STAAR®

State of Texas
Assessments of
Academic Readiness

GRADE 7
Mathematics

Administered May 2019

RELEASED

STAAR GRADE 7 MATHEMATICS REFERENCE MATERIALS

STAAR
State of Texas
Assessments of
Academic Readiness

LINEAR EQUATIONS

Slope-intercept form	$y = mx + b$
Constant of proportionality	$k = \dfrac{y}{x}$

CIRCUMFERENCE

Circle	$C = 2\pi r$	or	$C = \pi d$

AREA

Triangle	$A = \dfrac{1}{2}bh$
Rectangle or parallelogram	$A = bh$
Trapezoid	$A = \dfrac{1}{2}(b_1 + b_2)h$
Circle	$A = \pi r^2$

VOLUME

Prism	$V = Bh$
Pyramid	$V = \dfrac{1}{3}Bh$

ADDITIONAL INFORMATION

Pi	$\pi \approx 3.14$	or	$\pi \approx \dfrac{22}{7}$
Distance			$d = rt$
Simple interest			$I = Prt$
Compound interest			$A = P(1 + r)^t$
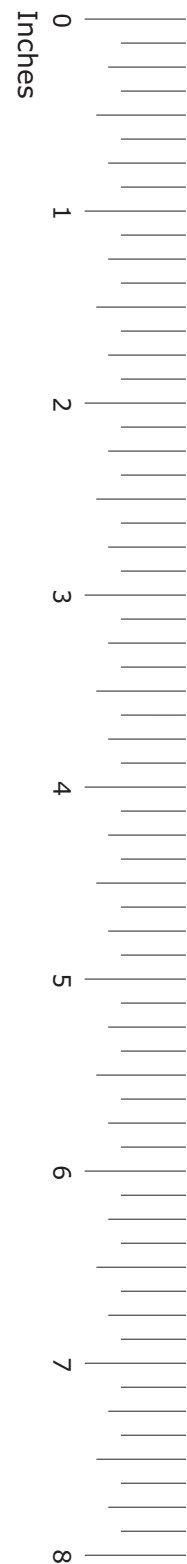
STAAR GRADE 7 MATHEMATICS REFERENCE MATERIALS

LENGTH

Customary	Metric
1 mile (mi) = 1,760 yards (yd)	1 kilometer (km) = 1,000 meters (m)
1 yard (yd) = 3 feet (ft)	1 meter (m) = 100 centimeters (cm)
1 foot (ft) = 12 inches (in.)	1 centimeter (cm) = 10 millimeters (mm)

VOLUME AND CAPACITY

Customary	Metric
1 gallon (gal) = 4 quarts (qt)	1 liter (L) = 1,000 milliliters (mL)
1 quart (qt) = 2 pints (pt)	
1 pint (pt) = 2 cups (c)	
1 cup (c) = 8 fluid ounces (fl oz)	

