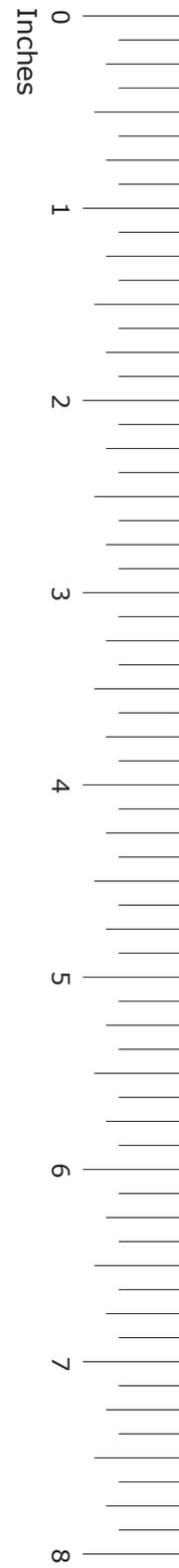


GRADE 6
Mathematics

Administered April 2014

RELEASED

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)

TIME

1 year = 12 months

1 year = 52 weeks

1 week = 7 days

1 day = 24 hours

1 hour = 60 minutes

1 minute = 60 seconds

STAAR GRADE 6 MATHEMATICS REFERENCE MATERIALS

PERIMETER

Square

$$P = 4s$$

Rectangle

$$P = 2l + 2w$$

CIRCUMFERENCE

Circle

$$C = 2\pi r$$

or

$$C = \pi d$$

AREA

Triangle

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

or

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

Square

$$A = s^2$$

Rectangle

$$A = lw$$

or

$$A = bh$$

Parallelogram

$$A = bh$$

Trapezoid

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

or

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

Circle

$$A = \pi r^2$$

VOLUME

Cube

$$V = s^3$$

Rectangular prism

$$V = lwh$$

or

$$V = Bh$$

ADDITIONAL INFORMATION

Pi

$$\pi \approx 3$$

20

19

18

17

16

15

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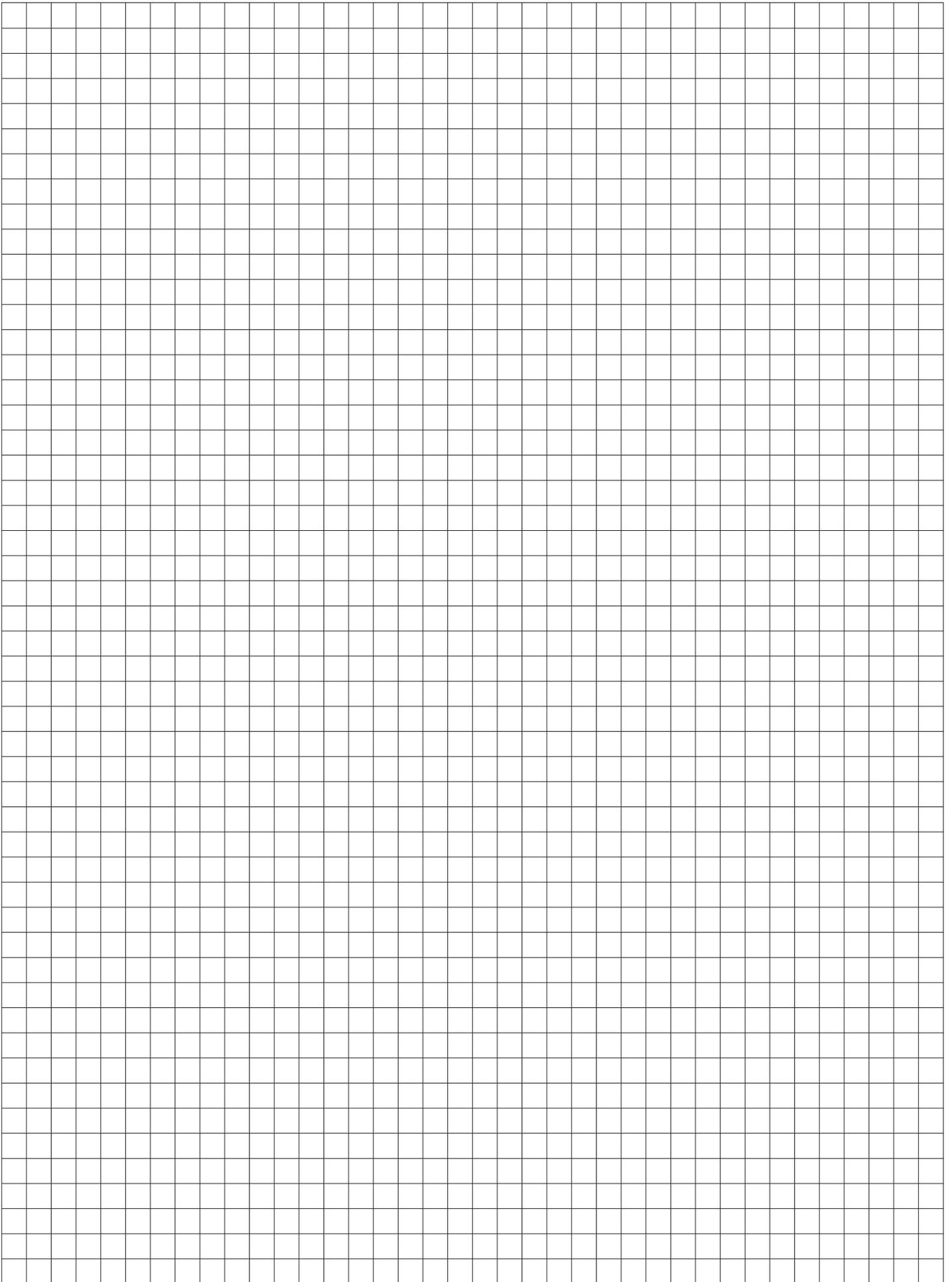
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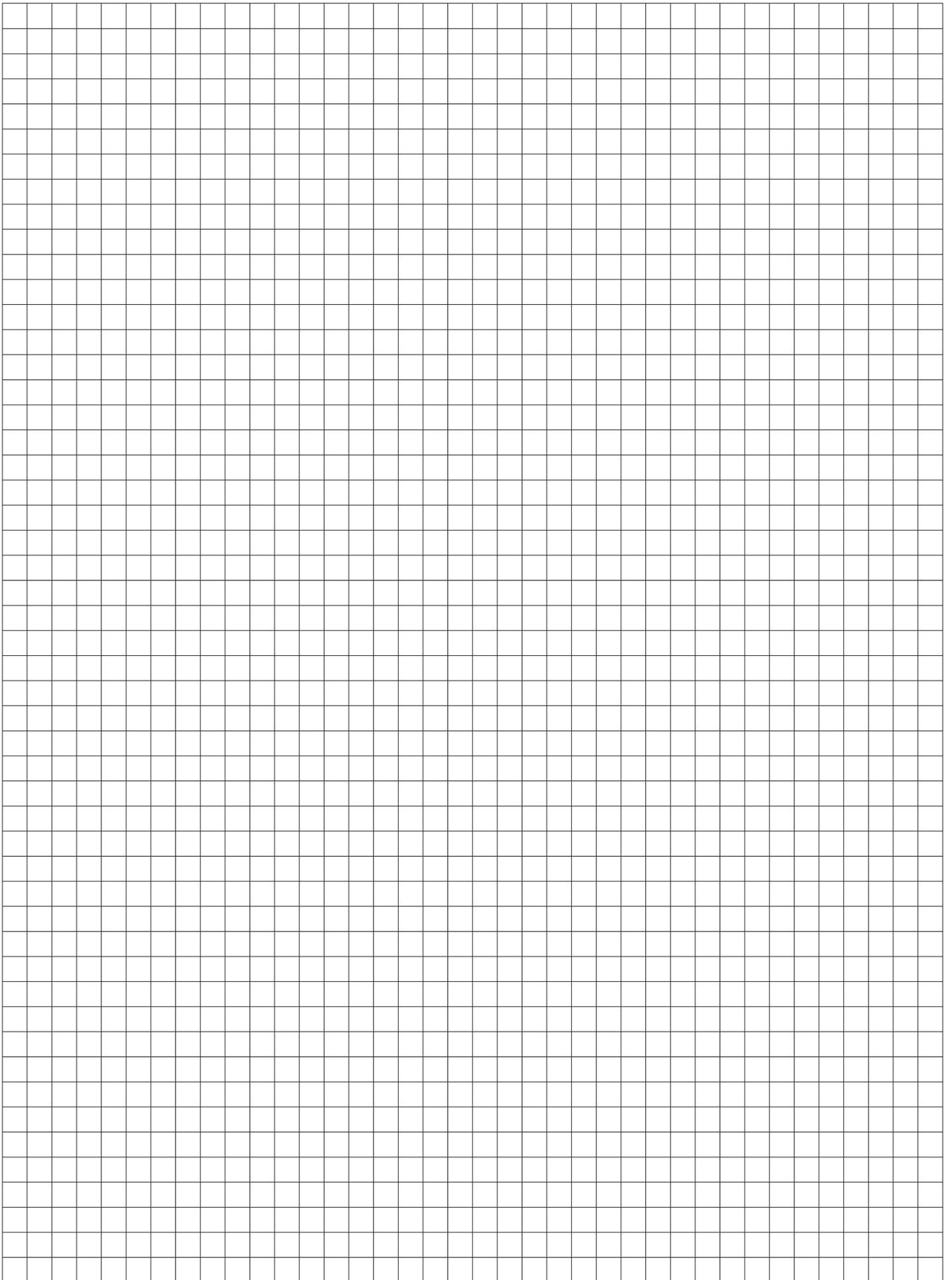
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Centimeters





