

1 mile (mi) = 1,760 yards (yd)

1 yard (yd) = 3 feet (ft)

1 foot (ft) = 12 inches (in.)

Metric

1 kilometer (km) = 1,000 meters (m)

1 meter (m) = 100 centimeters (cm)

1 centimeter (cm) = 10 millimeters (mm)

VOLUME AND CAPACITY

Customary

1 gallon (gal) = 4 quarts (qt)

1 quart (qt) = 2 pints (pt)

1 pint (pt) = 2 cups (c)

1 cup (c) = 8 fluid ounces (fl oz)

Metric

1 liter (L) = 1,000 milliliters (mL)

WEIGHT AND MASS

Customary

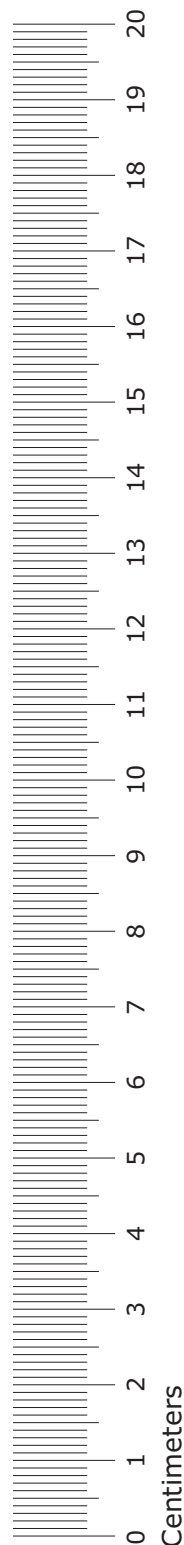
1 ton (T) = 2,000 pounds (lb)

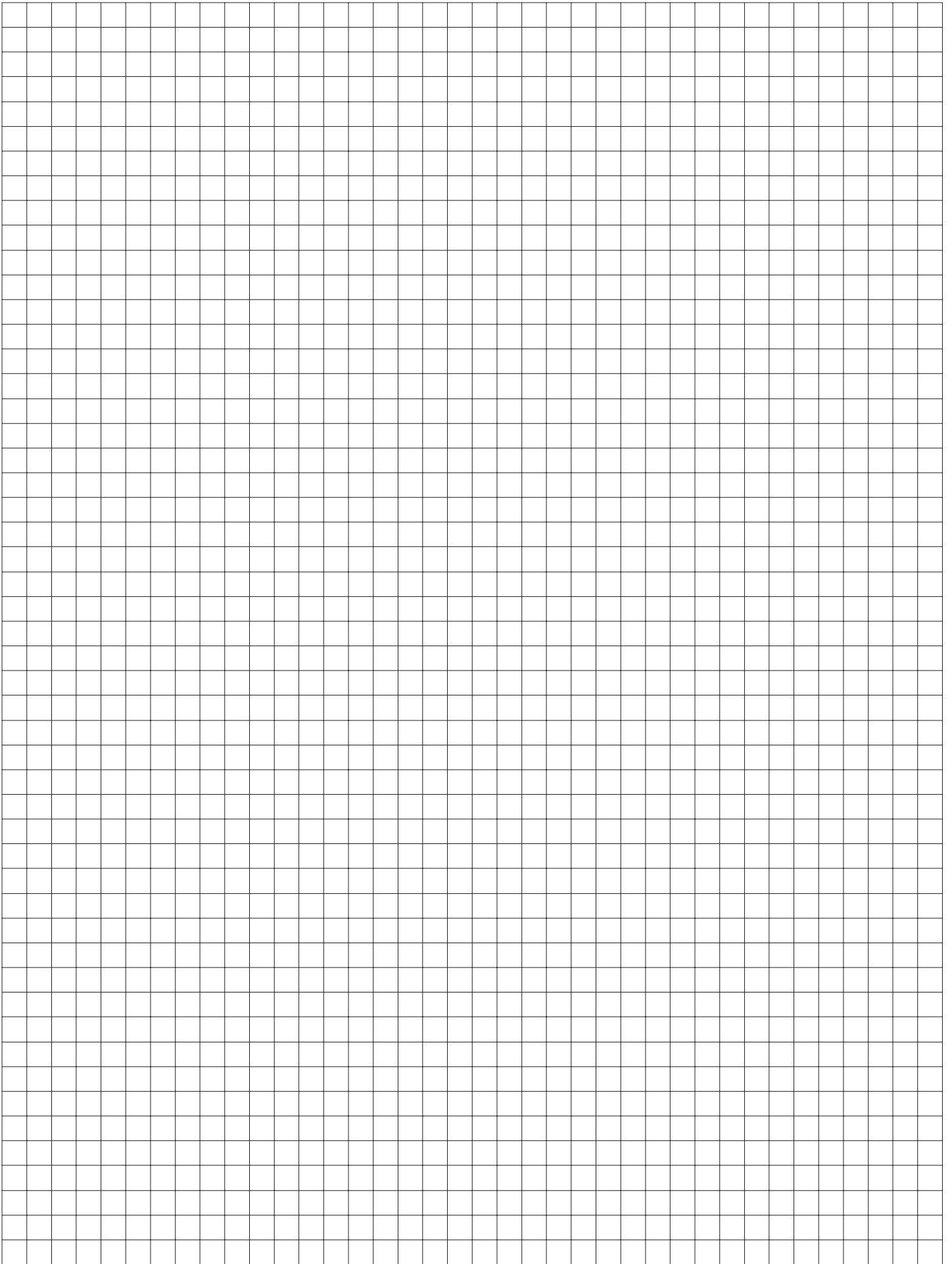
1 pound (lb) = 16 ounces (oz)