WEIGHT AND MASS

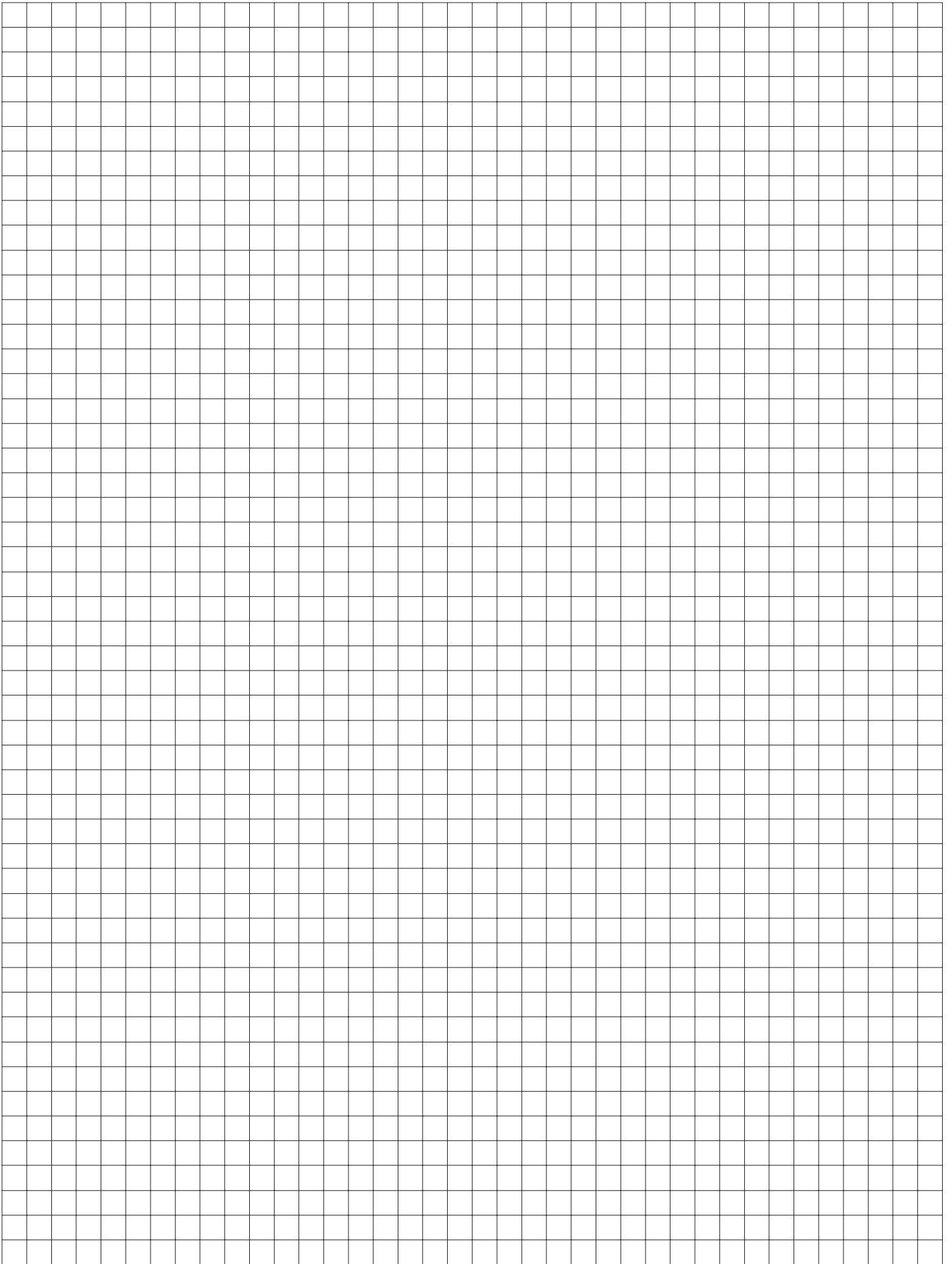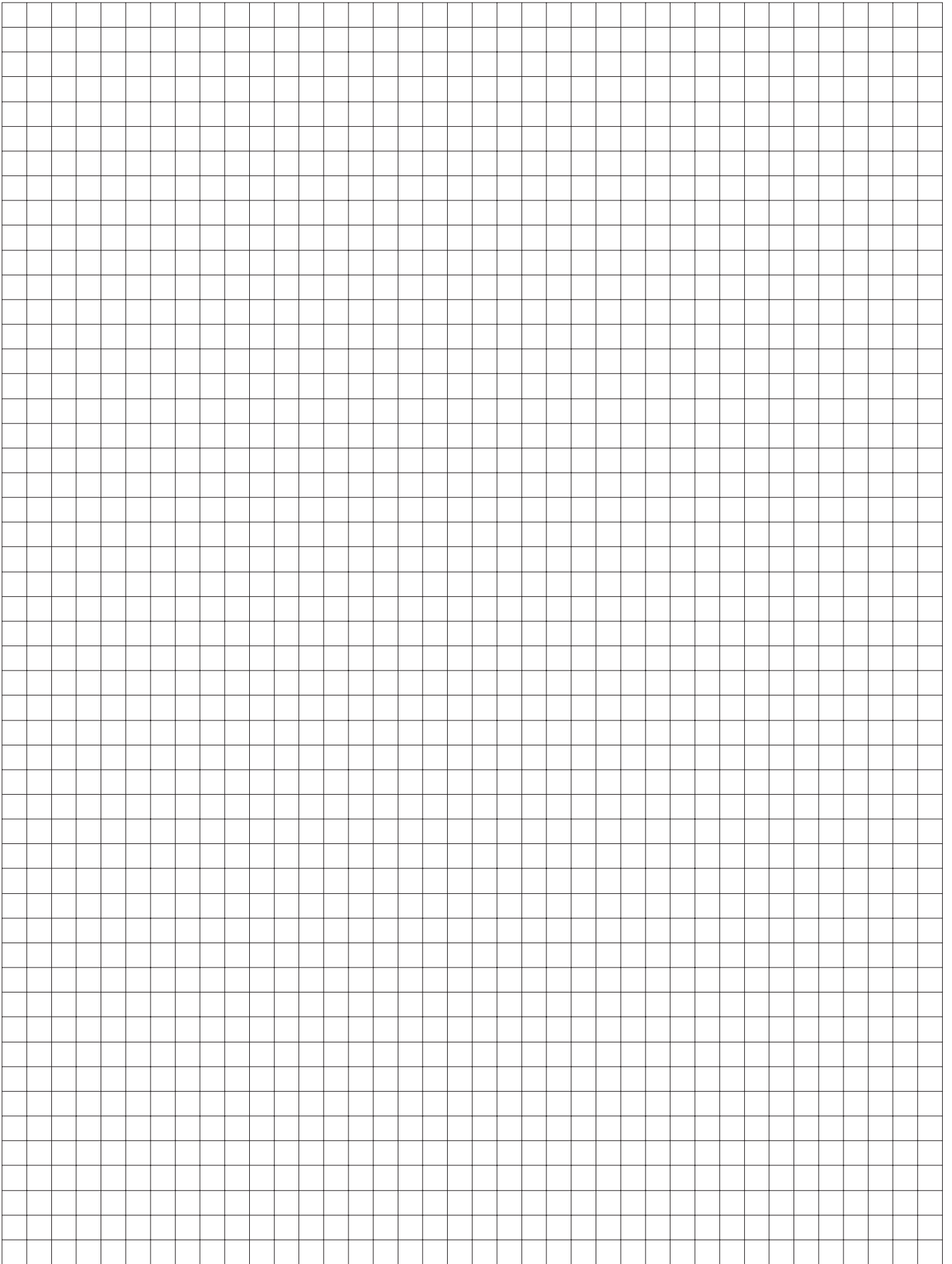| Customary	Metric
1 ton (T) = 2,000 pounds (lb)	1 kilogram (kg) = 1,000 grams (g)
1 pound (lb) = 16 ounces (oz)	1 gram (g) = 1,000 milligrams (mg)

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 Fatima paid for 5 pallets of grass to be delivered.

- Each pallet of grass cost $129.95.
- Fatima paid $76.20 for delivery.

What is the total amount Fatima paid?

A $725.95

B $649.75

C $581.95

D $1,030.75

2 Nerissa has 5 pink bows, 1 blue bow, and 4 purple bows in a box. She will randomly choose 1 bow from the box.

What is the probability Nerissa will choose a purple bow?