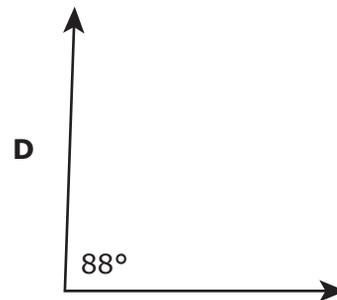
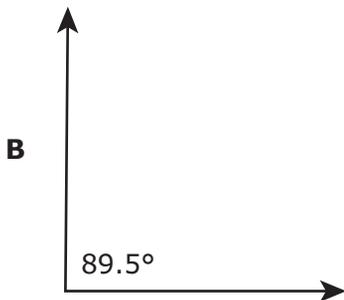
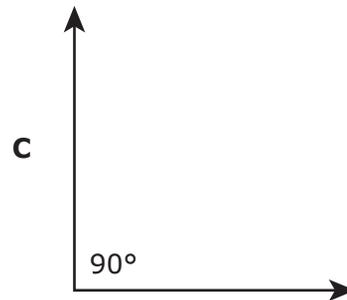
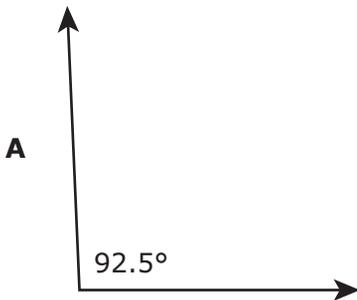
MATHEMATICS

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 Bert drew an angle that has the characteristics listed below.
- It has a measure greater than 88.5° .
 - It is an obtuse angle.

Which of the following could be the angle Bert drew?



- 2** Which situation is best represented by the integer -14 ?
- F** A grocery store clerk helps 14 times as many customers as another clerk.
 - G** A coach divides the players on his team into 14 equal groups.
 - H** A mail carrier delivers mail to 14 additional houses not on his normal mail route.
 - J** A carpenter shortens the length of a board by 14 inches.

3 Felix is reading the sign below in order to decide when to go to a violin lesson.



The list below shows some of the possible outcomes of 1 day and 1 time to have a violin lesson.

Monday	Wednesday	Tuesday
Morning	Afternoon	Evening

Which list shows all the other possible outcomes of 1 day and 1 time to have a lesson?

