



State of Texas Assessments of Academic Readiness

GRADE 7

Mathematics

Practice Assessment

STAAR GRADE 7 MATHEMATICS REFERENCE MATERIALS



LINEAR EQUATIONS

Slope-intercept form

$$y = mx + b$$

Constant of proportionality

$$k = \frac{y}{x}$$

CIRCUMFERENCE

Circle

$$C = 2\pi r$$

or

$$C = \pi d$$

AREA

Triangle

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

Rectangle or parallelogram

$$A = bh$$

Trapezoid

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

Circle

$$A = \pi r^2$$

VOLUME

Prism

$$V = Bh$$

Pyramid

$$V = \frac{1}{3}Bh$$

ADDITIONAL INFORMATION

Pi

$$\pi \approx 3.14$$

or

$$\pi \approx \frac{22}{7}$$

Distance

$$d = rt$$

Simple interest

$$I = Prt$$

Compound interest

$$A = P(1 + r)^t$$

Inches
0

1

2

3

4

5

6

7

8

STAAR GRADE 7 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)

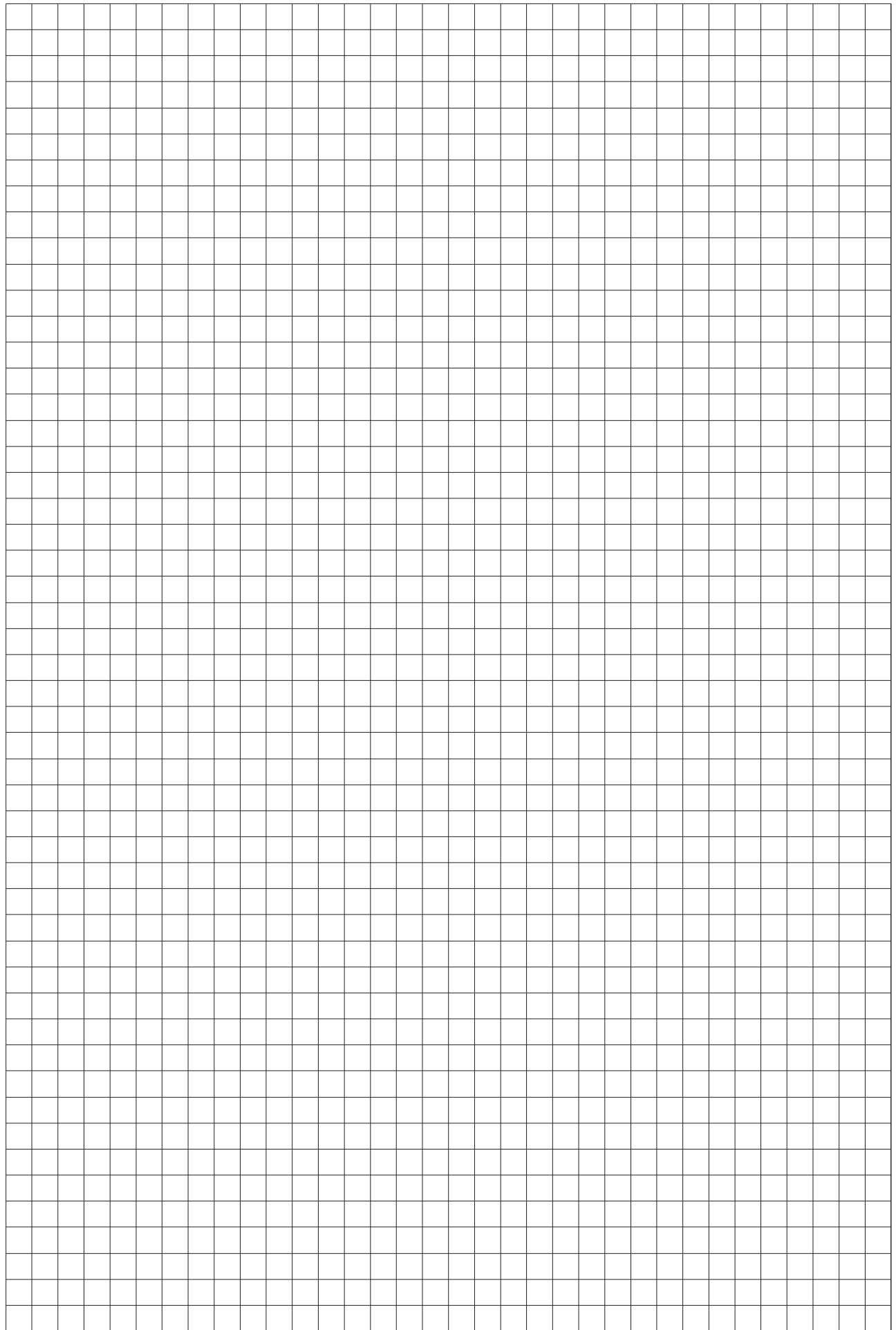
Metric

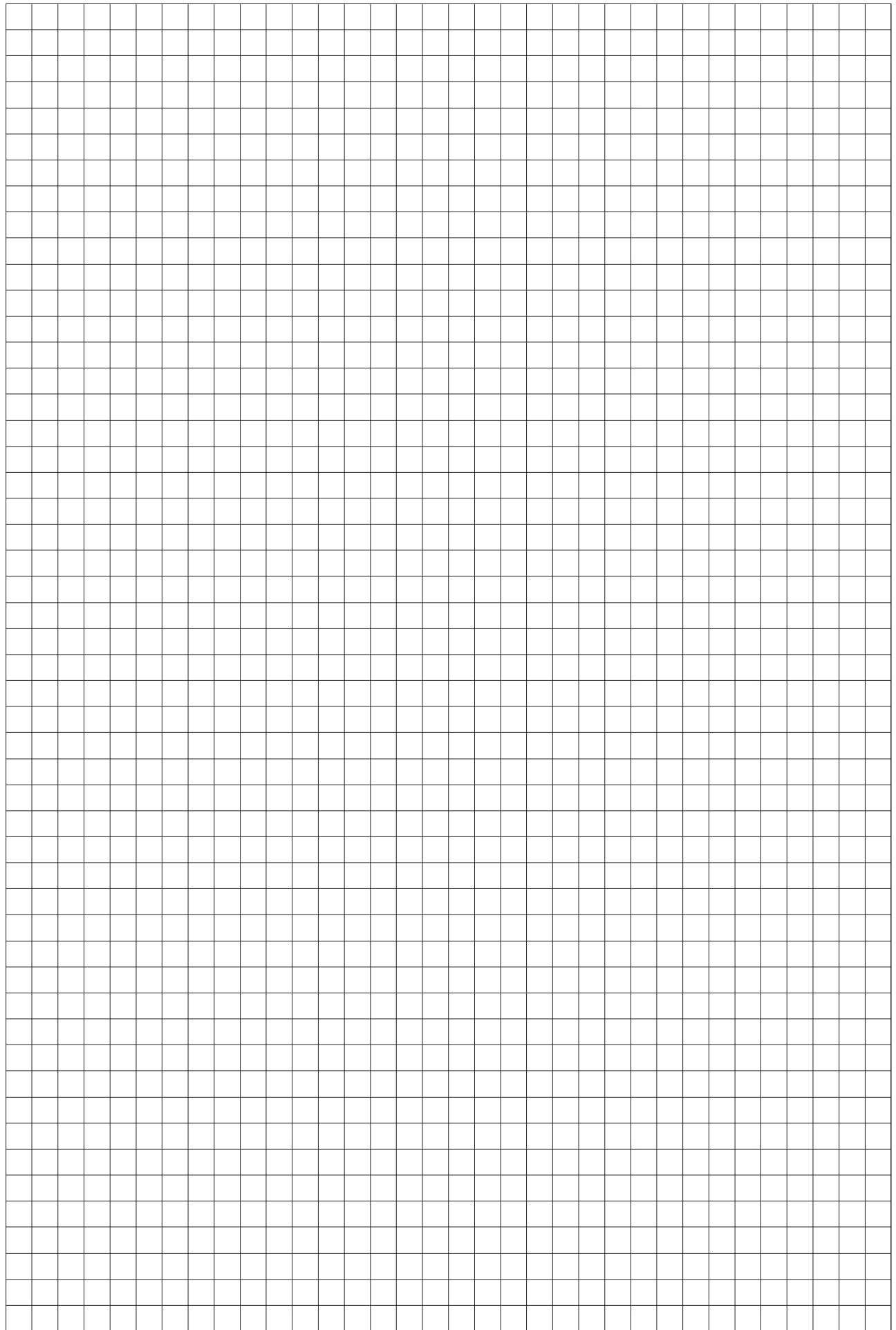
1 kilogram (kg) = 1,000 grams (g)

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

20
19
18
17
16
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Centimeters





MATHEMATICS

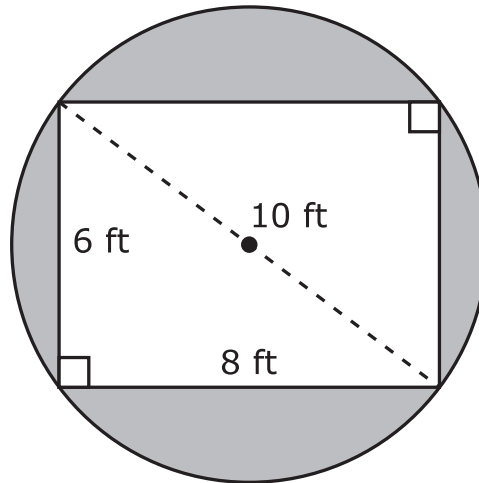
DIRECTIONS