F $\dfrac{1}{2}$

G $\dfrac{2}{5}$

H $\dfrac{1}{10}$

J $\dfrac{3}{5}$

3 The box plots show the target heart rates of men 20–40 years old and men 50–70 years old.

Target Heart Rates of Men
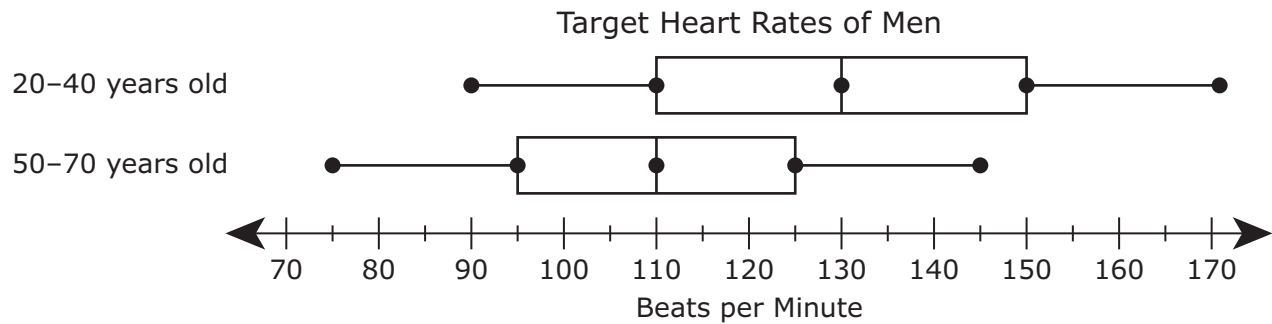
Which statement is best supported by the information in the box plots?

A The range of the data for men 20–40 years old is less than the range of the data for men 50–70 years old.

B The median of the data for men 20–40 years old is less than the median of the data for men 50–70 years old.

C The minimum target heart rate for men 20–40 years old is less than the minimum target heart rate for men 50–70 years old.

D The interquartile range of the data for men 20–40 years old is greater than the interquartile range of the data for men 50–70 years old.

4 Pamela rode her bike at a constant rate of 0.1 kilometer per minute. Which table represents *y*, the number of kilometers Pamela rode her bike in *x* minutes?

F   Bike Ride

Number of Minutes, *x*	Number of Kilometers, *y*
5	0.1
10	0.1
15	0.1
20	0.1
25	0.1

H   Bike Ride

Number of Minutes, *x*	Number of Kilometers, *y*
5	0.1
10	0.2
15	0.3
20	0.4
25	0.5

G   Bike Ride

Number of Minutes, *x*	Number of Kilometers, *y*
5	0.5
10	1.0
15	1.5
20	2.0
25	2.5

J   Bike Ride

Number of Minutes, *x*	Number of Kilometers, *y*
5	5.1
10	10.1
15	15.1
20	20.1
25	25.1

---

5 A stereo speaker in the shape of a triangular pyramid has a height of 6 inches. The area of the base of the speaker is 11 square inches.

What is the volume of the speaker in cubic inches?

A 22 in.^{3}

B 198 in.^{3}

C 66 in.^{3}

D 33 in.^{3}

GO ON

6 A club sold standard and premium memberships. The graph shows the number of each type of membership sold over the last four weeks.
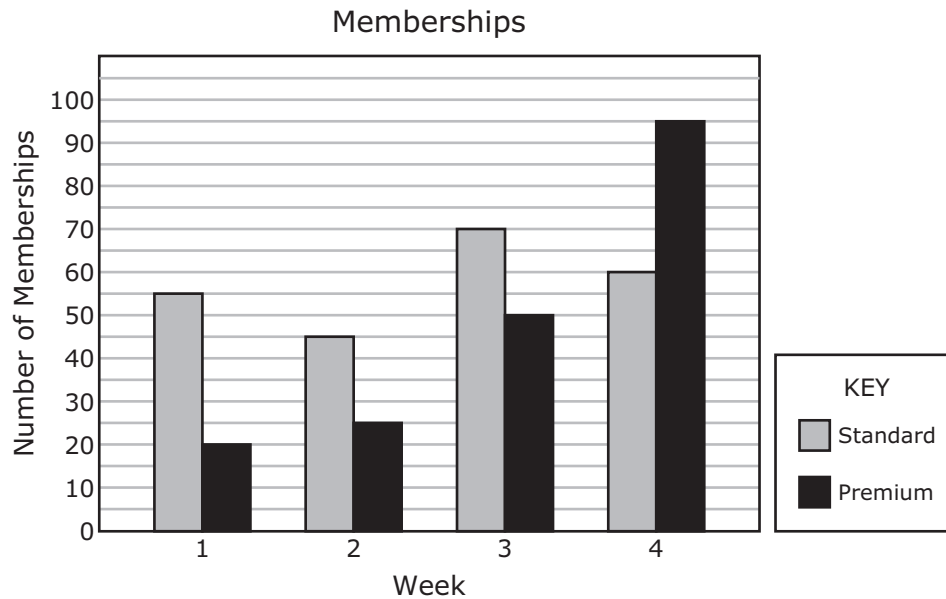
Memberships

Which statement is supported by the information in the graph?

F The number of premium memberships sold during Week 4 was 75% more than the number of premium memberships sold during Week 1.

G The total number of memberships sold during Week 1 was equal to the total number of memberships sold during Week 2.

H The number of premium memberships sold during Week 3 was 2 times the number of premium memberships sold during Week 2.

J The total number of memberships sold during Week 4 was 35 less than the total number of memberships sold during Week 3.

GO ON

7 Vincent flipped three coins during a probability experiment. The outcomes of the first 40 trials are shown in the table.