A

Monday	Tuesday	Wednesday
Morning	Afternoon	Evening

C

Wednesday	Monday	Thursday
Morning	Afternoon	Evening

B

Wednesday	Thursday
Morning	Evening

D

Wednesday	Thursday
Morning	Afternoon

- 4 There are 176 slices of bread in 8 loaves. If there are the same number of slices in each loaf, how many slices of bread are in 5 loaves?
- F 110
G 173
H 100
J 163
-

- 5 Xavier has a group of rectangular prisms. Each rectangular prism has a volume of 128 cubic centimeters and a height of 2 centimeters. The table shows the relationship between each prism's length, l , and width, w .

Rectangular Prisms

Width, w (centimeters)	Length, l (centimeters)
1	64
2	32
4	16
8	8

Which equation can Xavier use to find the length, l , in centimeters of a prism that has a width of w centimeters?

- A $\frac{128}{2} = l + w$
B $2 \times 128 = l \times w$
C $\frac{128}{2} = l \times w$
D $2 + 128 = l \times w$

- 6 Gracie borrowed \$92 from her father. She has already paid back \$12. She will pay him another \$16 on Monday and then make equal payments of \$4 until the rest of the money has been repaid. The expression below can be used to find the number of equal payments Gracie will need to make in order to repay the money.

$$\frac{92 - (12 + 16)}{4}$$

How many equal payments will Gracie need to make in order to repay the money?

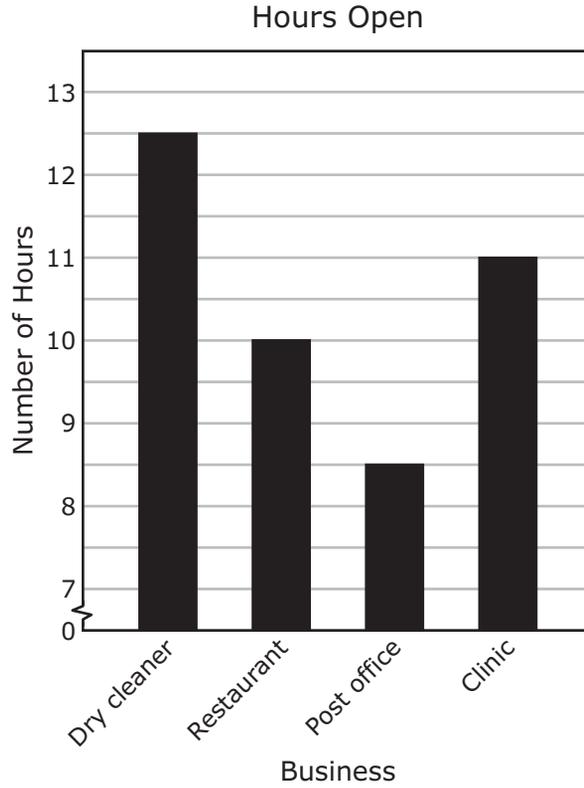
F 24

G 16

H 5

J 27

7 The graph shows the number of hours that four businesses were open on Friday.



Based on the information in the graph, which statement could be true?

- A The dry cleaner opened at 6:15 A.M. and closed at 6:15 P.M.
- B The restaurant opened at 11:45 A.M. and closed at 9:30 P.M.
- C The post office opened at 9:00 A.M. and closed at 6:00 P.M.
- D The clinic opened at 7:30 A.M. and closed at 6:30 P.M.

8 Yasir drilled a circular hole that had a diameter of 8 millimeters. Which equation can be used to find r , the radius of the circular hole in millimeters?

F $8 = \frac{r}{2}$

G $8 = 2 \times r$

H $8 = \frac{r}{\pi}$

J $8 = 2 \times \pi \times r$

9 On Tuesday morning a school cafeteria served 16 gallons of orange juice during breakfast. How many cups are in 16 gallons?

A 256 cups

B 64 cups

C 2,048 cups

D 128 cups

- 10 The value of g can be determined using the expression $r - \frac{9}{8}$. Which table represents the relationship between the values of g and r ?

F

r	g
$\frac{39}{8}$	$\frac{38}{8}$
$\frac{30}{8}$	$\frac{29}{8}$
$\frac{21}{8}$	$\frac{20}{8}$
$\frac{12}{8}$	$\frac{11}{8}$

H

r	g
3	$4\frac{1}{8}$
$3\frac{1}{8}$	$4\frac{2}{8}$
$3\frac{2}{8}$	$4\frac{3}{8}$
$3\frac{3}{8}$	$4\frac{4}{8}$

G

r	g
8	$6\frac{7}{8}$
$8\frac{1}{8}$	7
$8\frac{2}{8}$	$7\frac{1}{8}$
$8\frac{3}{8}$	$7\frac{2}{8}$

J

r	g
$\frac{39}{8}$	$\frac{40}{8}$
$\frac{30}{8}$	$\frac{31}{8}$
$\frac{21}{8}$	$\frac{22}{8}$
$\frac{12}{8}$	$\frac{13}{8}$

11 Ryan had a whole pizza. He ate $\frac{1}{8}$ of the pizza for lunch and another 25% of the pizza for dinner. What fraction of the pizza has Ryan NOT eaten?

A $\frac{5}{6}$

B $\frac{5}{8}$

C $\frac{1}{4}$

D $\frac{3}{8}$

12 A hummingbird weighed w ounces. One day the hummingbird drank 8 times its weight in water and ate half its weight in food. Which equation can be used to find t , the combined weight of the water and the food, in ounces, that the hummingbird had on this day?

F $t = w + 8 - \frac{1}{2}$

G $t = w + 8 + \frac{1}{2}$

H $t = 8w + \frac{w}{2}$

J $t = 2w + \frac{w}{8}$

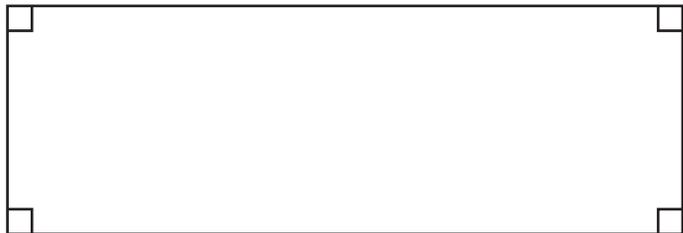
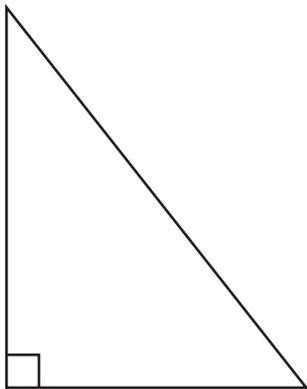
- 13** Ms. Porter had eight parties at her house last year. The number of guests at each party is shown below.