Read each question carefully. Choose the best answer to each question. For open-response questions, determine the best answer to the question.

1 Which inequality is true when $x = 4$?

- (A) $3 - 2x < -5$
- (B) $1 - 4x > -14$
- (C) $-5 - 3x < 10$
- (D) $-4 + 5x > 18$

- 2 The figure shows a rectangle inscribed in a circle that has a diameter of 10 feet.



Which measurement is closest to the area of the shaded portion of the figure in square feet?

- (A) 314 ft^2
- (B) 78.5 ft^2
- (C) 266 ft^2
- (D) 30.5 ft^2

- 3** A triangle has angle measures of $(x + 3)^\circ$, $(5x - 8)^\circ$, and $(2x + 1)^\circ$.
What is the measure of the smallest angle of the triangle in degrees?
- (A) 47°
 - (B) 26°
 - (C) 107°
 - (D) 23°
-

- 4** A clothing store has these items on sale:

- 5 hats
- 10 jackets
- 15 pants
- 20 sweaters

A customer randomly selects one of the sale items. Complete each statement.

Select the correct answer for each box. Each answer may be used more than once. Not all answers will be used.

A 0.10 **B** 0.20 **C** 0.40 **D** 0.50 **E** 0.70 **F** 0.80

The probability that the customer will randomly select a sweater or a hat is .

The probability that the customer will randomly select a jacket is .