Probability Experiment

Faces Showing on Flipped Coins	Number of Outcomes
3 tails	4
1 head, 2 tails	13
2 heads, 1 tail	16
3 heads	7

Based on the information in the table, in how many of the next 120 trials will the outcome be exactly two of the coins showing heads?
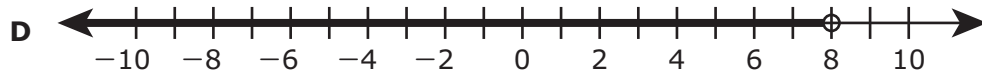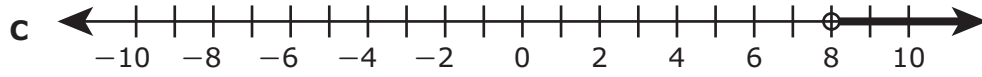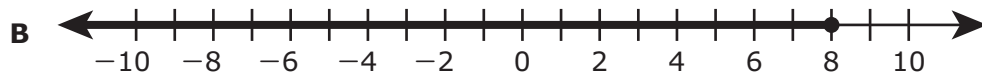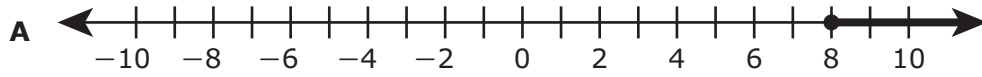
A 60

B 87

C 39

D 48

**8** Chris bought 10.4 gallons of gasoline. There are approximately 3.8 liters in 1 gallon.
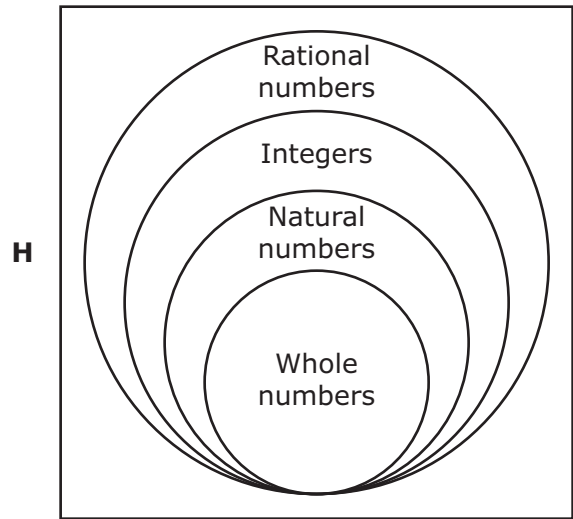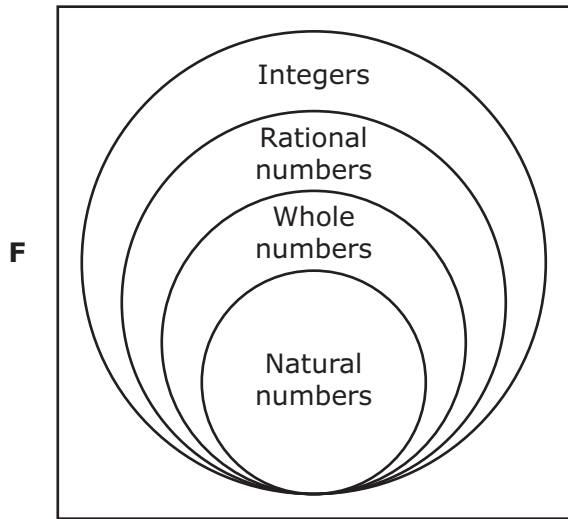
Which measurement is closest to the number of liters of gasoline Chris bought?

F 11.44 L

G 2.74 L

H 39.52 L

J 14.20 L

9 Which number line represents the solution to the inequality $125x + 200 \geq 1{,}200$?

A

B

C

D

10 Which Venn diagram best represents the relationship among integers, natural numbers, rational numbers, and whole numbers?

F

Integers
Rational numbers
Whole numbers
Natural numbers

H

Rational numbers
Integers
Natural numbers
Whole numbers

G

Natural numbers
Integers
Rational numbers
Whole numbers

J

Rational numbers
Integers
Whole numbers
Natural numbers
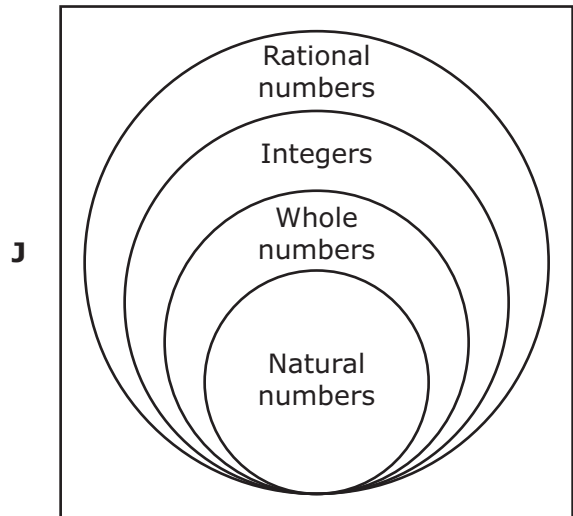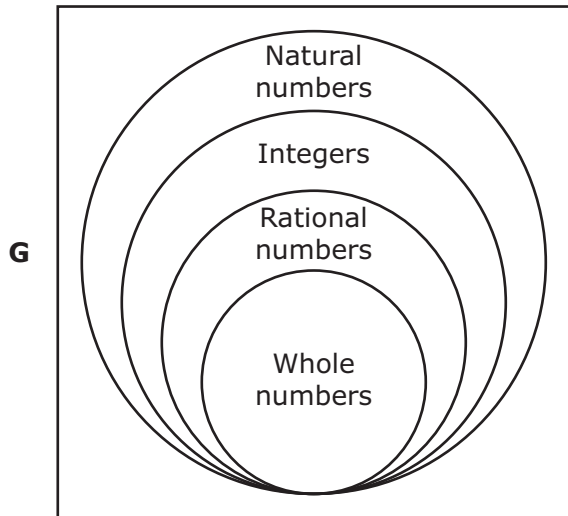
11 The net of a triangular prism is shown. Use the ruler provided to measure the dimensions of the net to the nearest half centimeter.
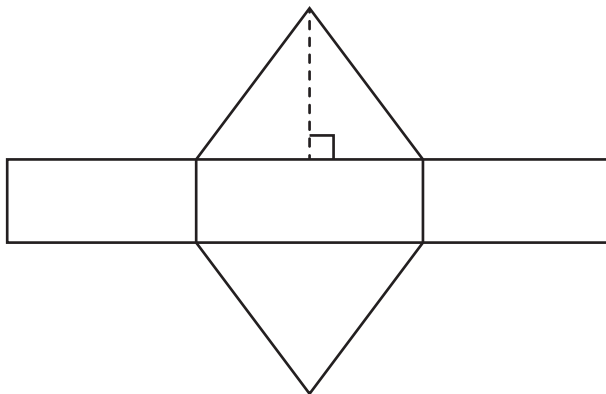
Which measurement is closest to the total surface area of the triangular prism in square centimeters?
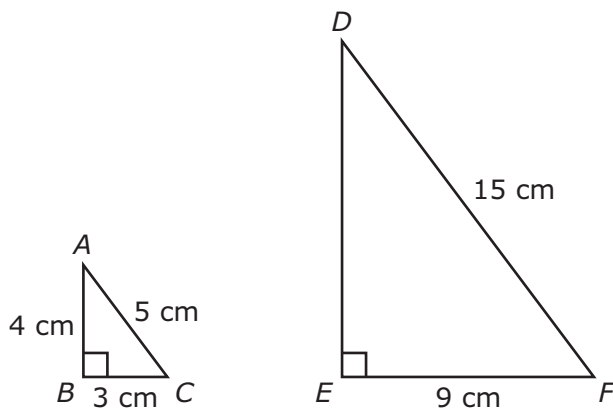
A 20 cm^2