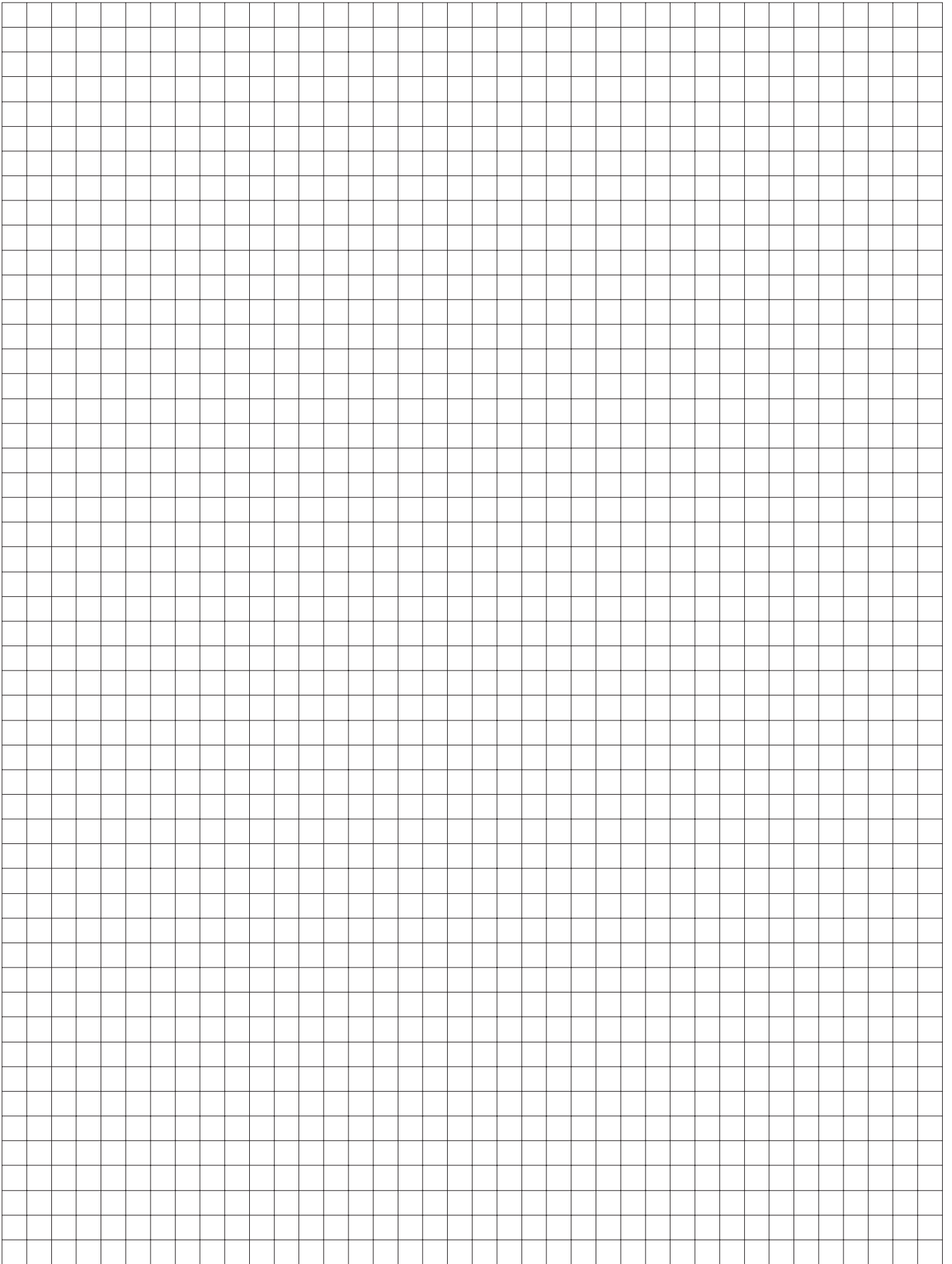
Metric

1 kilogram (kg) = 1,000 grams (g)