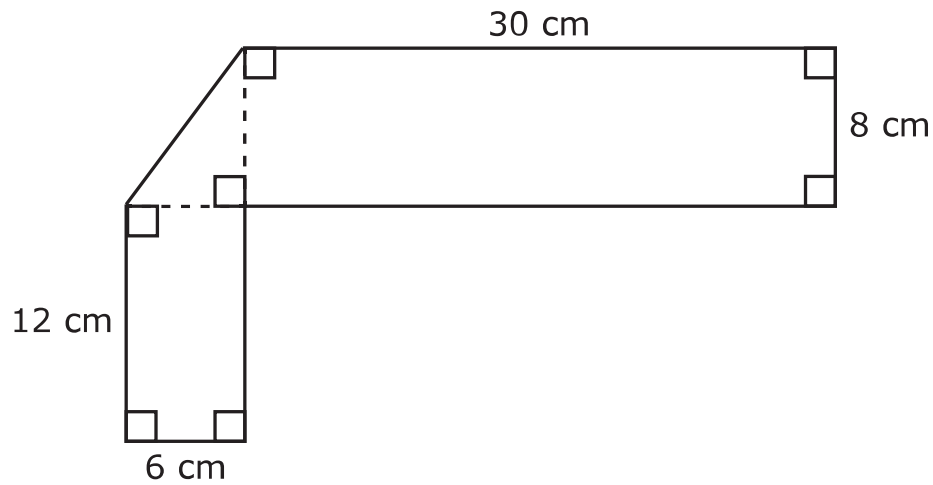
- 5 An animal rescue group recorded the number of adoptions that occurred each week for three weeks:
- There were x adoptions during the first week.
 - There were 10 more adoptions during the second week than during the first week.
 - There were twice as many adoptions during the third week as during the first week.

There were a total of at least 50 adoptions from the animal rescue group during the three weeks.

Which inequality represents all possible values of x , the number of adoptions from the animal rescue group during the first week?

- (A) $4x + 10 \leq 50$
- (B) $4x + 10 \geq 50$
- (C) $3x + 10 \leq 50$
- (D) $3x + 10 \geq 50$

- 6 A composite figure is made up of two rectangles and a right triangle. The figure and its dimensions in centimeters are shown in the diagram.



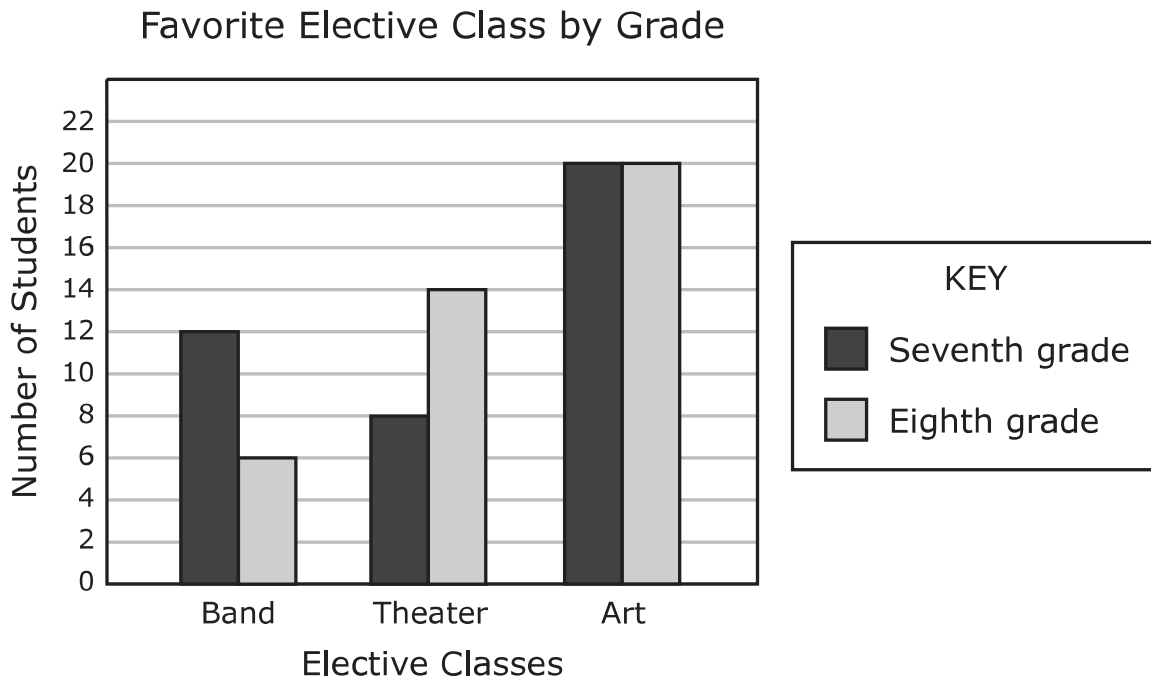
What is the area of the composite figure in square centimeters?

- (A) 336 cm^2
- (B) 360 cm^2
- (C) 312 cm^2
- (D) 344 cm^2

7 What is the solution to the equation $0.5x - 1.25 = 3.5$?

Record your answer in the space provided.

- 8 Mr. Kumar conducted a random survey asking 80 students which elective class they prefer. The results are shown in the bar graph.



Which inference about the data is best supported by this information?

- (A) More eighth-grade students prefer art as an elective than prefer band or theater.
- (B) Fewer seventh-grade students prefer band or theater as an elective than prefer art.
- (C) Half as many seventh-grade students as eighth-grade students prefer theater as an elective.
- (D) Twice as many seventh-grade students as eighth-grade students prefer band as an elective.

