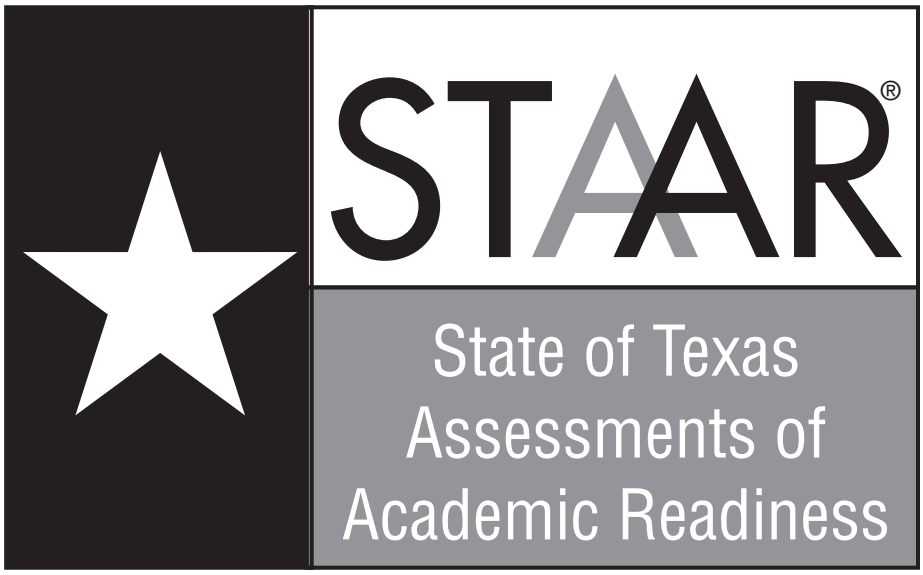

GRADE 7

Mathematics

Administered May 2021

RELEASED

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

CIRCUMFERENCE

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

AREA

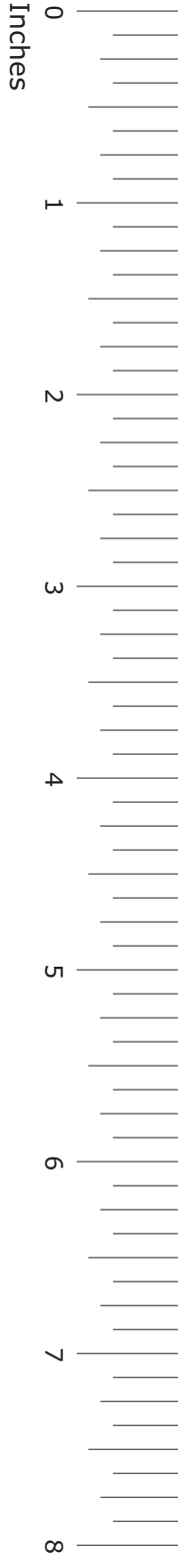
Triangle	$A = \frac{1}{2}bh$
Rectangle or parallelogram	$A = bh$
Trapezoid	$A = \frac{1}{2}(b_1 + b_2)h$
Circle	$A = \pi r^2$

VOLUME

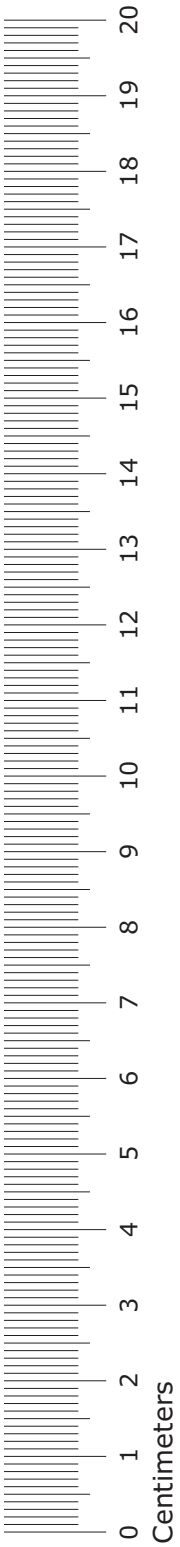
Prism	$V = Bh$
Pyramid	$V = \frac{1}{3}Bh$

ADDITIONAL INFORMATION

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



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)

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 George started a coin collection. His dad gave him 75 coins. Each month he will add 20 coins to the collection.

Which equation can be used to find *y,* the total number of coins in George's collection after *x* months?