1 gram (g) = 1,000 milligrams (mg)







MATHEMATICS

DIRECTIONS

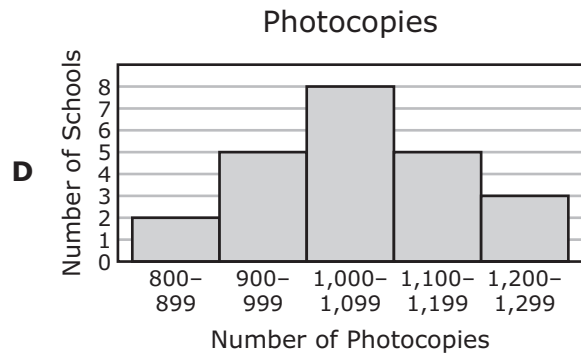
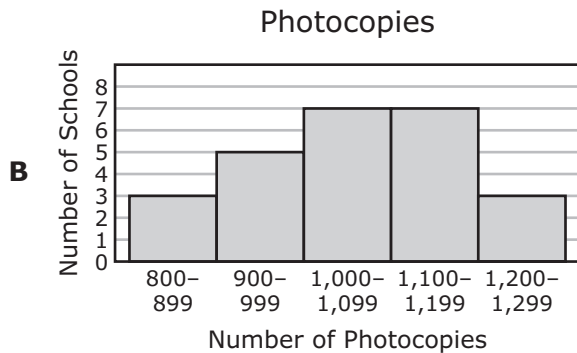
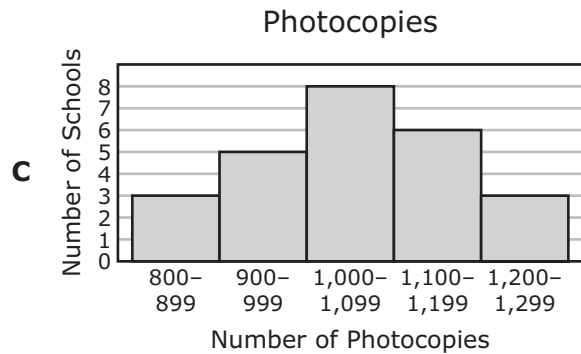
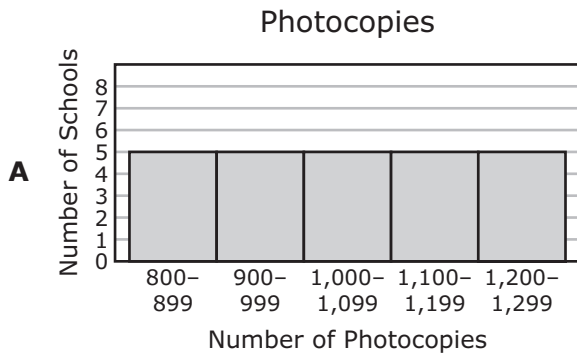
Read each question carefully. For a multiple-choice question, determine the best answer to the question from the four answer choices provided. For a griddable question, determine the best answer to the question. Then fill in the answer on your answer document.

- 1 The table shows the number of photocopies made during one day at each of the 25 schools in a school district.