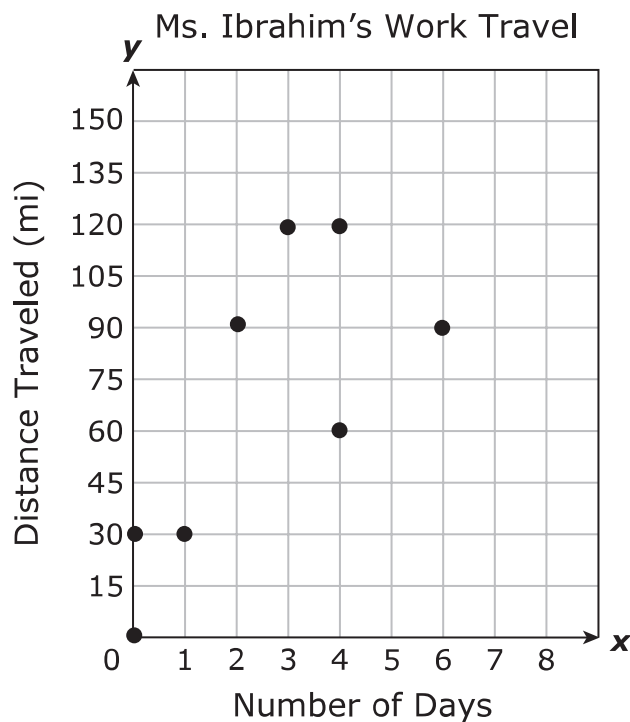
- 9 A pyramid has a square base with a side length of 7 centimeters. If the volume of the pyramid is 196 cubic centimeters, what is its height in centimeters?

- (A) 4 cm
- (B) 12 cm
- (C) 8 cm
- (D) 21 cm

-
- 10 Ms. Ibrahim traveled a total of 150 miles for work in 5 days. She traveled the same distance for work each day.

Which three points lie on the line that represents the total distance in miles, y , she traveled for work in x days?

Circle **THREE** correct answers.



- 11** A store manager surveyed a random sample of customers to determine their favorite type of nut. The results of the survey are shown in the table.

Survey Results

Type of Nuts	Frequency
Cashews	12
Almonds	24
Pecans	6
Pistachios	8

Based on the results in the table, which statement about the favorite type of nuts of a randomly selected customer is true?

- (A) The customer is $\frac{1}{4}$ as likely to prefer pecans as to prefer almonds.
- (B) The customer is 4 times as likely to prefer cashews as to prefer pistachios.
- (C) The customer is more likely to prefer cashews or pecans than to prefer almonds.
- (D) The customer is less likely to prefer pecans or pistachios than to prefer cashews.

- 12** The circumference of a circular disk is approximately 67.23 centimeters. The diameter of the disk is 21.4 centimeters.

Which ratio best represents the value of π ?

(A) $\frac{21.4}{67.23}$

(B) $\frac{67.23}{21.4}$

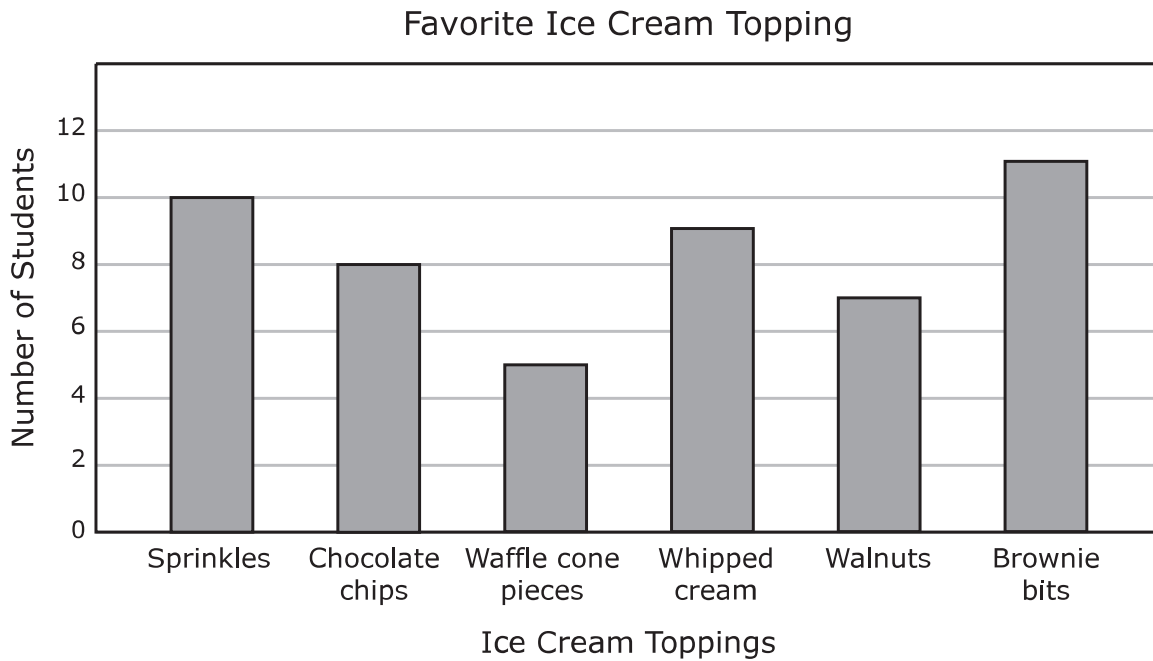
(C) $\frac{10.7}{67.23}$

(D) $\frac{67.23}{10.7}$

-
- 13** What is the value of $-8\left(1\frac{1}{2}\right) + 2\left(2\frac{1}{4}\right)$?