15, 19, 9, 27, 21, 21, 10, 14

What is the median number of guests at these parties?

- A** 17
- B** 24
- C** 18
- D** 21

-
- 14** Use the ruler provided to measure the two figures below to the nearest centimeter.

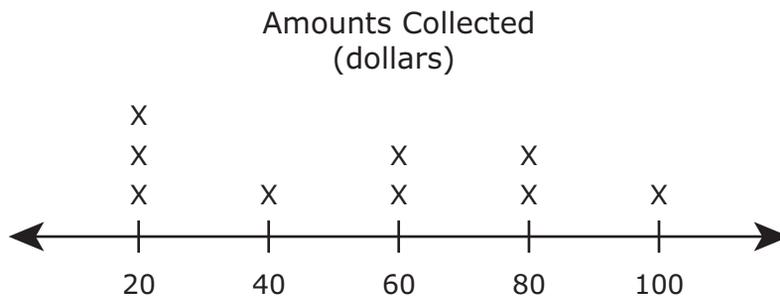


Which of the following is closest to the combined areas of these figures in square centimeters?

- F** 31 cm^2
- G** 55 cm^2
- H** 37 cm^2
- J** 47 cm^2

- 15** Mrs. Stephens drove through a total of 36 intersections on her way home from work last week. At 4 of every 16 intersections, Mrs. Stephens had to stop for a red light before she could drive through. At how many intersections did Mrs. Stephens have to stop for a red light?
- A** 3
 - B** 9
 - C** 24
 - D** 12

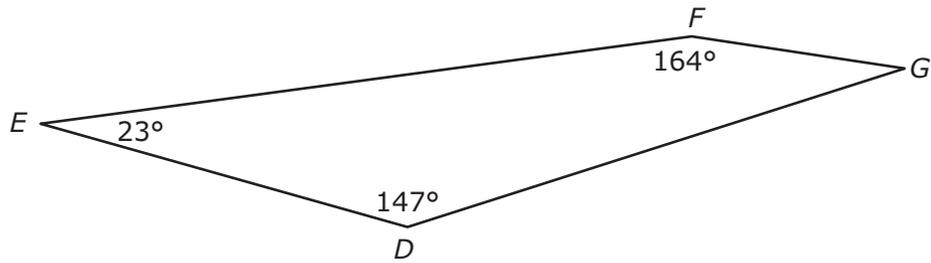
-
- 16** The 10 members of an art club collected a total of \$520 during a fund-raiser. The amounts collected by 9 of the members are represented on the line plot below.



How many dollars were collected by the tenth member of the art club?

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

17 What is the measure of $\angle G$ in the polygon below?



- A 16°
- B 23°
- C 33°
- D 26°

18 A sea turtle made 460 dives in 12 hours. At this rate, how many dives did the sea turtle make in 3 hours?

- F 153
- G 115
- H 120
- J 165

- 19** A cylindrical barrel has a diameter of 19.875 inches. Which of the following is the best estimate of the circumference of the barrel in feet?
- A** 10 ft
 - B** 2 ft
 - C** 5 ft
 - D** 1 ft

- 20** Jackson has 180 pieces of gum. He wants to share the pieces of gum equally with his friends. Which table shows the relationship between n , the number of people who receive gum, and p , the number of pieces of gum each person receives?

Gum

F

Number of People, n	Number of Pieces, p
2	90
4	45
6	30
12	15

Gum

H

Number of People, n	Number of Pieces, p
2	360
4	720
6	1,080
12	2,160

Gum

G

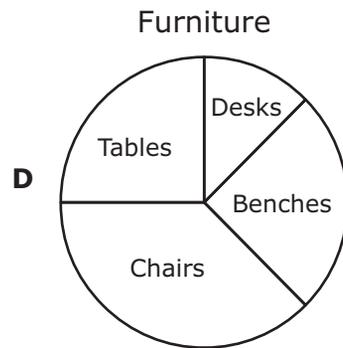
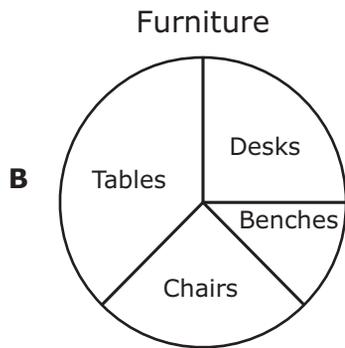
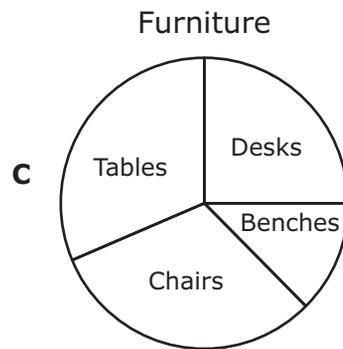
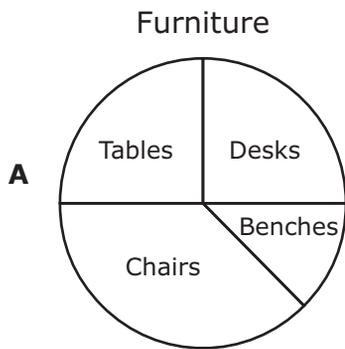
Number of People, n	Number of Pieces, p
10	170
20	160
30	150
40	140

Gum

J

Number of People, n	Number of Pieces, p
10	18
20	16
30	14
40	12

- 21** There are 80 pieces of furniture for sale at a store. Of these pieces of furniture, 20 are desks and 10 are benches. The rest are chairs and tables. The ratio of the number of chairs to the number of tables is 3 to 2. Which circle graph best represents the pieces of furniture for sale at the store?



22 An electric eel has a length of 1.84 meters. What fraction is equivalent to the length of this electric eel in meters?