A $y = 75x + 20$

B $y = 20x + 75$

C $y = 75x - 20$

D $y = 20x - 75$

---

2 A building has a height of 125 meters and a length of 80 meters. On a scale drawing of the building, the height is 25 centimeters.

What is the length of the building on the scale drawing in centimeters?

F 55 cm

G 16 cm

H 20 cm

J 64 cm

3 Alberto's monthly income is $3,200. Part of Alberto's monthly budget is shown in the table.

Monthly Budget

Category	Amount of Money
Rent	$896
Groceries	$384
Savings	$165
Car payment	$428
Utilities	$120

What percentage of Alberto's income is used to pay for his rent and groceries?

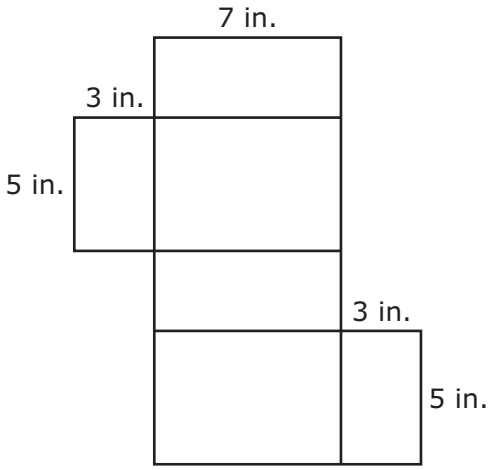
A 40%

B 28%

C 64%

D 12%

4 The dimensions of a rectangular prism are given in the net shown.



What is the total surface area of the rectangular prism in square inches?

F 71 in.^{2}

G 58 in.^{2}

H 142 in.^{2}

J 105 in.^{2}

5 A survey of visitors at a national park was conducted to determine the preferred activity of each visitor to the park. Each visitor chose one activity. The survey results are shown in the table.

Preferred Activities

Activity	Number of Visitors
Camping	28
Hiking Trails	22
Water Sports	14
Biking Trails	16

Based on this information, which prediction about the preferred activity for the next 200 visitors to the park is the most reasonable?

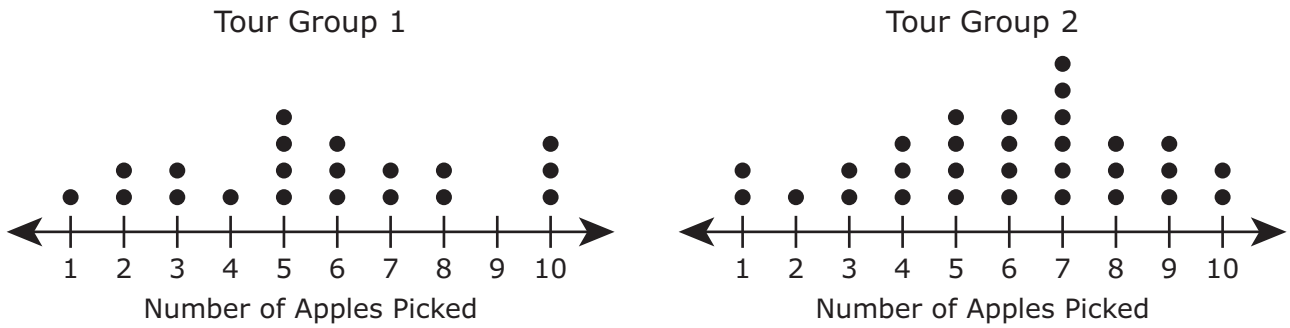
A The number of visitors who prefer water sports will be 5 more than the number of visitors who prefer biking trails.

B The number of visitors who prefer hiking trails will be 8 more than the number of visitors who prefer water sports.

C The number of visitors who prefer camping will be 15 times the number of visitors who prefer hiking trails.

D The number of visitors who prefer camping will be 2 times the number of visitors who prefer water sports.

6 The dot plots show the numbers of apples picked by members of two different tour groups at an orchard.



Which statement correctly compares these two data sets?

F The median of the data is the same for both data sets.

G The mode of the data is the same for both data sets.

H The range of the data is the same for both data sets.

J The distribution of the data is symmetrical for both data sets.

---

7 Members of the chess club held a bake sale to raise money. Cupcakes and cookies were sold.

- Cupcakes were sold for $1 each.
- Cookies were sold for $0.50 each.
- The members sold a total of 288 items.
- Of the items sold, $\frac{2}{3}$ were cupcakes and the remaining items were cookies.