Record your answer in the space provided.

- 14** The bar graph shows the results of a survey of 50 seventh graders about their favorite ice cream topping.



Based on the graph, what percentage of seventh graders prefer sprinkles or chocolate chips as an ice cream topping?

- (A) 20%
- (B) 64%
- (C) 18%
- (D) 36%

- 15** A snack mix recipe calls for 10 cups of cereal and 4 cups of pretzel sticks.

What is the constant of proportionality that relates the number of cups of cereal, y , to the number of cups of pretzel sticks, x ?

- (A) 0.4
 - (B) 14
 - (C) 2.5
 - (D) 6
-

- 16** Mr. Russo prepared a monthly budget. The table shows the percentage of income that Mr. Russo budgets for each expense.

Monthly Budget

Expense	Amount
Housing	30%
Utilities	10%
Food	15%
Transportation	10%
Other	35%

If Mr. Russo spends \$450 on food, what is his total monthly budget?

- (A) \$3,000
- (B) \$6,750
- (C) \$2,550
- (D) \$4,500

- 17** A jar contains red, green, and blue marbles. The table shows the percentage of each color of marble in the jar.

Jar of Marbles

Color	Percentage of Marbles
Red	10%
Green	30%
Blue	60%

The jar contains 90 blue marbles. Which statements are true?

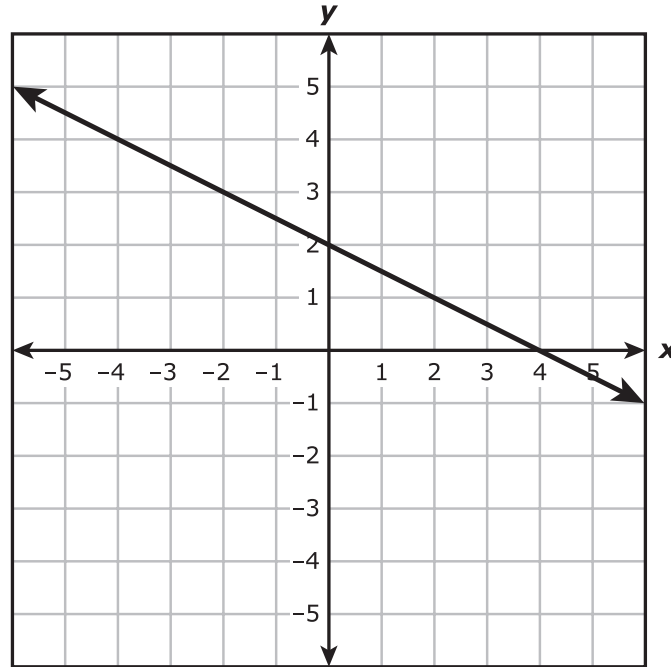
Select **TWO** correct answers.

- There are 126 marbles in the jar.
- There are 150 marbles in the jar.
- There are 19 red marbles and 57 green marbles in the jar.
- There are 9 red marbles and 27 green marbles in the jar.
- There are 15 red marbles and 45 green marbles in the jar.

-
- 18** The bottom of a circular pan has a diameter of 14 inches. Which measurement is closest to the area of the bottom of the pan in square inches?

- (A) 87.92 in.²
- (B) 153.86 in.²
- (C) 43.96 in.²
- (D) 615.44 in.²

19 The graph shows a linear relationship between x and y .



Which equation best represents this linear relationship?

- (A) $y = -\frac{1}{2}x + 4$
- (B) $y = -2x + 4$
- (C) $y = -\frac{1}{2}x + 2$
- (D) $y = -2x + 2$

- 20** A child at a day care can choose one type of writing tool and one type of paper for an art project. The chart shows the types of writing tools and paper that are available.

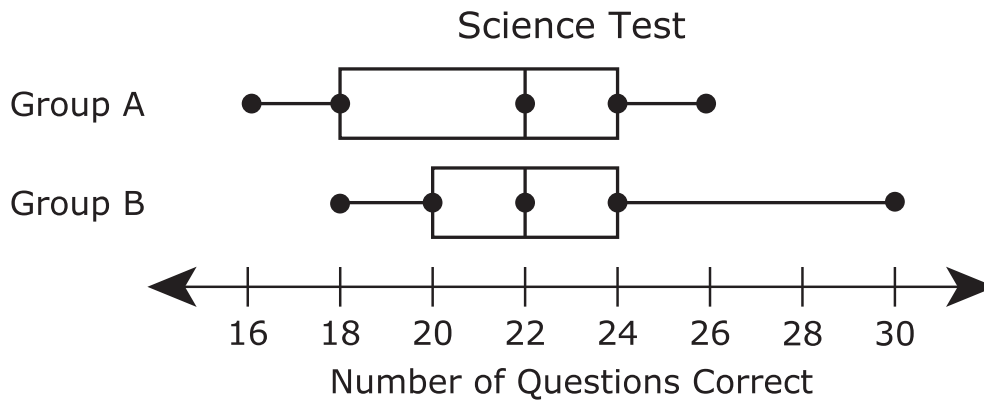
Art Project

Type of Writing Tool	Type of Paper
Crayon	Construction
Marker	Newsprint
Pencil	

Which list shows all the combinations of one type of writing tool and one type of paper that can be used for the art project?