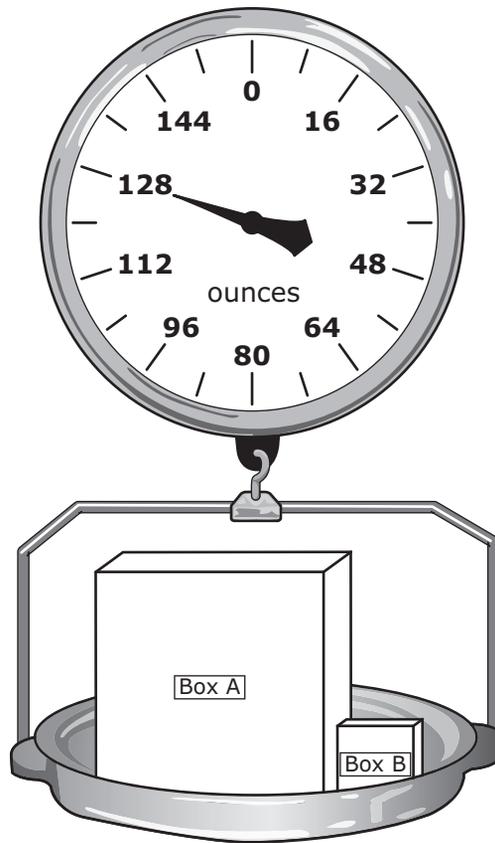
F $1\frac{84}{10}$ m

G $\frac{92}{500}$ m

H $1\frac{21}{25}$ m

J Not here

23 Rob weighed 2 boxes. The combined weight of the boxes is shown on the scale below.



The ratio of the weight of Box A to the weight of Box B is 3:1. Which of the following is closest to the weight of Box A?

- A 126 oz
- B 42 oz
- C 32 oz
- D 96 oz

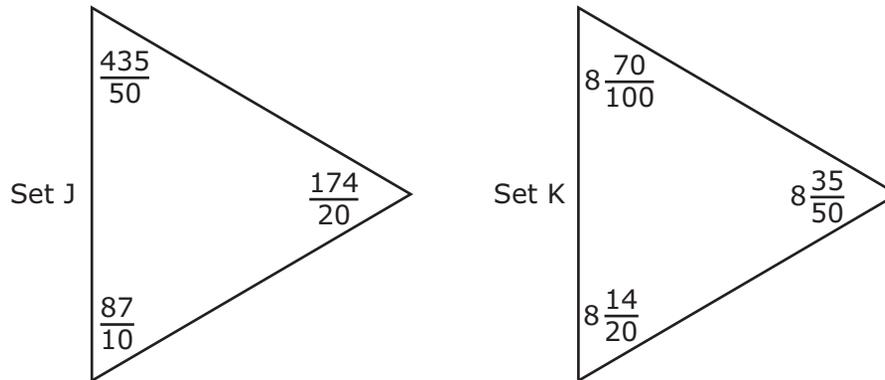
- 24** The air temperature in Mrs. Stokes's classroom was 90°F at 7:00 A.M. She turned on the air conditioner, and the air temperature decreased 2°F every 10 minutes for the next hour. By 8:30 A.M., the air temperature had decreased another 4°F . The expression below can be used to determine the air temperature in Mrs. Stokes's classroom at 8:30 A.M.

$$90 - 2(60 \div 10) - 4$$

What was the air temperature in Mrs. Stokes's classroom at 8:30 A.M.?

- F** 74°F
- G** 70°F
- H** 86°F
- J** 82°F

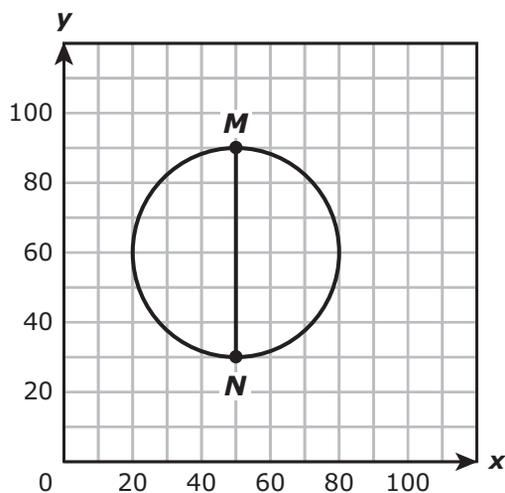
25 Two sets of numbers are shown below.



Which statement is true?

- A The number 8.7 is equivalent to each number in Set K but not each number in Set J.
- B The number 8.7 is equivalent to each number in Set J and Set K.
- C The number 8.070 is equivalent to each number in Set K but not each number in Set J.
- D The number 8.070 is equivalent to each number in Set J and Set K.

- 26 Line segment NM passes through the center of the circle shown on the coordinate grid below.



Which equation can be used to find C , the circumference of the circle in units?

F $C = \pi \cdot 60$

G $C = 2 \cdot \pi \cdot 60$

H $C = \frac{120}{2}$

J $C = \frac{60}{2}$

- 27** Lindsey spent $2\frac{1}{3}$ hours in a science lab on Wednesday.
- She spent $\frac{3}{4}$ hour preparing materials for an experiment.
 - She spent $\frac{5}{6}$ hour conducting the experiment.
 - She spent the rest of the time cleaning her lab station.

Based on this information, which statement is true?

- A** Lindsey spent $1\frac{8}{15}$ hours cleaning her lab station.
- B** Lindsey spent $\frac{2}{3}$ hour preparing materials and conducting the experiment.
- C** Lindsey spent the same amount of time conducting the experiment as she spent cleaning her lab station.
- D** Lindsey spent $\frac{1}{12}$ hour more conducting the experiment than she spent preparing materials for the experiment.

28 Metal and glass make up 100% of a sculpture. If g represents the percentage of the sculpture that is made of glass, which equation can be used to find m , the percentage of the sculpture that is made of metal?

F $g - 100 = m$

G $100 - g = m$

H $\frac{g}{100} = m$

J $100 + g = m$

29 Shen and David each washed a car.

- Shen spent 5 minutes washing his car for every 2 minutes David spent washing his car.
- Each boy started washing his car at 4:00 P.M.
- David finished washing his car at 4:30 P.M.

At what time did Shen finish washing his car?

A 4:12 P.M.

B 4:33 P.M.

C 5:15 P.M.

D Not here

- 30** In triangle ABC , the measure of angle A is 70° . Angle B is congruent to angle C . What is the measure of angle B in degrees?