How much money did the chess club members raise from the cookies that were sold?

A $72.00

B $96.00

C $48.00

D $45.00

8 Marco has two number cubes. The faces of each number cube are numbered from 1 to 6. Marco rolled the number cubes and recorded the number showing on the top face of each number cube. The results are shown in the table.

4, 2	5, 2	3, 1	3, 4	2, 6
1, 1	4, 2	2, 3	3, 3	5, 1
1, 5	5, 2	1, 5	1, 2	1, 5
2, 4	4, 2	2, 4	5, 3	2, 4

Based on these results, what is the experimental probability that the next time the number cubes are rolled, they will land with a 2 showing on the top face of one number cube and a 4 showing on the top face of the other number cube?

F $\frac{3}{10}$

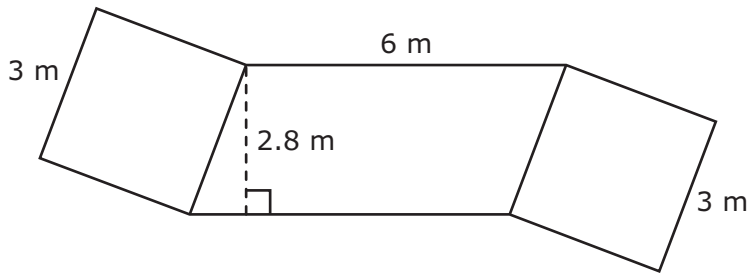
G $\frac{11}{20}$

H $\frac{9}{20}$

J $\frac{1}{36}$

---

9 Two congruent squares and a parallelogram were used to form the figure shown.



What is the area of the figure in square meters?

A 25.8 m^2

B 40.8 m^2

C 34.8 m^2

D 28.8 m^2

10 What is the value of the expression $26.95 \div -5\frac{1}{2}$?

F −0.49

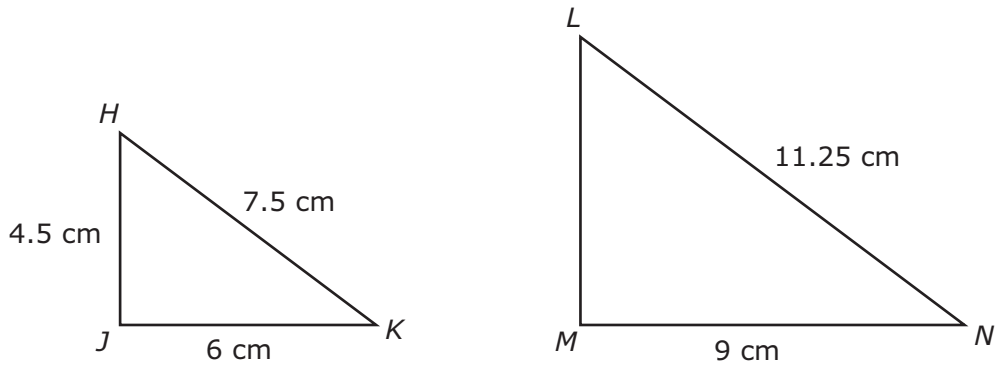
G −4.9

H −3.3

J −5.3

---

11 Triangle *HJK* is similar to triangle *LMN*.



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

A $\frac{7.5}{11.25} = \frac{LM}{4.5}$

B $\frac{6}{7.5} = \frac{LM}{9}$

C $\frac{11.25}{LM} = \frac{4.5}{7.5}$

D $\frac{9}{LM} = \frac{6}{4.5}$

GO ON

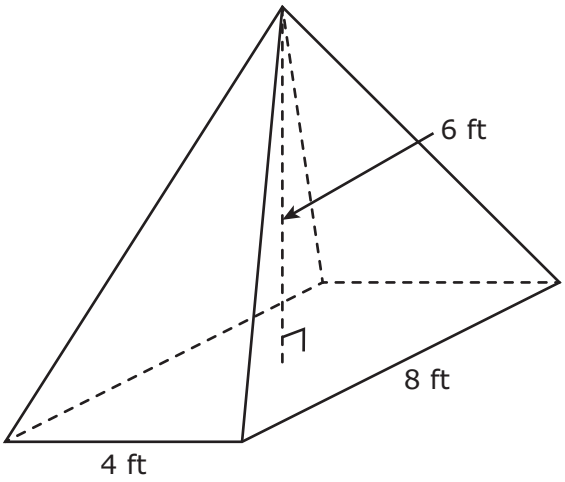
12 What is the solution to this equation?

$$-12x - 7 = 53$$

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

---

13 The dimensions of a rectangular pyramid are shown.



What is the volume of this rectangular pyramid in cubic feet?