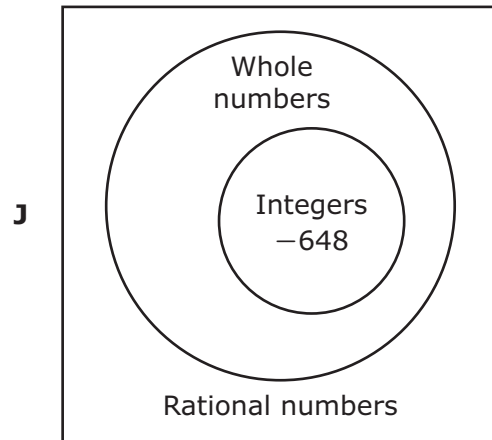
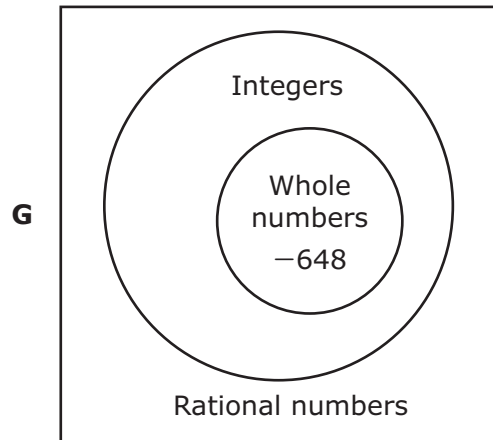
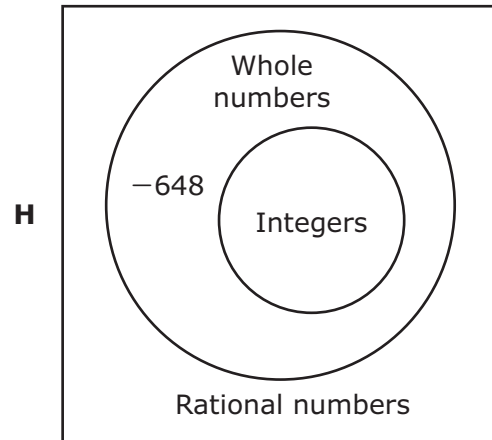
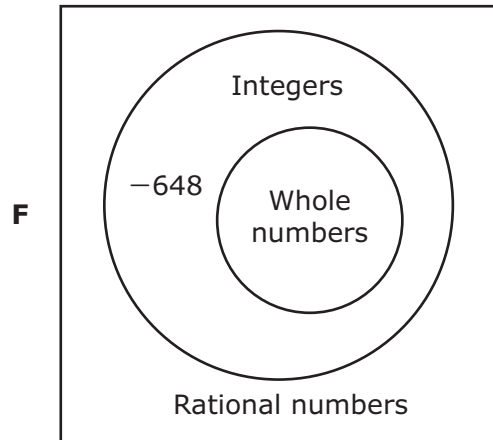
Photocopies

805	805	872	910	919
923	950	989	1,004	1,010
1,020	1,051	1,056	1,085	1,094
1,098	1,108	1,128	1,133	1,150
1,150	1,187	1,209	1,220	1,298

Which histogram displays all the data in the table correctly?



2 Which Venn diagram shows the correct relationship among different sets of numbers and the correct placement of -648 ?



- 3 The expression shown can be used to calculate the amount of money in dollars a grocery store customer should receive in change when paying with \$50.

$$50 - (14 + 12 + 2(5) + 2(2) + 3)$$

What amount of change in dollars should the customer receive?

- A \$4
 - B \$26
 - C \$29
 - D \$7
-

- 4 Which expression is equivalent to $(6 \cdot p) + 3$?

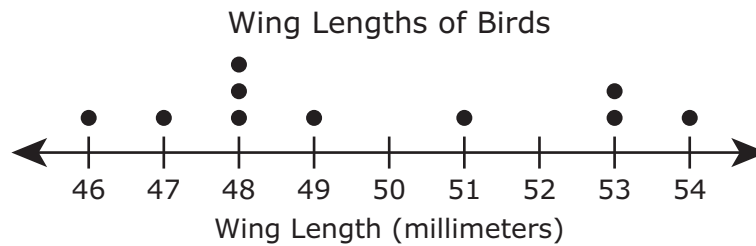
- F $3 - (6 \cdot p)$
- G $3 + (p \cdot 6)$
- H $6 + 3 \cdot p$
- J $6 \cdot (p + 3)$

- 5 A scientist used 786 milliliters of a liquid for an experiment. How many liters of the liquid did the scientist use for this experiment?
- A 786,000 L
 - B 7.86 L
 - C 0.786 L
 - D 0.0786 L
-

- 6 Which inequality is true if $p = 3.4$?
- F $3p < 10.2$
 - G $13.6 \leq 3.9p$
 - H $5p > 17.1$
 - J $8.5 \geq 2.5p$
-

- 7 Carlos walked to school on 14 of the 20 school days in February. Which value is equivalent to the fraction of the school days in February that Carlos walked to school?
- A 70%
 - B 0.07
 - C 0.142
 - D 56%

- 8 The dot plot shows the wing lengths in millimeters for ten birds.



Which statement is supported by the data in the dot plot?

- F More than half of the birds have wing lengths of less than 50 millimeters.
 - G There are more birds that have a wing length of 54 millimeters than birds that have a wing length of 46 millimeters.
 - H Fewer than half of the birds have wing lengths greater than 48 millimeters.
 - J There are more birds that have a wing length of 52 millimeters than birds that have a wing length of 51 millimeters.
-

- 9 After 4 new students joined a class, the class had 32 students.

Which equation can be used to find n , the number of students in the class before the 4 new students joined?