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

-
- 31** The list shows the amount of each ingredient Charlotte used to make 3 servings of macaroni and cheese.

- 12 ounces of macaroni
- 1 egg
- 2 cups of milk
- $2\frac{1}{2}$ cups of cheddar cheese

Based on this information, which statement is NOT true?

- A** To make 6 servings, Charlotte should use 5 cups of cheddar cheese.
- B** To make 24 servings, Charlotte should use 96 ounces of macaroni.
- C** To make 12 servings, Charlotte should use 4 eggs.
- D** To make 9 servings, Charlotte should use 8 cups of milk.

32 What is the prime factorization of 99?

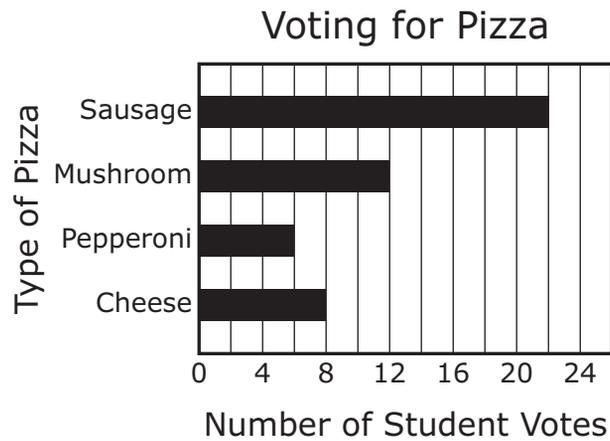
F $3^2 \cdot 11$

G $3^3 \cdot 11$

H $9 \cdot 11$

J Not here

- 33** The graph below shows the number of students in a math club who voted for each of four types of pizza.



Which statement is best supported by the graph?

- A** The number of students who voted for mushroom pizza is 2 times the number of students who voted for sausage pizza.
- B** The number of students who voted for sausage pizza is 13 more than the number of students who voted for cheese pizza.
- C** The number of students who voted for pepperoni pizza is 6 fewer than the number of students who voted for mushroom pizza.
- D** The number of students who voted for cheese pizza is 1 more than the number of students who voted for pepperoni pizza.

- 34** The table shows a relationship between some values of p and v .

p	7.2	7.4	7.6	7.8
v	17.3	17.5	17.7	17.9

Based on the table, which expression represents any value of v in terms of its corresponding value of p ?

- F** $p - \frac{2}{10}$
- G** $p - 10\frac{1}{10}$
- H** $p + \frac{2}{10}$
- J** $p + 10\frac{1}{10}$

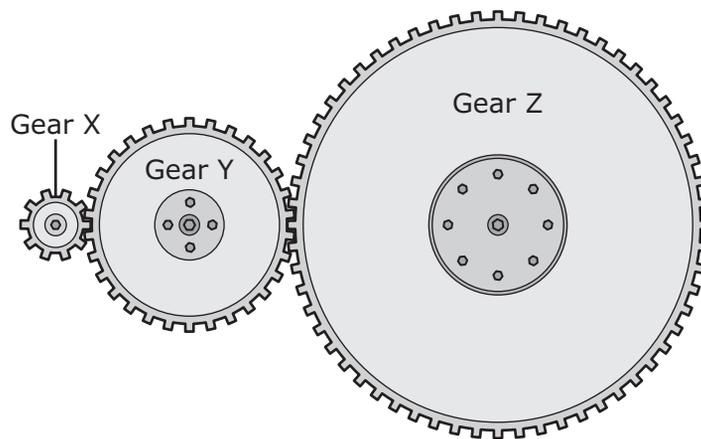
-
- 35** Which number is a common multiple of 4 and 11?

- A** 176
- B** 36
- C** 154
- D** 22

36 At a zoo 5% of the birds are macaws. What decimal is equivalent to 5%?

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

37 Three connected gears are shown below.



- For every complete rotation of Gear Z, Gear Y makes 2 complete rotations.
- For every complete rotation of Gear Y, Gear X makes 3 complete rotations.

Based on this information, what is the number of complete rotations Gear Z will make when Gear X makes 912 complete rotations?

- A** 456
- B** 608
- C** 152
- D** 304

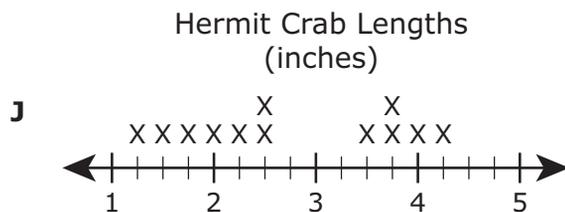
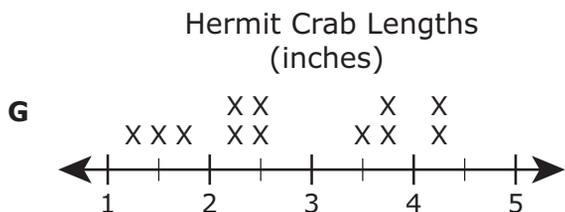
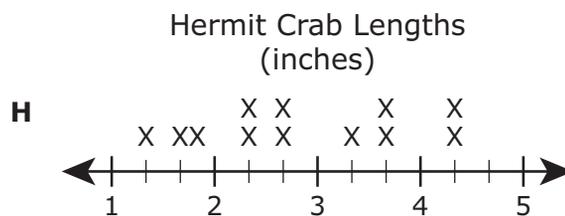
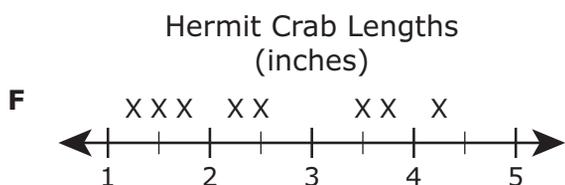
38 The stem and leaf plot shows the length of several hermit crabs.