- (A) Crayon, construction
Crayon, newsprint
- (B) Crayon, newsprint
Marker, newsprint
Pencil, newsprint
- (C) Crayon, construction
Crayon, newsprint
Marker, construction
Marker, newsprint
- (D) Crayon, construction
Crayon, newsprint
Marker, construction
Marker, newsprint
Pencil, construction
Pencil, newsprint

- 21** Two groups of students completed a science test. The box plots show the numbers of questions the students in each group answered correctly on the test.



Determine whether each measure for Group A is equal to, greater than, or less than the measure for Group B.

Select **ONE** correct answer in each row.

Measure	Group A = Group B	Group A > Group B	Group A < Group B
Interquartile range	Ⓐ	Ⓑ	Ⓒ
Range	Ⓐ	Ⓑ	Ⓒ
Median	Ⓐ	Ⓑ	Ⓒ

- 22** A six-sided number cube numbered 1 through 6 was tossed 150 times. The results are shown in the table.

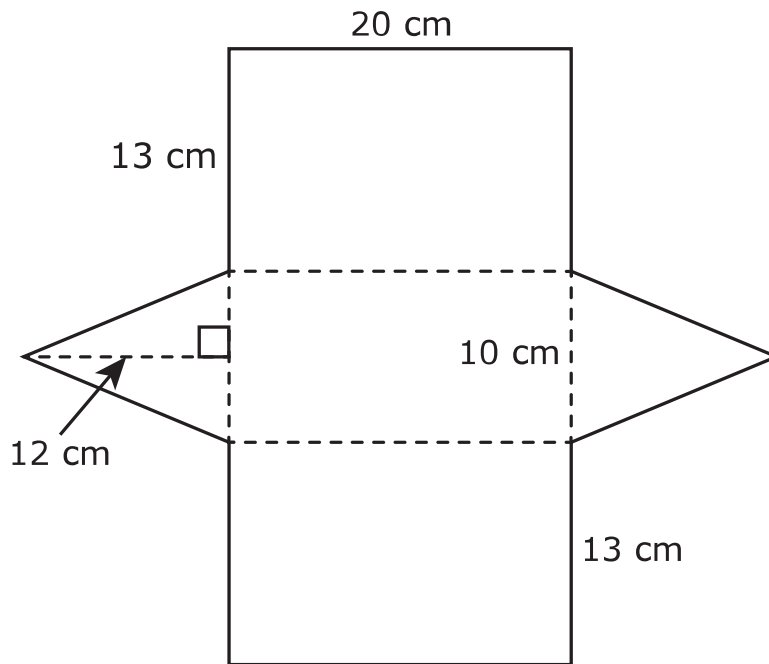
Number Cube
Results

Number	Frequency
1	16
2	28
3	24
4	15
5	37
6	30

What is the experimental probability that the next toss will result in an odd number?

- (A) $\frac{68}{150}$
- (B) $\frac{75}{150}$
- (C) $\frac{77}{150}$
- (D) $\frac{73}{150}$

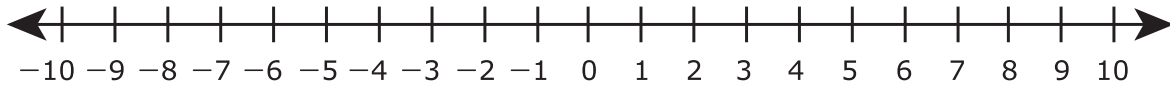
23 The net of a triangular prism is shown with dimensions in centimeters.



What is the total surface area of the triangular prism in square centimeters?

- (A) 900 cm^2
- (B) 850 cm^2
- (C) 720 cm^2
- (D) 840 cm^2

- 24 Complete the statements about the ray that represents the solution to $12 - 4x < -20$ on a number line.



Select **ONE** correct answer in each box to complete each sentence.

The endpoint of the ray should be (A) a solid circle placed

(B) an open

at (A) -8

(B) -2

at

(C) 2

(D) 8

The ray should point to the (A) left

(B) right

- 25** A summer camp hosts 500 campers. A random survey of 50 campers was conducted to determine which activity was their favorite.

The table shows the number of campers who chose each activity.

Summer Camp Activities

Activity	Number of Campers
Swimming	16
Rock climbing	8
Hiking	12
Kayaking	14

Based on the survey results, which of these is the best prediction about the favorite activities of the 500 campers?

- (A) There are 22 more campers who prefer kayaking than prefer rock climbing.
- (B) There are 8 more campers who prefer swimming than prefer rock climbing.
- (C) There are 20 more campers who prefer hiking than prefer kayaking.
- (D) There are 40 more campers who prefer swimming than prefer hiking.

26 What is the value of $2\frac{1}{4} - 3\frac{2}{5}$?

(A) $-1\frac{3}{20}$

(B) $-\frac{2}{5}$

(C) $-5\frac{13}{20}$

(D) $-\frac{7}{9}$

27 Maggie wants to plant flowers in a rectangular garden in her backyard:

- The length of the garden is 60 yards.
- The width of the garden is 7 feet.
- There are 3 feet in 1 yard.
- There are approximately 3.28 feet in 1 meter.

What are the approximate length and the width of Maggie's garden in meters?

Select **ONE** correct answer in each box to complete each sentence.

The length of Maggie's garden is approximately

(A) 6.1

(B) 18.3

(C) 54.9

meters.

The width of Maggie's garden is approximately

(A) 2.1

(B) 10.3

(C) 23.0

meters.