A 96 ft^3

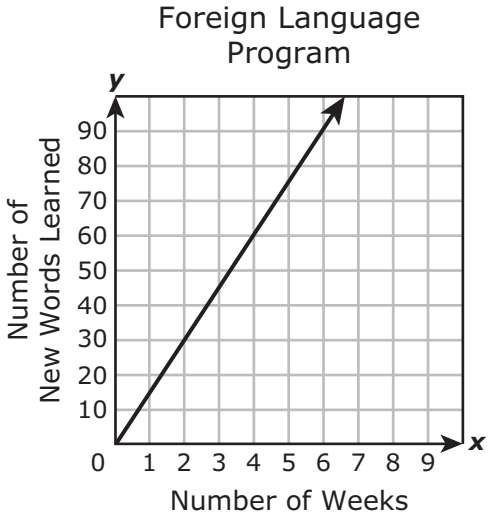
B 18 ft^3

C 64 ft^3

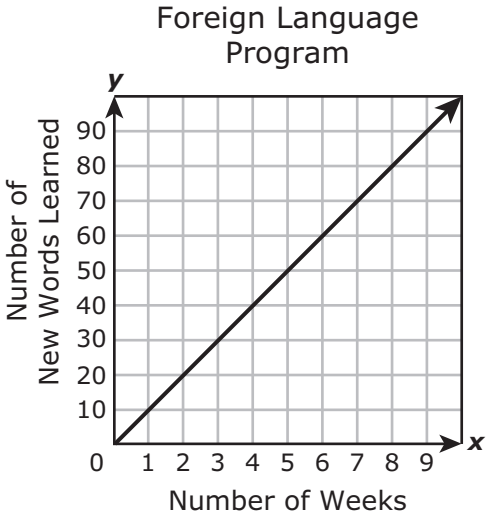
D 192 ft^3

14 A student in a foreign language program learns 15 new words each week. Which graph best represents the relationship between x, the number of weeks the student has been in the program and y, the total number of new words the student has learned?

F



H



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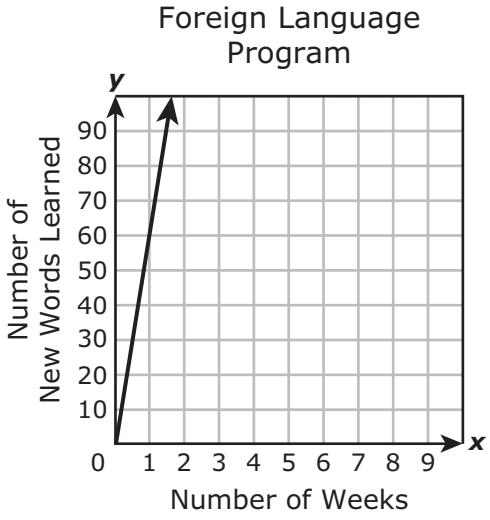
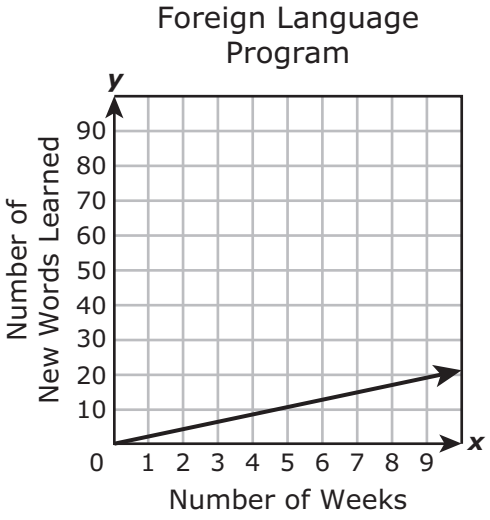
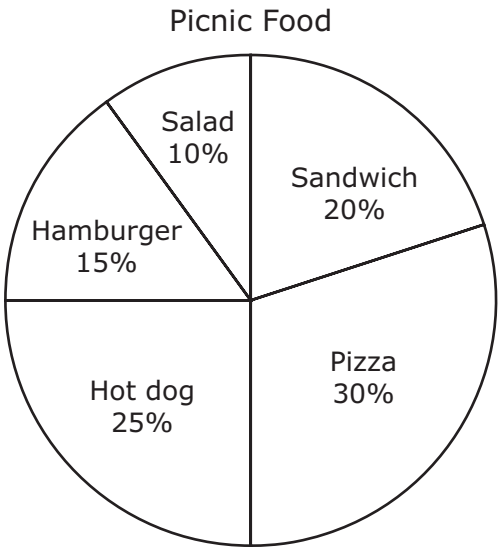


J



GO ON

15 A survey was conducted to determine the food choices of the 80 students at a picnic. The types of picnic foods are shown in the circle graph.