- A $\frac{n}{4} = 32$
- B $n - 4 = 32$
- C $4n = 32$
- D $n + 4 = 32$

10 What is the value of the expression shown?

$$24 - 5^2$$

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

11 Which situation can be represented by the equation $y = 12x$?

- A Victoria went to school for x years.
This is 12 times y , the number of years her brother went to school.
 - B Victoria spent x dollars to buy a gift for her brother.
She gave the cashier y dollars and received \$12 in change.
 - C Victoria has y dollars.
This amount is 12 times x , the amount of money in dollars Victoria's brother has.
 - D Victoria is y years old.
Her age is 12 years greater than x , her brother's age in years.
-

12 The weights of four puppies are shown in pounds.

$$9.5 \quad 9\frac{3}{8} \quad 9.125 \quad 9\frac{3}{4}$$

Which list shows these weights in order from greatest to least?

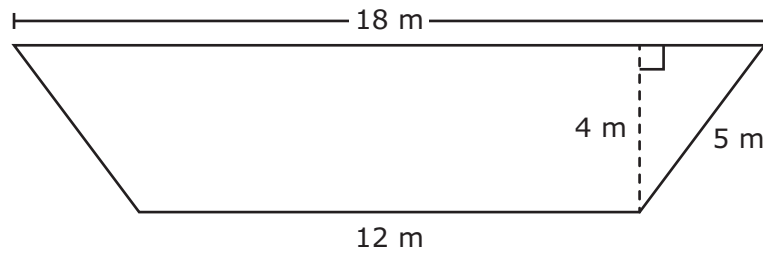
- F $9\frac{3}{4}$ 9.5 $9\frac{3}{8}$ 9.125
- G 9.5 $9\frac{3}{8}$ $9\frac{3}{4}$ 9.125
- H 9.125 $9\frac{3}{8}$ 9.5 $9\frac{3}{4}$
- J $9\frac{3}{4}$ $9\frac{3}{8}$ 9.5 9.125

- 13** The ratio of the number of boys to the number of girls in a choir is 5 to 4. There are 60 girls in the choir.

How many boys are in the choir?

- A** 75
 - B** 61
 - C** 48
 - D** 80
-

- 14** The dimensions of a lawn shaped like a trapezoid are given in meters.



What is the area of the lawn in square meters?

- F** 108 m^2
- G** 60 m^2
- H** 72 m^2
- J** 120 m^2

15 The tables show the relationships between x and y for two data sets.

x	y
1	5.5
2	11.0
3	16.5
4	22.0
5	27.5

x	y
1	5
2	10
3	15
4	20
5	25

Which statements describe the relationships between x and y in Data Set I and Data Set II?

- A** Both data sets show additive relationships.
In Data Set I, y is 5.5 more than x , and in Data Set II, y is 5 more than x .
- B** Data Set I shows a multiplicative relationship in which y is 5.5 times x .
Data Set II shows an additive relationship in which y is 20 more than x .
- C** Both data sets show multiplicative relationships.
In Data Set I, y is 5.5 times x , and in Data Set II, y is 5 times x .
- D** Data Set I shows an additive relationship in which y is 4.5 more than x .
Data Set II shows a multiplicative relationship in which y is 5 times x .

- 16 Four points are labeled on the number line.



Which point best represents $\frac{1}{3}$?

- F Point *K*
 - G Point *L*
 - H Point *M*
 - J Point *N*
-
- 17 Ms. Gallegos burns 236 calories riding her bike each hour. She wants to burn more than 590 calories riding her bike at the same rate.

Which inequality represents all possible values for t , the number of hours Ms. Gallegos must ride her bike to burn more than 590 calories?