Hermit Crab Lengths
(inches)

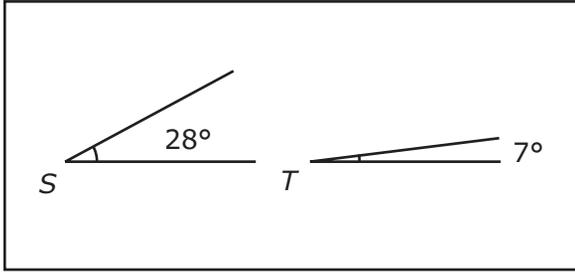
Stem	Leaf
1	25 50 75
2	25 25 50 50
3	50 75 75
4	25 25

KEY	
2	25 = 2.25 inches

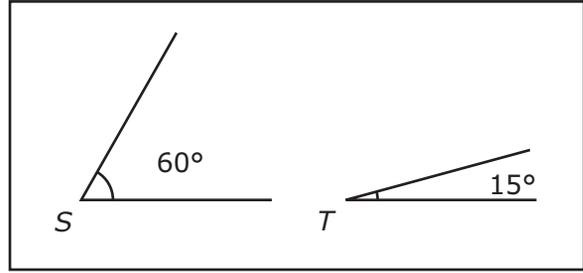
Which line plot best represents the data in the stem and leaf plot?



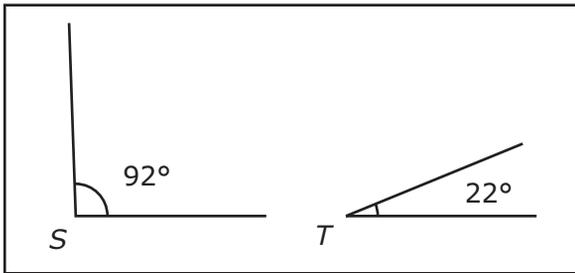
39 Four sets of angles are shown below.



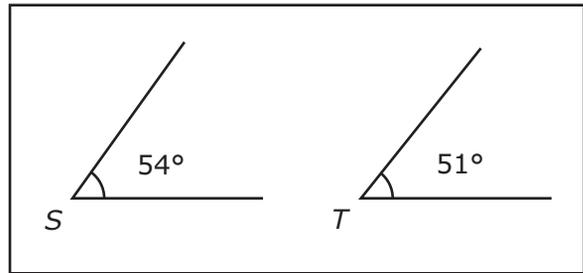
Set I



Set II



Set III



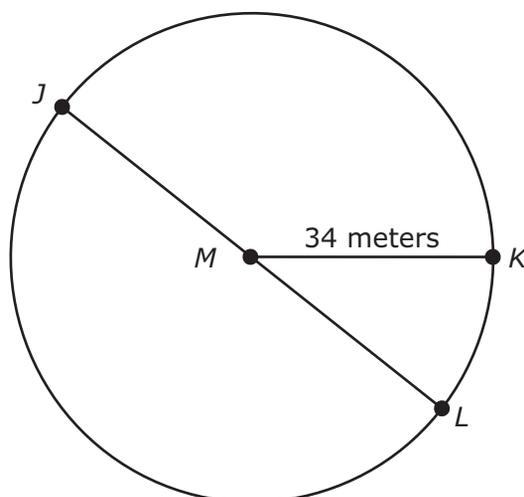
Set IV

In which of the sets is there a ratio of 4:1 between the measure of angle S and the measure of angle T?

- A Set I only
- B Sets I, II, III, and IV
- C Sets I and II only
- D Set IV only

- 40** A farmer has a bale of hay with a mass of 36 kilograms. How many milligrams of hay are in the bale?
- F** 36,000,000 mg
 - G** 36,000 mg
 - H** 3,600,000 mg
 - J** 360,000 mg
-

- 41** The center of the circle below is point M .



Which expression can be used to find the length of \overline{JL} in meters?

- A** $2 \times \pi \times 34$
- B** 2×34
- C** $34 \times \pi$
- D** $34 \div 2$

42 Enrique bought a football and a puzzle at a store.

- He paid \$15.35 for the football.
- He paid a total of \$24.02 for the football and the puzzle.

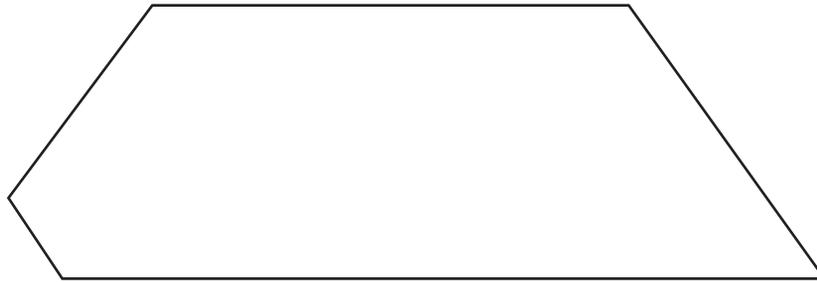
How much did Enrique pay for the puzzle, in dollars and cents?

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

43 One week a family drank p pints of milk. Which equation can be used to find the number of gallons of milk, g , the family drank that week?

- A** $p = g \div 4$
- B** $p = g \div (4 \times 2)$
- C** $g = p \div 4$
- D** $g = p \div (4 \times 2)$

- 44** The figure below is a scale drawing of a warehouse floor. Use the ruler provided to measure the dimensions of the figure to the nearest $\frac{1}{4}$ inch.

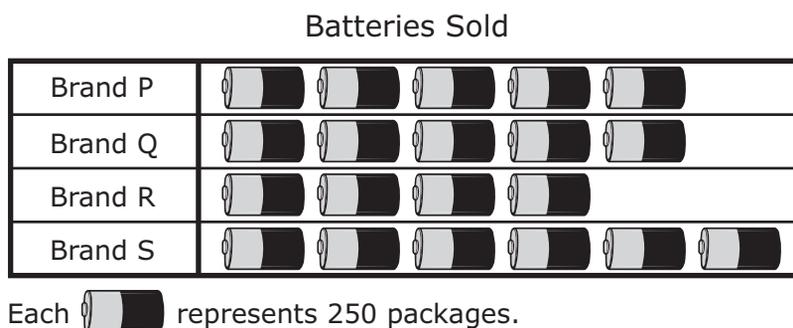


Scale
1 inch : 16 feet

Which of the following is closest to the perimeter of the actual warehouse floor in feet?