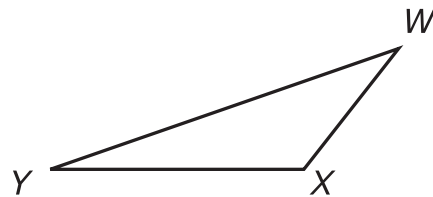
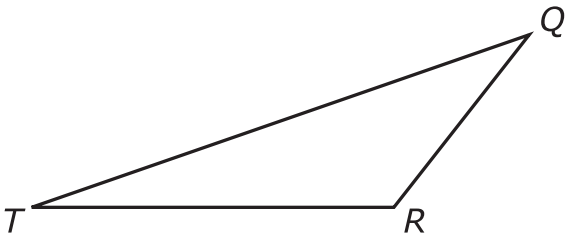
28 Ms. Avery sold tomatoes at a local farmers' market over a two-week period.

- She sold 4.8 pounds of tomatoes on each of 3 days during the first week.
- She sold 5.6 pounds of tomatoes on each of 4 days during the second week.

How many pounds of tomatoes did Ms. Avery sell during the two-week period?

- (A) 72.8 lb
(B) 10.4 lb
(C) 36.8 lb
(D) 17.4 lb

29 Triangle QRT is similar to triangle WXY .



Which statement about the triangles must be true?

- (A) Angle R is congruent to angle X .
(B) Angle T is congruent to angle W .
(C) $\frac{QR}{RT} = \frac{XY}{WX}$
(D) $\frac{RT}{YW} = \frac{TQ}{WX}$

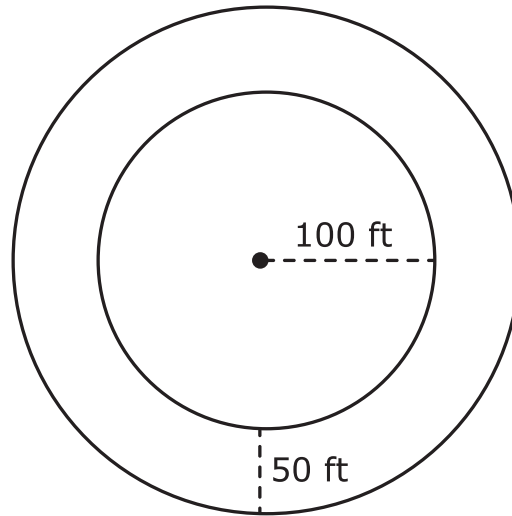
30 Silas wrote an equation to model the total cost of his taxi ride.

- The base fare for the taxi ride is \$2.55.
- The taxi service charges \$1.75 per mile.

Which equation models Silas's total cost in dollars, y , for a taxi ride that is x miles long?

- (A) $y = 2.55x - 1.75$
- (B) $y = 2.55x + 1.75$
- (C) $y = 1.75x - 2.55$
- (D) $y = 1.75x + 2.55$

- 31** Two circles with the same center are shown with measurements in feet.



What is the circumference of each circle in terms of π ?

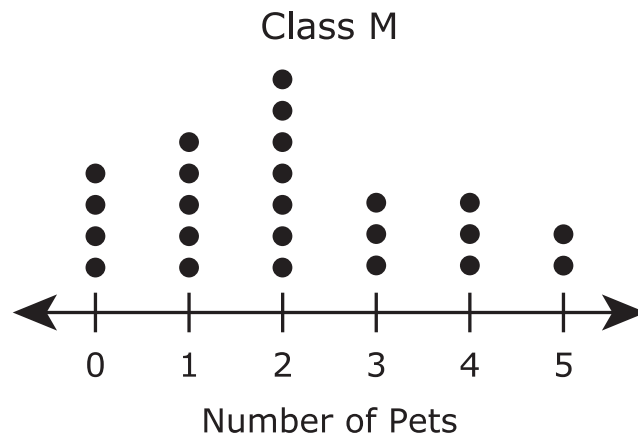
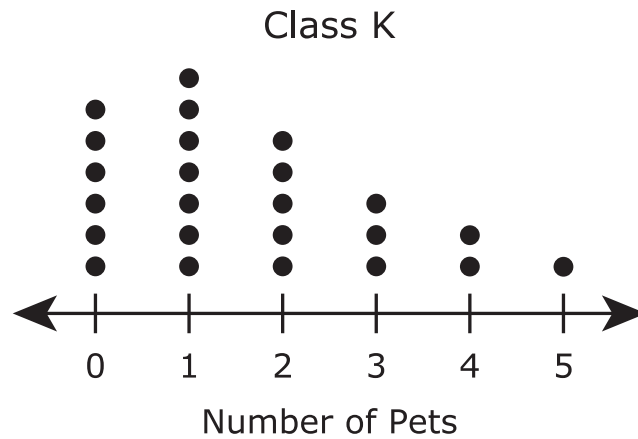
Select the correct answer for each box. Each answer may be used more than once. Not all answers will be used.

A 50π **B** 100π **C** 150π **D** 200π **E** 250π **F** 300π

The circumference of the inner circle is feet.

The circumference of the outer circle is feet.

- 32 The dot plots show the numbers of pets the students in each of two classes have.



Each ● means 1 student.

Which statement is best supported by the information in the dot plots?

- (A) The range for Class K is greater than the range for Class M.
- (B) The mean for Class K is equal to the mean for Class M.
- (C) The median for Class K is less than the median for Class M.
- (D) The mode for Class K is equal to the mode for Class M.