Based on the circle graph, how many more students chose pizza than students who chose salad?

A 8

B 16

C 32

D 24

GO ON

16 The greatest weight a moving truck can carry is 1,600 pounds. The truck is loaded with a piano that weighs 400 pounds. Boxes that weigh 50 pounds each will also be loaded into the truck.

Which inequality represents all possible values of x, the number of these boxes that can be loaded into the moving truck?

F $50x + 400 \leq 1{,}600$

G $50x + 400 \geq 1{,}600$

H $400x + 50 \leq 1{,}600$

J $400x + 50 \geq 1{,}600$

---

17 A teacher has a container of paper clips. She will randomly select one paper clip from the container.

- The container has 8 pink paper clips.
- The container has 14 purple paper clips.
- The container has 12 yellow paper clips.
- The container has 16 blue paper clips.

Which statement is true?

A The probability of selecting a purple paper clip is $\frac{3}{4}$, and the probability of selecting a paper clip that is not purple is $\frac{1}{4}$.

B The probability of selecting a purple paper clip is $\frac{1}{4}$, and the probability of selecting a paper clip that is not purple is $\frac{3}{4}$.

C The probability of selecting a purple paper clip is $\frac{18}{25}$, and the probability of selecting a paper clip that is not purple is $\frac{7}{25}$.

D The probability of selecting a purple paper clip is $\frac{7}{25}$, and the probability of selecting a paper clip that is not purple is $\frac{18}{25}$.

18 The owner of a bookstore buys used books from customers for $1.50 each. The owner then resells the used books for 400% of the amount he paid for them.

What is the price of a used book in this bookstore?

F $5.50

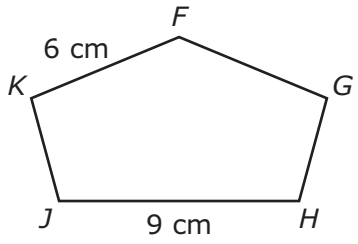
G $4.00

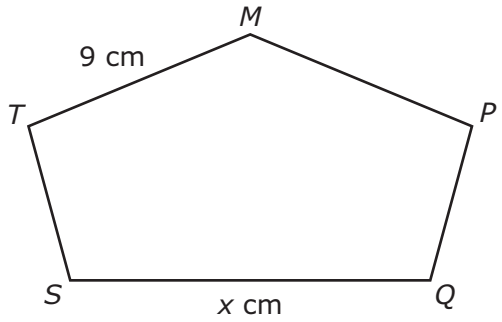
H $2.10

J $6.00

---

19 Pentagon *FGHJK* is similar to pentagon *MPQST*.





What is the value of *x*?