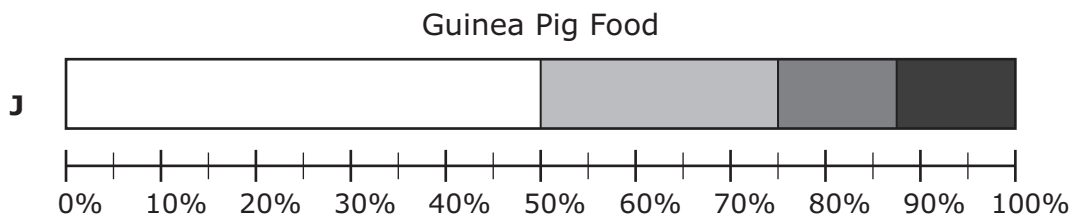
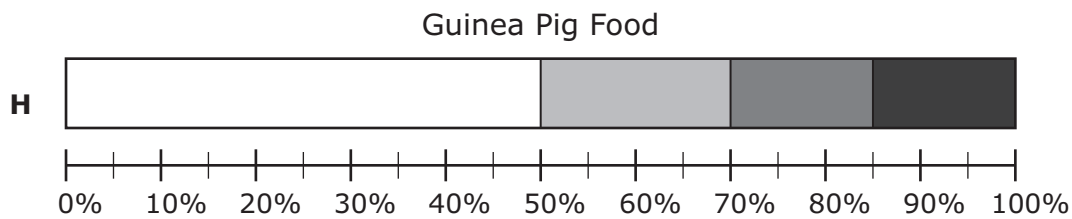
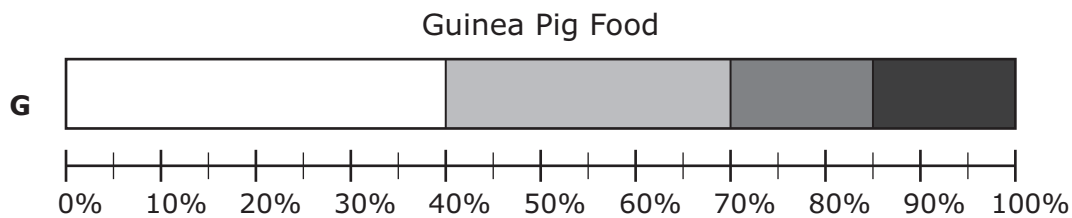
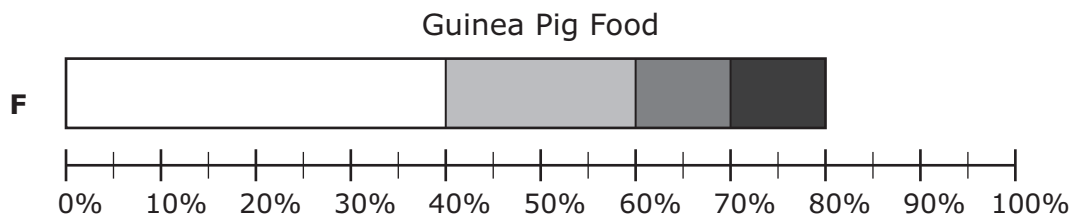
- A $t > 2.5$
- B $t < 2.5$
- C $t > 0.4$
- D $t < 0.4$

- 18 On Saturday Kai gave his guinea pig 80 grams of food. The table shows the amount of each type of food he gave to the guinea pig.

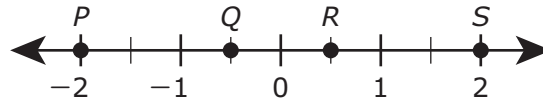
Guinea Pig Food

Type of Food	Amount of Food (grams)	Key for Bar Graph
Hay	40	□
Alfalfa pellets	20	■
Tomatoes	10	■
Lettuce	10	■

Which percentage bar graph best represents the data?



- 19 Four points are labeled on the number line.



Which point represents the value of $\left|-\frac{1}{2}\right|$?

- A Point P
- B Point Q
- C Point R
- D Point S

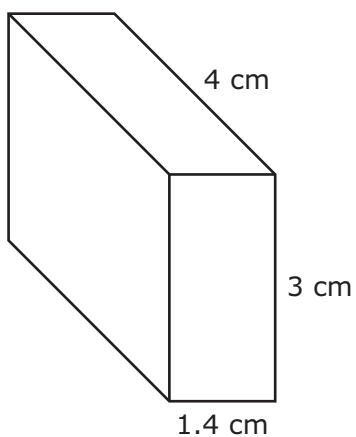
-
- 20 The table shows the relationship between r and s , where s is the independent variable.

s	1	2	3	4	5	6
r	$\frac{1}{6}$	$\frac{1}{3}$	$\frac{1}{2}$	$\frac{2}{3}$	$\frac{5}{6}$	1

Which equation represents the relationship between r and s ?

- F $s = \frac{1}{6}r$
- G $r = s - \frac{5}{6}$
- H $s = r - \frac{5}{6}$
- J $r = \frac{1}{6}s$

- 21** The dimensions of the rectangular prism shown are given in centimeters.



What is the volume of the rectangular prism in cubic centimeters?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

-
- 22** The weight of one serving of trail mix is 2.5 ounces. How many servings are there in 22.5 ounces of trail mix?

- F** 11.5
- G** 25.0
- H** 56.25
- J** 9.0

23 Regina writes the expression $y + 9 \cdot \frac{3}{4}$. Which expression is equivalent to the one Regina writes?

A $(9 \cdot 3 \div 4) + y$

B $9 + y \cdot (3 \div 4)$

C $(y + 9)(3 \div 4)$

D None of these

24 Which situation could be represented by the equation $10.75 = 5.5n$?

F Ricardo ran 5.5 miles.
He ran each mile in 10.75 minutes.
What is n , the total number of minutes it took Ricardo to run 5.5 miles?