B 14 cm^2

C 8 cm^2

D 6 cm^2

12 What is the solution to this equation?

$$2x + 10 = 28$$

Record your answer and fill in the bubbles on your answer document. Be sure to use the correct place value.
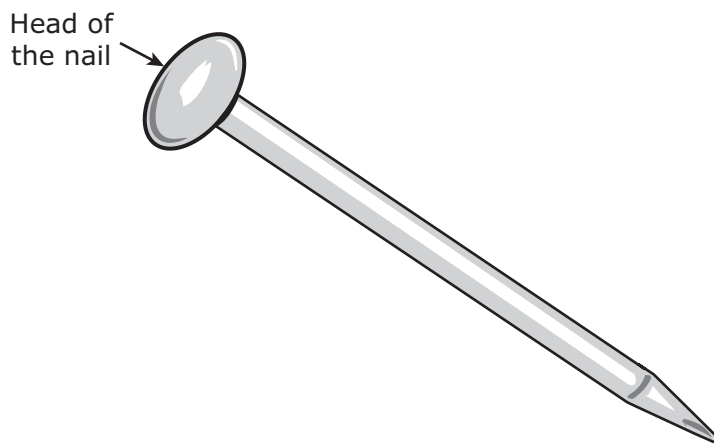
13 Triangle *ABC* is similar to triangle *DEF*.

Which proportion can be used to find the length of $\overline{DE}$ in centimeters?

A $\dfrac{4}{3} = \dfrac{DE}{9}$

B $\dfrac{5}{15} = \dfrac{DE}{4}$

C $\dfrac{4}{DE} = \dfrac{9}{3}$

D $\dfrac{9}{DE} = \dfrac{3}{5}$

14 The head of a nail is circular, as shown. The head of this nail has a diameter of 6 millimeters.

Head of
the nail

Which measurement is closest to the area of the head of this nail in square millimeters?

F 9.42 mm^2

G 113.04 mm^2

H 28.26 mm^2

J 37.68 mm^2

---

15 The price of a sweater was reduced from $20 to $12. By what percentage was the price of the sweater reduced?

A 8%

B 80%

C 60%

D 40%

**16** The table shows the number of bottles of different kinds of juice sold at a cafeteria on Monday.

Juice Sold

Kind of Juice	Number of Bottles Sold
Apple	11
Cranberry	7
Orange	18
Pineapple	4

If the cafeteria has 80 customers on Tuesday, which prediction for Tuesday is NOT supported by the data in the table?

F The number of bottles of cranberry juice sold will be 6 more than the number of bottles of pineapple juice sold.

G The number of bottles of apple juice sold will be 6 times the number of bottles of cranberry juice sold.

H There will be a total of 50 bottles of orange and cranberry juice sold.

J The difference between the number of bottles of apple juice sold and the number of bottles of pineapple juice sold will be 14.

17 Which equation best represents the relationship between x and y in the graph?
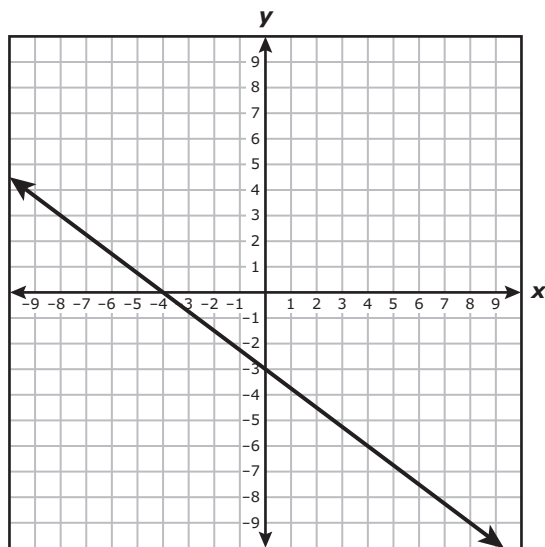
A $y = -\dfrac{3}{4}x - 3$

B $y = -\dfrac{4}{3}x - 3$

C $y = -\dfrac{3}{4}x - 4$

D $y = -\dfrac{4}{3}x - 4$

18 A model of a rectangular stove top with four circular burners is shown. The side lengths of the stove top and the diameters of the burners are labeled.

24 in.