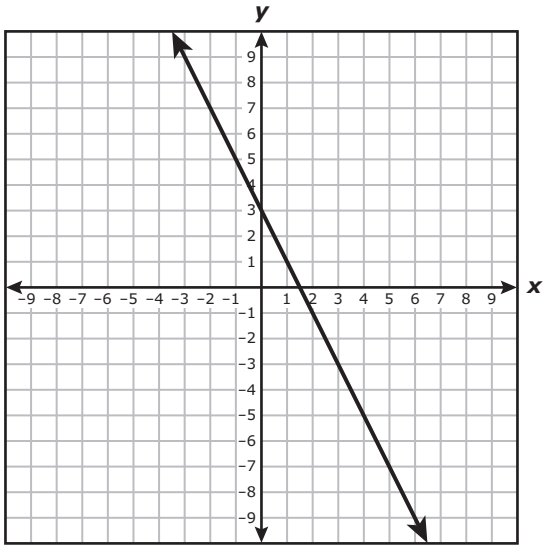
A 13.5

B 12

C 9.5

D Not here

20 Which equation best represents the relationship between x and y in the graph?



F $y = 3x - 2$

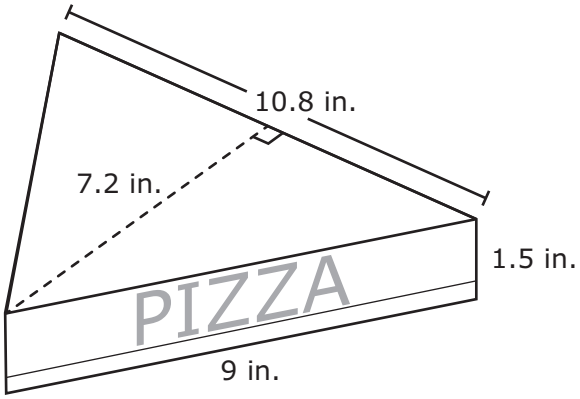
G $y = -\frac{1}{2}x + 3$

H $y = -2x + 3$

J $y = 2x + \frac{3}{2}$

GO ON

21 A container in the shape of a triangular prism is used to hold a slice of pizza. The dimensions of the container are shown in the diagram.



What is the volume of the container in cubic inches?

A 58.32 in.^{3}

B 116.64 in.^{3}

C 19.44 in.^{3}

D 28.5 in.^{3}

---

22 Hector paid $105 for 6 tickets to a hockey game. Each ticket cost the same amount.

What was the cost of each ticket in dollars and cents?

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

23 The table shows the numbers of different types of pies sold at a bakery during one day.

Pies Sold

Type of Pie	Number Sold
Apple	5
Pecan	3
Lemon	4
Chocolate	8

Based on the results in the table, which statement about the pies sold at this bakery during one week is NOT true?

A It is two times as likely for a chocolate pie to be sold as for a lemon pie to be sold.

B It is equally likely for an apple or pecan pie to be sold as for a chocolate pie to be sold.

C It is more likely for an apple or lemon pie to be sold than for a pecan or chocolate pie to be sold.

D It is less likely for a pecan pie to be sold than for a lemon pie to be sold.

24 A student ran a distance of $3\frac{1}{2}$ miles each day for 5 days. Then the student ran a distance of $4\frac{1}{4}$ miles each day for the next 5 days.

What was the total distance in miles the student ran during these 10 days?

F 23 mi

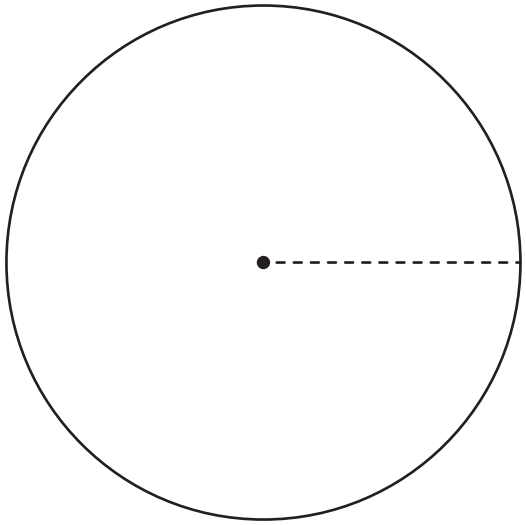
G $38\frac{3}{4}$ mi

H $42\frac{1}{2}$ mi

J 35 mi

---

25 Use the ruler provided to measure the radius of the circle to the nearest half centimeter.



Which measurement is closest to the area of the circle in square centimeters?

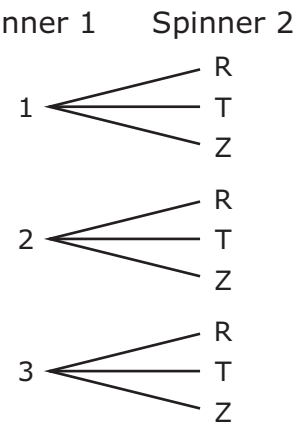
A 153.86 cm^2

B 43.96 cm^2

C 21.98 cm^2

D 38.47 cm^2

26 A student will spin two spinners in an experiment. The tree diagram shows all possible outcomes of the experiment.



Which sample space is described by this tree diagram?