G Ricardo ran a total of 10.75 miles on Monday.
He ran 5.5 miles in the morning and the rest of the miles in the evening.
What is n , the number of miles Ricardo ran in the evening?

H Ricardo ran a total of 10.75 miles.
He ran 5.5 miles each hour.
What is n , the number of hours Ricardo ran?

J Ricardo ran 10.75 hours one week and 5.5 hours the next week.
What is n , the total number of hours Ricardo ran during these weeks?

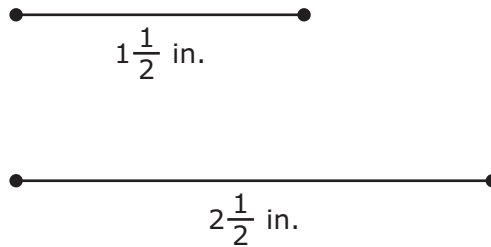
25 The list shows the numbers of employees in the nine departments at a company.

14, 23, 6, 54, 30, 26, 17, 3, 26

What is the range of the numbers of employees in these departments?

- A** 23
 - B** 51
 - C** 26
 - D** 18
-

26 The lengths of two line segments are shown.



Use the ruler provided to measure the length of a third line segment to the nearest $\frac{1}{2}$ inch.

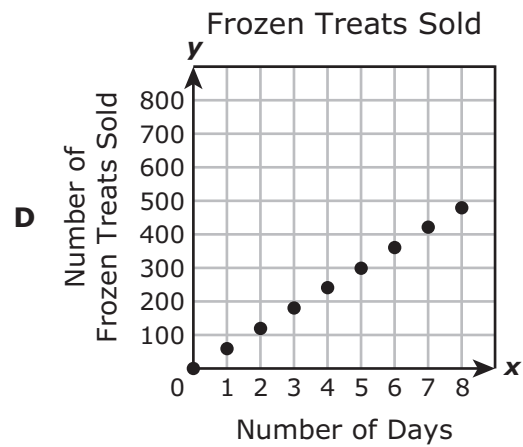
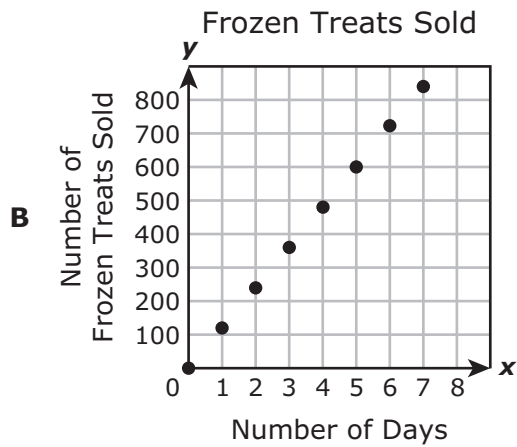
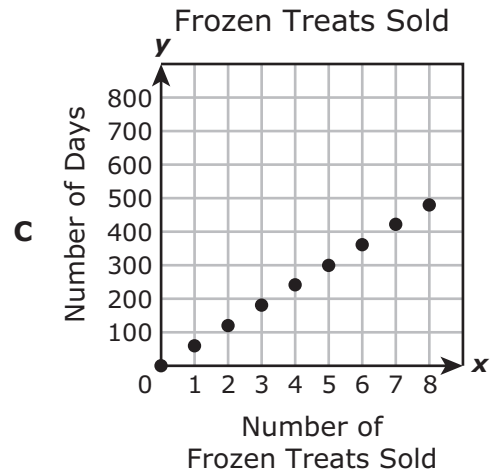
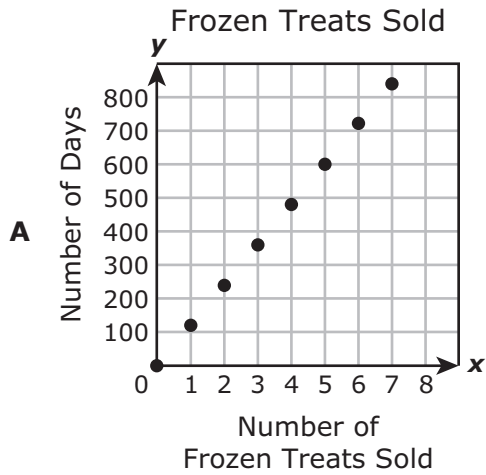


Which statement is true about these three line segments?

- F** These line segments can form a triangle, because each side of the triangle can be a different length.
- G** These line segments can form a triangle, because the longest side of the triangle can be exactly 4 inches long.
- H** These line segments cannot form a triangle, because at least two sides of the triangle must be the same length.
- J** These line segments cannot form a triangle, because the longest side of the triangle must be shorter than 4 inches.