22 in.
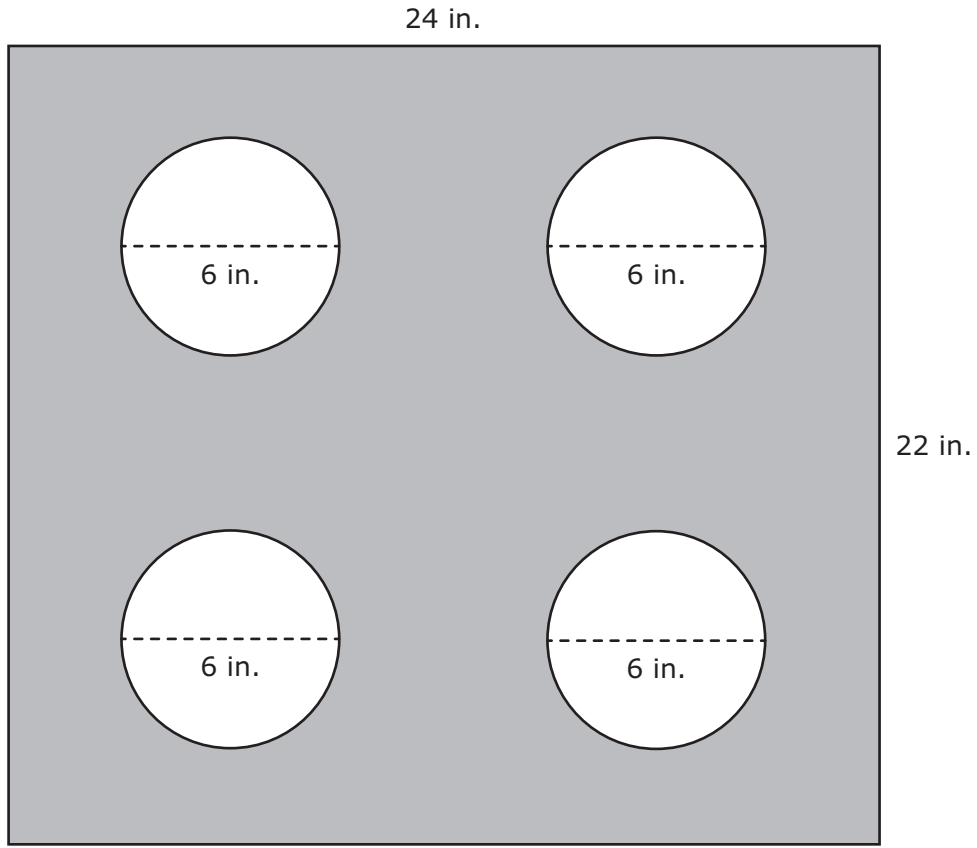
Which measurement is the best estimate of the area in square inches of the stove top that does not include the area of the burners?

F 108 in.^{2}

G 492 in.^{2}

H 420 in.^{2}

J 528 in.^{2}

19 Phillip created the net worth statement shown.

Net Worth Statement

Assets	Value
House (current value)	$85,000
Checking account	$2,500
Automobile	$18,500
Investments	$7,000
Total Assets	**$113,000**
Liabilities	
Mortgage	$62,000
Credit card debt	$9,500
Total Liabilities	**$71,500**

Based on the information in the statement, what is Phillip's net worth?

A $184,500

B $41,500

C −$71,500

D −$41,500

20 Leon created a scale drawing of the school library in his art class. In the scale drawing, the length of the library is 13 inches. The length of the actual library is 78 feet.

Which scale did Leon use to create the scale drawing of the school library?

F 1 inch represents 6 feet

G 1 inch represents $\frac{1}{6}$ foot

H 6 inches represents 1 foot

J 6 inches represents $\frac{1}{6}$ foot

GO ON

21 This week Andres will practice with his band for $1\frac{1}{2}$ hours on Monday, $1\frac{3}{4}$ hours on Tuesday, and 2 hours on Wednesday. Next week Andres will practice with his band for the same number of hours on Monday, Tuesday, and Wednesday.

What is the total number of hours Andres will practice with his band over these 6 days?

A $5\frac{1}{4}$ hours

B $10\frac{1}{2}$ hours

C $4\frac{1}{4}$ hours

D $8\frac{1}{2}$ hours

22 A farmer plants crops on 48 acres of land. The circle graph shows the percentages of land used for some of the different types of crops.

Land for Crops
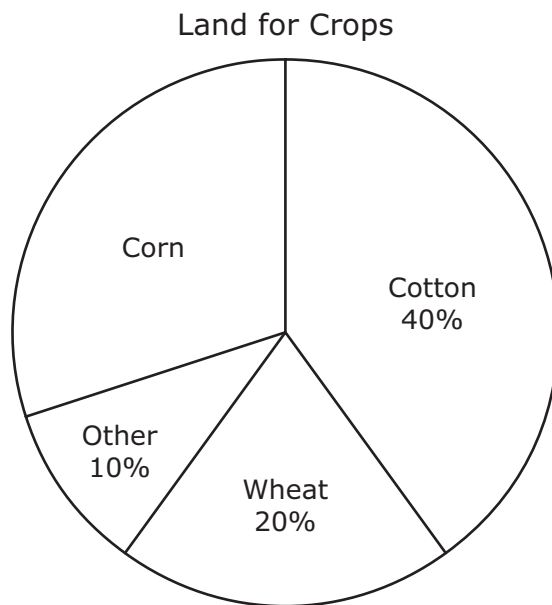
Based on the circle graph, how many acres of land are used for corn?

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

23 Which answer choice represents a person burning 90 calories by climbing 18 flights of stairs?

A

Calories Burned per
Flight of Stairs Climbed

Number of Flights of Stairs Climbed, f	Number of Calories Burned, c
1	5
3	15
5	25
7	35

B $c = f + 5$, where c represents the number of calories burned and f represents the number of flights of stairs climbed

C

Calories Burned per
Flight of Stairs Climbed
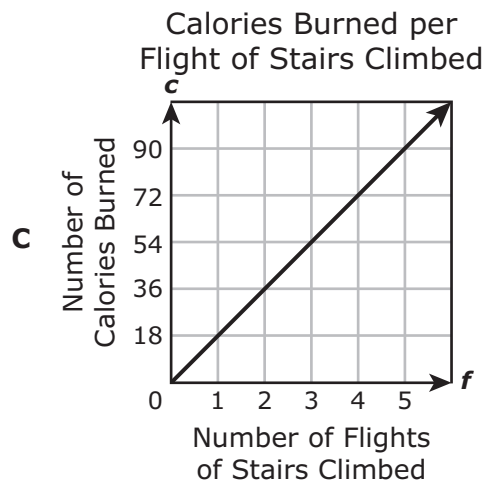
D   A person who climbs 5 flights of stairs will burn 1 calorie.