- F** 10 feet
- G** 160 feet
- H** 192 feet
- J** 26 feet

- 45 The pictograph below shows the number of packages of different brands of batteries that a store sold on Friday.



Which statement is best supported by the information in the pictograph?

- A The ratio of Brand P batteries to Brand Q batteries is 1:2.
- B The ratio of Brand R batteries to the total number of batteries is 5:1.
- C Of all the packages of batteries sold, 20% were Brand R batteries.
- D Of all the packages of batteries sold, 3% were Brand S batteries.

-
- 46 There are a total of 950 boxes of shoes at a store.

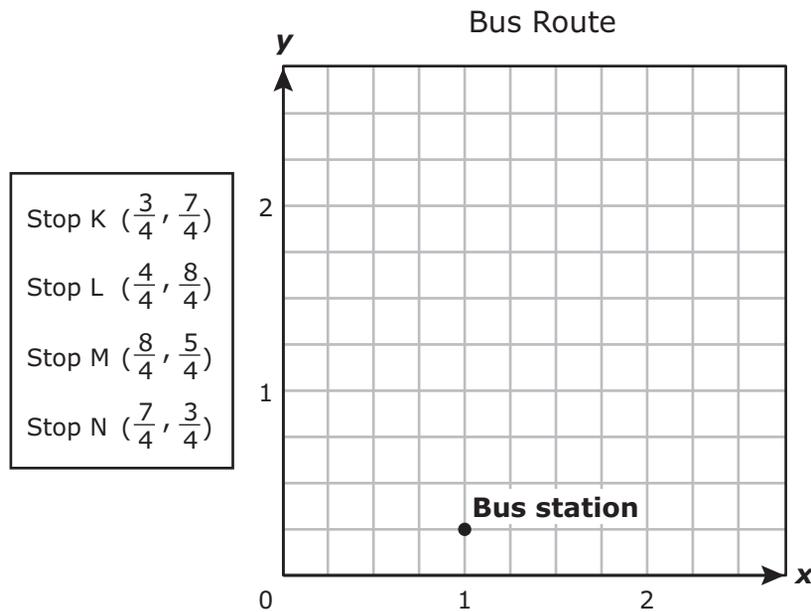
- Half of the boxes contain athletic shoes.
- Another 125 boxes contain dress shoes.
- Of the remaining boxes of shoes, 4 out of 5 boxes contain sandals.

Based on the expression below, how many boxes at the store contain sandals?

$$4(950 \div 2 - 125) \div 5$$

- F 280
- G 355
- H 450
- J 255

- 47 The ordered pairs below represent the location of 4 stops on a bus route.



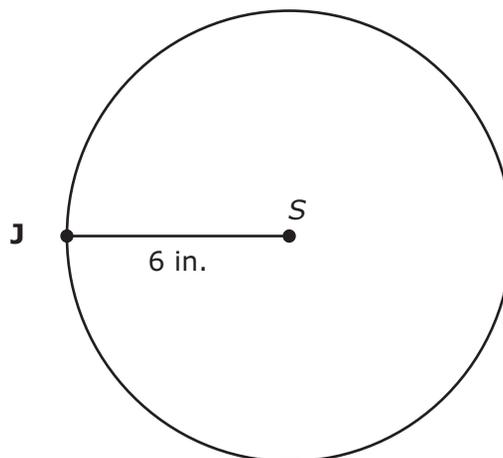
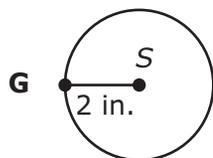
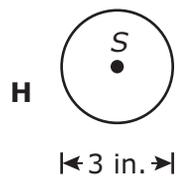
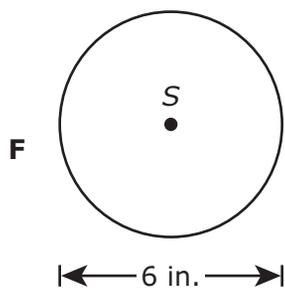
The location of the bus station is shown on the coordinate grid. Which stop is closest to the bus station?

- A Stop K
 - B Stop L
 - C Stop M
 - D Stop N
-
- 48 Freddie used 28 nails to make birdhouses. He used the same number of nails for each birdhouse. Which of the following CANNOT be the number of birdhouses Freddie made?

- F 4
- G 6
- H 7
- J 2

- 49 Quinlan pays \$178 every 4 months for his guitar lessons. At this rate, how much will Quinlan pay for 3 years of guitar lessons?
- A \$534
B \$2,136
C \$1,602
D \$712

-
- 50 Raja drew a circle and labeled the center S . He used the expression $12 \cdot \pi$ to find the circumference of the circle in inches. Which of the following could be the circle Raja drew?



51 Which equation is true?

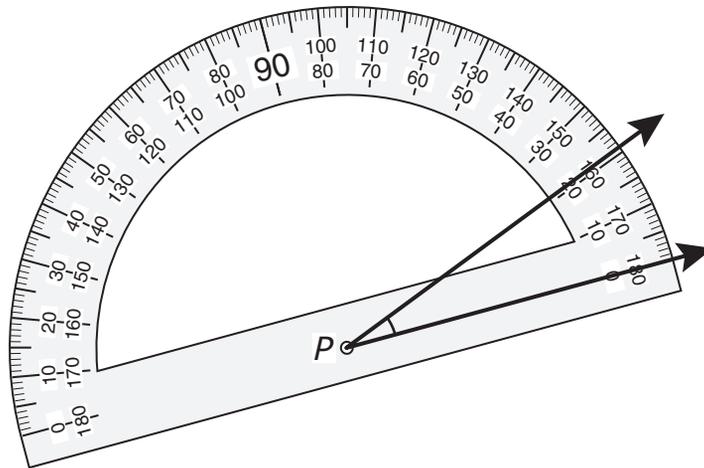
A $0.9 = \frac{90}{100}$

B $\frac{12}{10} = 1.02$

C $1.9 = \frac{9}{100}$

D $\frac{18}{9} = 0.2$

52 In the diagram below, what is the measure of angle P to the nearest degree?



F 21°

G 159°

H 39°

J 161°

BE SURE YOU HAVE RECORDED ALL OF YOUR ANSWERS
ON THE ANSWER DOCUMENT.



**STAAR
GRADE 6
Mathematics
April 2014**