27 The owner of a food cart sells an average of 120 frozen treats per day during the summer.

Which graph best shows this relationship between the number of days and the number of frozen treats sold?



- 28** Each child in a group was asked to choose a single favorite type of cereal. The table shows the number of children who chose each type of cereal as a favorite.

Cereal

Type of Cereal	Number of Children
Oatmeal	15
Grits	10
Wheat porridge	2
Cold cereal	20
Other	3

Which statement is NOT supported by the data in the table?

- F** More than 5% of the children chose "other" as the favorite type of cereal.
 - G** Oatmeal is the favorite type of cereal for 15% of the children.
 - H** Cold cereal is associated with the mode for the favorite type of cereal.
 - J** Grits is the favorite type of cereal for 20% of the children.
-

- 29** On Wednesday 72% of the customers who bought gas at a gas station made additional purchases. There were 250 customers who bought gas.

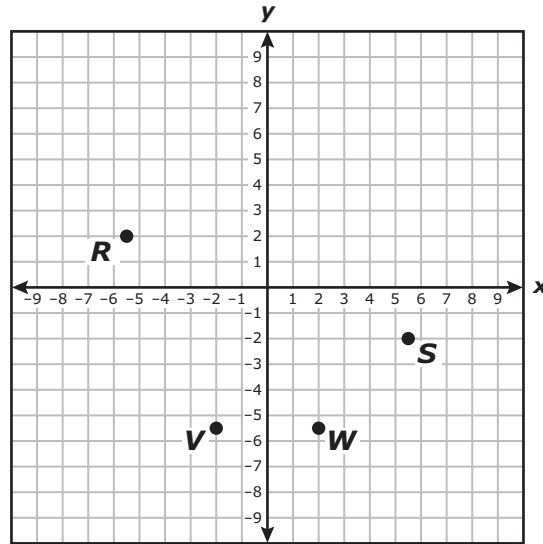
How many of these 250 customers made additional purchases?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

- 30** Mari used a thermometer to record temperatures of -3.4° Celsius and 1.6° Celsius. Which temperature in degrees Celsius is less than both of the temperatures Mari recorded?
- F** -2.6°C
 - G** 3.9°C
 - H** -5.4°C
 - J** 0°C
-

- 31** The area of a rectangle is 45.5 square inches. The base of the rectangle is 7 inches.
- What is the height of the rectangle in inches?
- A** 318.5 in.
 - B** 6.5 in.
 - C** 15.75 in.
 - D** 38.5 in.

32 Four points are graphed on the coordinate grid.



Which point is best represented by the ordered pair $(2, -5.5)$?

- F Point *W*
- G Point *V*
- H Point *S*
- J Point *R*

- 33** A portion of Raúl's check register is shown. His checking account had a balance of \$539.50 on April 2.

Raúl's Check Register

Date	Description	Deposit (dollars)	Withdrawal (dollars)	Balance (dollars)
4/2				539.50
4/2	Gas (debit card)		35.50	
4/6	Shirt (check)		23.75	
4/13	Money from Mom (check)	55.00		

Based on the information in the check register, what was the balance of Raúl's checking account after the transaction on April 13 in dollars and cents?

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.

-
- 34** A grocery store clerk put only packages of flour tortillas and packages of corn tortillas on a shelf. The ratio of the number of packages of corn tortillas to the total number of packages on the shelf was 7 to 16.

Which number could be the number of packages of flour tortillas the clerk put on the shelf?

- F** 23
- G** 18
- H** 14
- J** 32

35 Which expression is equivalent to $4(3 + 5) - 3 \cdot 9^2$?

A $14 \cdot 81$

B $17 - (27)^2$

C $12 + 20 - 54$

D $4(8) - 3 \cdot 81$

36 What is the value of $\frac{4}{15} \div \frac{2}{3}$?

F $\frac{8}{45}$

G $\frac{14}{15}$

H $\frac{5}{2}$

J $\frac{2}{5}$

- 37** Timothy has a set of plastic squares. The table shows the relationship between A , the area of each square in square centimeters, and s , the side length of each square in centimeters.

Timothy's Squares

Area, A (square centimeters)	1	4	49	64
Side Length, s (centimeters)	1	2	7	8

Which equation can be used to represent the relationship between A and s for these squares?

- A** $A = s$
 - B** $A = s \cdot s$
 - C** $A = 2 + s$
 - D** $A = s + s$
-

- 38** Riley received financial assistance to pay for his college education. After he graduates, he will have to pay back the amount of money he received plus any interest that accrues after graduation.

Which kind of financial assistance did Riley receive?

- F** Student loan
- G** Scholarship
- H** Work-study
- J** Savings plan



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