GO ON

24 What is the value of the expression $6\frac{3}{4}(-11.5)$?

 F $77\frac{5}{8}$

 G $69\frac{3}{4}$

 H $-77\frac{5}{8}$

 J $-69\frac{3}{4}$

---

25 Justin has 50 pictures in an album. Of these pictures, 30 show his friends, 12 show his family, and 8 show only Justin. Justin is in $\frac{1}{2}$ of the pictures that show his friends and $\frac{1}{2}$ of the pictures that show his family.

Based on this information, which statement is true?

 A The probability of randomly selecting a picture that shows Justin with his friends is greater than the probability of randomly selecting a picture that shows Justin with his family.

 B The probability of randomly selecting a picture that shows Justin is 8%.

 C The probability of randomly selecting a picture that shows Justin with his family is 5 times the probability of randomly selecting a picture that shows only his friends.

 D The probability of randomly selecting a picture that does not show Justin is 21%.

26 The circumference of a circle is C centimeters. The diameter of the circle is 13 centimeters.

Which expression best represents the value of π?

F $\dfrac{C}{6.5}$

G $\dfrac{6.5}{C}$

H $\dfrac{C}{13}$

J $\dfrac{13}{C}$

---

27 What is the solution set for this inequality?

$$-8x + 40 > -16$$

A $x > 7$

B $x < 7$

C $x > -3$

D $x < -3$

GO ON

28 Zachary is buying 4 tires for his car. The table shows the prices and the advertised sales for the same type of tire at 4 tire stores.

Tire Store Sales

Store	Price per Tire	Advertised Sale
R	$150	Buy 3 tires and get the 4th tire free
S	$200	Buy 4 tires and receive $70 off the price of each tire
T	$175	Buy 4 tires and receive $200 off the total price
V	$130	Buy 4 tires and receive 10% off the total price

Based on the advertised sales, at which store will Zachary get the lowest price on 4 tires?

F Store R

G Store S

H Store T

J Store V

29 At a school carnival, tickets can be purchased to participate in different activities. The table shows the total cost for different numbers of tickets.
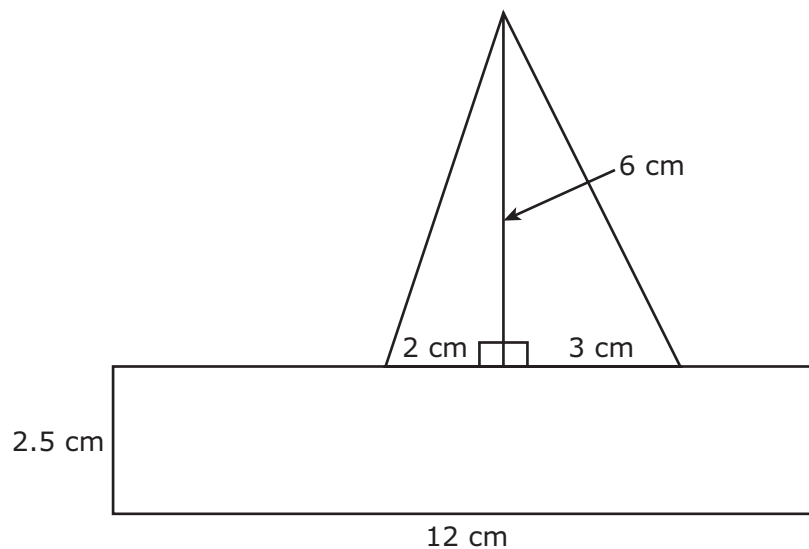
School Carnival

Number of Tickets, x	Total Cost, y (dollars)
8	2.00
12	3.00
20	5.00
30	7.50
50	12.50

What is the constant of proportionality that relates y, the total cost in dollars, to x, the number of tickets purchased?

A 4.00

B 0.25

C 1.00

D 0.10

30 A drawing of a sailboat was made using a rectangle and two right triangles, as shown.


What is the area of the drawing of the sailboat in square centimeters?

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

---

31 Perry traveled at an average speed of 55 miles per hour for 3.5 hours and then traveled at an average speed of 60 miles per hour for 2.5 hours. What was the total distance in miles that Perry traveled during this time?

A 347.5 mi

B 330 mi

C 360 mi

**D** 342.5 mi

32 The dot plots show the numbers of children's books purchased by customers at two different bookstores on one day.

Store 1

Number of Children's Books Purchased

Store 2

Number of Children's Books Purchased
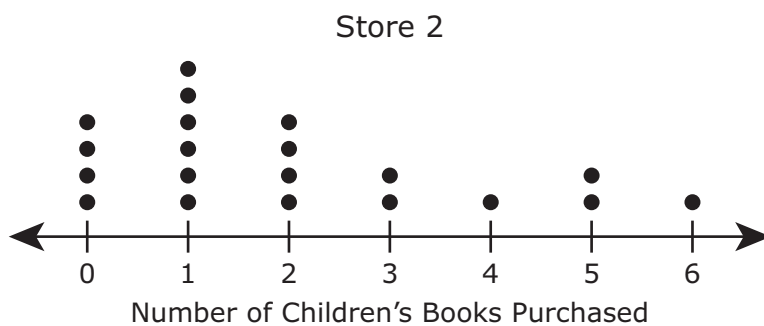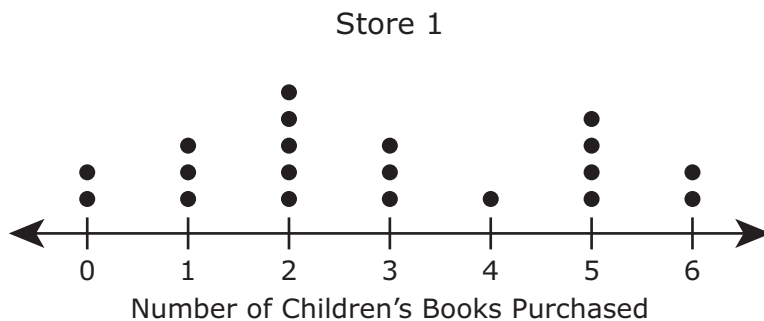
Which statement is supported by the information in the dot plots?