F $\{(1, R), (1, T), (1, Z), (2, R), (2, T), (2, Z), (3, R), (3, T), (3, Z)\}$

G $\{(1, 1), (1, 2), (1, 3), (2, 1), (2, 2), (2, 3), (3, 1), (3, 2), (3, 3), (1, R), (1, T), (1, Z), (2, R), (2, T), (2, Z), (3, R), (3, T), (3, Z)\}$

H $\{(1, 2, 3), (R, T, Z)\}$

J $\{(1, R, T, Z), (2, R, T, Z), (3, R, T, Z)\}$

---

27 Two stores are having sales on cameras.

- At Store X all cameras are on sale for 15% off the original price.
- At Store Y all cameras are on sale for $\frac{1}{5}$ off the original price.

Which store would have the better sale price for a camera with an original price of $80?

A Store X, because the sale price would be $68

B Store Y, because the sale price would be $64

C Store X, because the sale price would be $12

D Store Y, because the sale price would be $16

GO ON

28 Which equation is true when $c = 3$?

F $2c + 8 = 31$

G $5(7 - c) = 32$

H $9 - 6c = 0$

J $4(c + 2) = 20$

---

29 During one month Andre used 785 gallons of water at his home. There are approximately 3.8 liters in 1 gallon.

Which measurement is closest to the number of liters Andre used during this month?

A 206.6 L

B 2,709 L

C 2,983 L

D 20.7 L

30 A bag contains flavored lollipops. A lollipop will be randomly selected from the bag.

- 17 lollipops are grape flavored
- 8 lollipops are cherry flavored
- 14 lollipops are watermelon flavored
- 16 lollipops are strawberry flavored

What is the probability in decimal form that the selected lollipop will be either cherry flavored or watermelon flavored?

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

31 The table shows Avery's net worth statement.

Net Worth Statement

Item	Value
Bank accounts	$3,900
Car (current value)	?
Credit card debt	−$2,950
Real estate	$37,425
Student loans	−$1,700
Investments	$4,600

Avery's net worth is $53,755. Based on the information in the table, what is the current value of Avery's car?

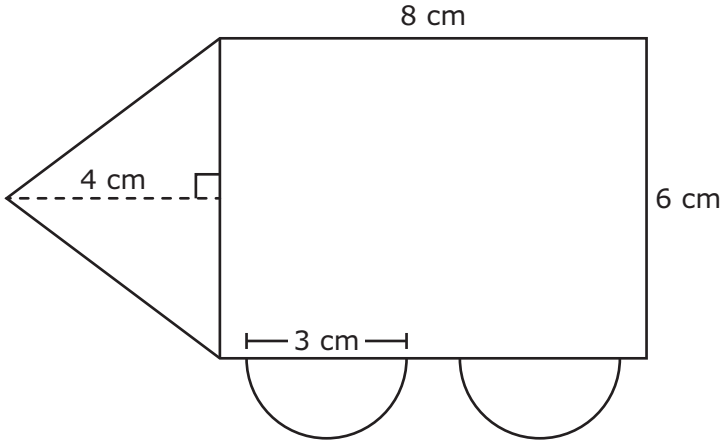
A $3,180

B $13,580

C $7,830

D $12,480

32 A rectangle, a triangle, and two congruent semicircles were used to form the figure shown.



Which measurement is closest to the area of the figure in square centimeters?

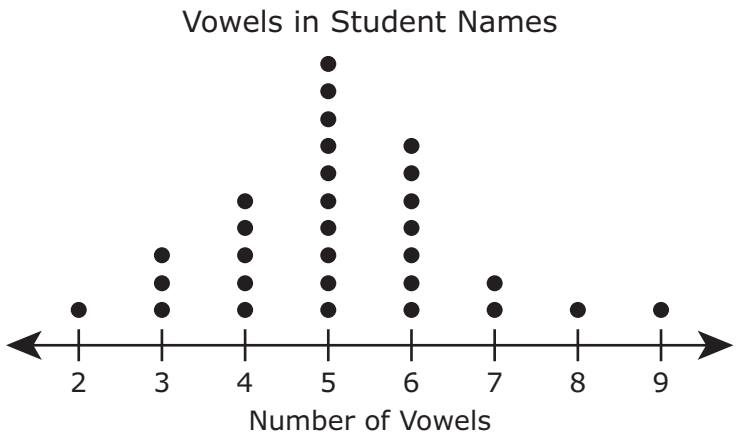
F 67 cm^2

G 74 cm^2

H 79 cm^2

J 88 cm^2

33 Ms. Gonzales gathered data on the number of vowels in the first and last names of each of her students. The data are shown in the dot plot.



What percentage of the students have 5 or more vowels in their first and last names?