33 The Garcia family bought 3 tickets to the zoo for \$84. What is the unit price per ticket?

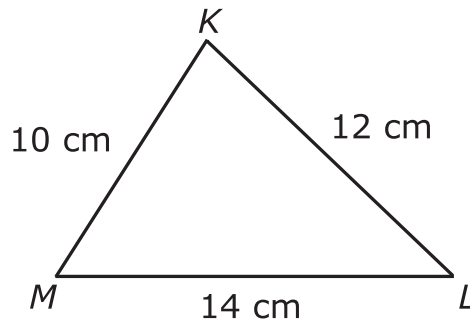
(A) \$87

(B) \$28

(C) \$81

(D) \$21

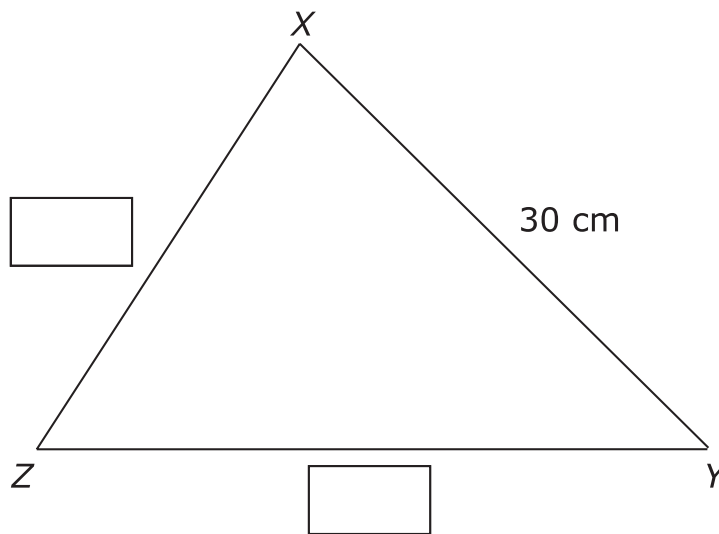
34 Triangle KLM and its side lengths in centimeters are shown.



Triangle KLM is enlarged to create similar triangle XYZ . What is the measurement in centimeters for each of the missing side lengths in triangle XYZ ?

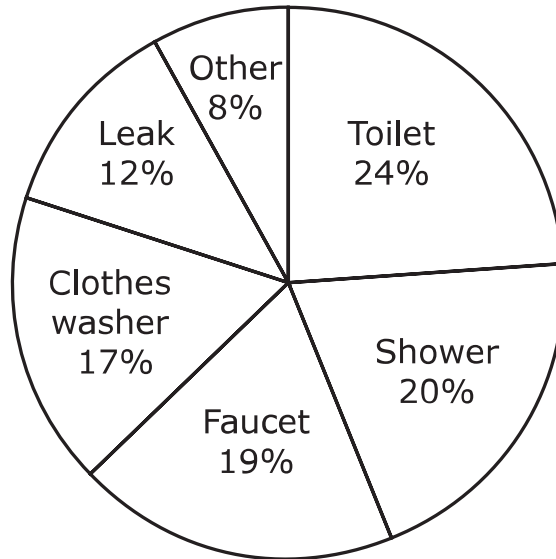
Write the correct answer in each box. Not all answers will be used.

20 cm | 25 cm | 28 cm | 32 cm | 35 cm



- 35** An average family uses 300 gallons of water per day at home. The circle graph shows the percentages of some of the types of water use for an average family.

Percentages of Water Use



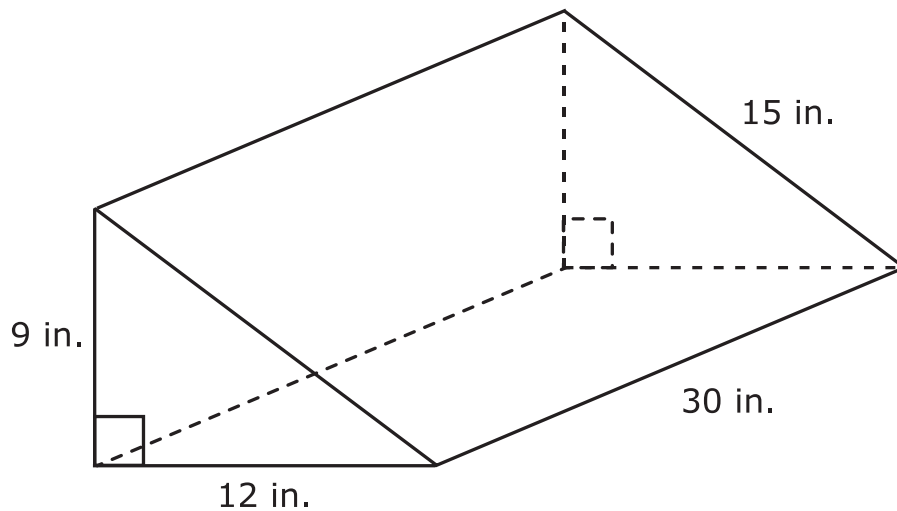
How many gallons of water per day are used for shower or leak?

- (A) 96 gallons
- (B) 24 gallons
- (C) 60 gallons
- (D) 36 gallons

36 What is the solution set for the inequality $3 \leq 8 - \frac{1}{4}x$?

- (A) $x \leq 20$
- (B) $x \leq \frac{5}{4}$
- (C) $x \geq 20$
- (D) $x \geq \frac{5}{4}$

37 A triangular prism with dimensions in inches is shown.



What is the volume of the triangular prism in cubic inches?

- (A) 1,080 in.³
- (B) 2,025 in.³
- (C) 1,620 in.³
- (D) 3,240 in.³

38 A recycling bin contained 40 pounds of plastic in October and 50 pounds of plastic in November. By what percentage did the amount of plastic increase from October to November?

(A) 10%

(B) 25%

(C) 20%

(D) 80%



**STAAR
GRADE 7
Mathematics
PRACTICE**