F The mode of the data for Store 2 is greater than the mode of the data for Store 1.

G The range of the data for Store 1 is greater than the range of the data for Store 2.

H The mean of the data for Store 1 is greater than the mean of the data for Store 2.

J The median of the data for Store 2 is greater than the median of the data for Store 1.

33 Triangle *RST* is similar to triangle *RVW*.
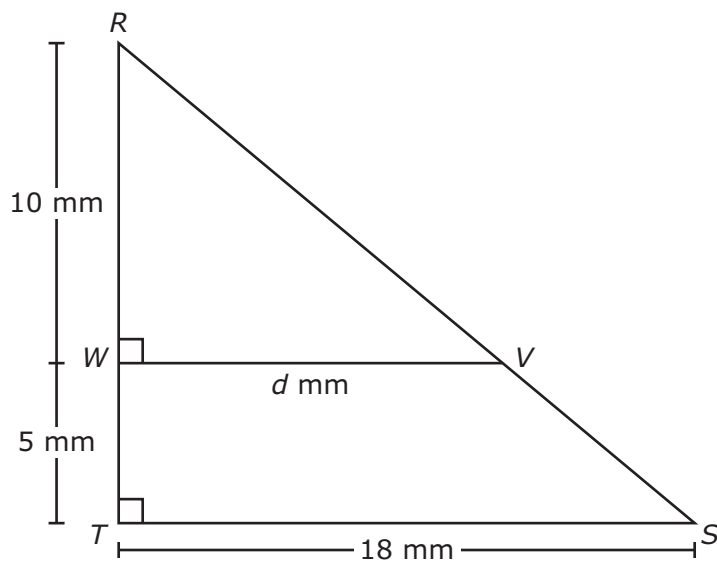
What is the value of *d* in millimeters?

A 27 mm

B 12 mm

C 9 mm

D 13 mm

---

34 Which values from the set {−6, −4, −3, −1, 0, 2} satisfy this inequality?

$$-\frac{1}{2}x + 3 \geq 5$$

F −4, −3, −1, 0, and 2 only

G −1, 0, and 2 only

H −6, −4, −3, and −1 only

J −6 and −4 only

35 A bag contains colored tiles.

- 3 tiles are red
- 6 tiles are green
- 3 tiles are blue

A tile will be randomly selected from the bag. What is the probability in decimal form that the tile selected will be green?

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

---

36 A worker uses 450 inches of steel wire to make 300 springs of the same size. At this rate how many inches of steel wire are needed to make 1 spring?

F $\dfrac{1}{3}$ in.

G $\dfrac{1}{15}$ in.

H $\dfrac{2}{3}$ in.

J $1\dfrac{1}{2}$ in.

---

37 A circle has a diameter of 7.6 feet. Which measurement is closest to the circumference of the circle in feet?

A 23.9 ft

B 45.3 ft

C 47.7 ft

D 11.9 ft

38 A college conducted a survey of randomly selected freshmen about their choice of major. The table shows the results of the survey.

Freshmen Majors

Major	Number of Freshmen
English	50
Science	35
Engineering	40
Business	45
Education	60
Undecided	50
Other	20

Which inference about all freshmen at this college is best supported by this information?

F The number of freshmen who chose English as their major is less than the number of freshmen who are Undecided on their major.

G The number of freshmen who chose Education as their major is greater than the number of freshmen who chose Science or Other as their major.

H The number of freshmen who chose Business or Education as their major is less than the number of freshmen who chose Science or Engineering as their major.

J The number of freshmen who chose Business as their major is greater than the number of freshmen who chose English as their major.

39 A ringtoss toy is composed of a rectangular prism on top of a cylinder. The rectangular prism is completely filled with water. The dimensions of the rectangular prism are shown in the diagram.
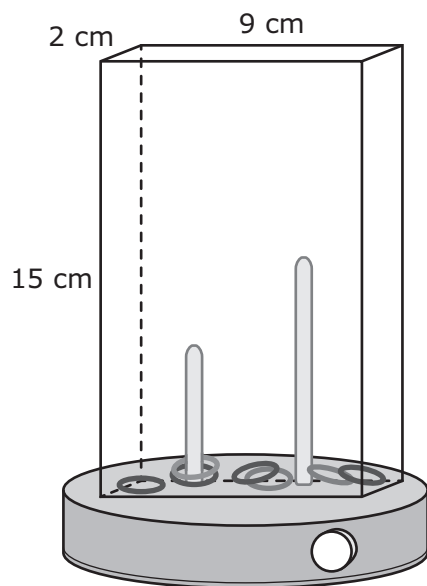
What is the volume of the rectangular prism in cubic centimeters?

A 26 cm^3

B 270 cm^3

C 165 cm^3

D 348 cm^3

---

40 Nicholas is buying shirts for his baseball team. He will pay $9.50 for each shirt plus a one-time fee of $22.50 for the design.

Which equation can be used to find y, the total cost to buy x shirts?

F $y = 9.5x + 22.5$

G $y = 22.5x + 9.5$

H $y = 9.5x - 22.5$

J $y = 22.5x - 9.5$

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

STOP

STAAR
GRADE 7
Mathematics
May 2019