A 21%

B 63%

C 37%

D 70%

---

34 Which situation can be represented by this equation?

$$250 + 65x = 575$$

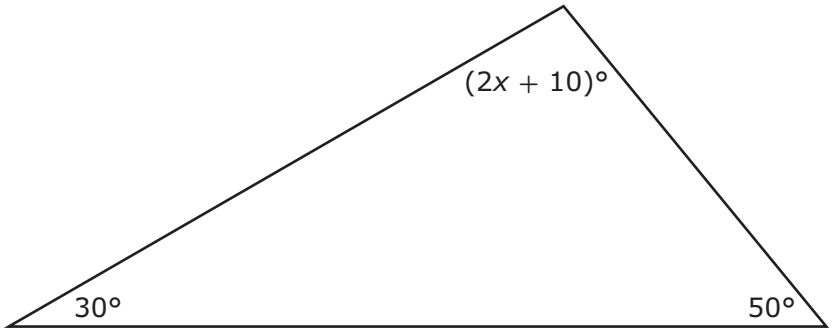
F Jeremy is traveling to a location that is 575 miles away. He has already traveled 250 miles. What is x, the number of hours that Jeremy will need to travel at a speed of 65 miles per hour to reach the location?

G Jeremy is traveling to a location that is 575 miles away. He has already traveled 250 miles. What is x, the number of additional miles that Jeremy will need to travel to reach the location?

H Jeremy is reading a book with 575 pages. He has already read 65 pages and will read 250 pages per day. What is x, the number of days that Jeremy will need to read to finish the book?

J Jeremy is reading a book with 575 pages. He has already read 315 pages. What is x, the number of pages Jeremy has left to read to finish the book?

35 The angle measures of a triangle are shown in the diagram.



What is the value of x?

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

---

36 What is the solution set for the inequality $4 - 5g > 39$?

F $g > -7$

G $g < -7$

H $g < 7$

J $g > 7$

37 The diameter of circle *X* is 15 centimeters. The diameter of circle *Y* is 20 centimeters.

Which measurement is closest to the difference between the circumference of circle *X* and the circumference of circle *Y* in centimeters?

A 15.7 cm

B 7.85 cm

C 137 cm

D 31.4 cm

---

38 A recipe for fruit salad includes $\frac{1}{3}$ cup of grapes for 4 servings. How many cups of grapes are needed for 30 servings of this fruit salad?

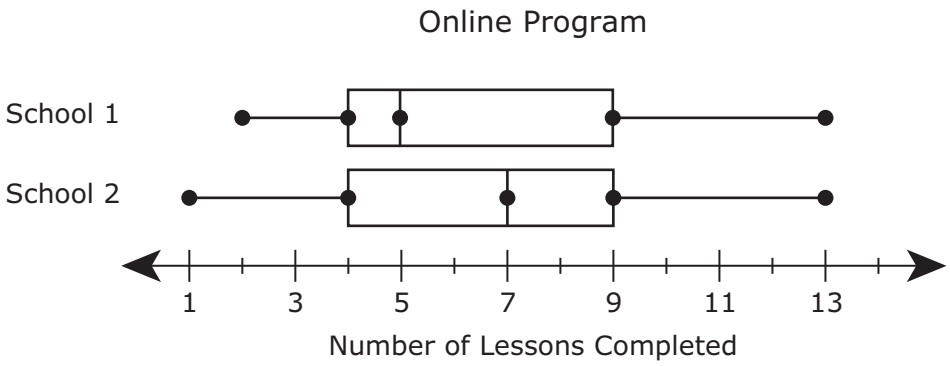
F 10 c

G 40 c

H $2\frac{1}{2}$ c

J $7\frac{1}{2}$ c

39 The box plots show the numbers of lessons completed by individual students enrolled in an online program at two different schools.



Which statement is best supported by the data in the box plots?

A The range of the data for School 1 is greater than the range of the data for School 2.

B The median of the data for School 2 is greater than the median of the data for School 1.

C The interquartile range of the data for School 2 is greater than the interquartile range of the data for School 1.

D The students at School 1 completed more lessons than the students at School 2.

---

40 Natasha has a job putting letters in envelopes to be mailed. In 1 hour she put 42 letters in envelopes.

Which equation best represents y, the total number of letters Natasha puts in envelopes in x hours if she continues at this rate?

F $x = y + 42$

G $y = x + 42$

H $x = 42y$

J $y = 42x$

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

STOP

STAAR
GRADE 7
Mathematics
May 2021