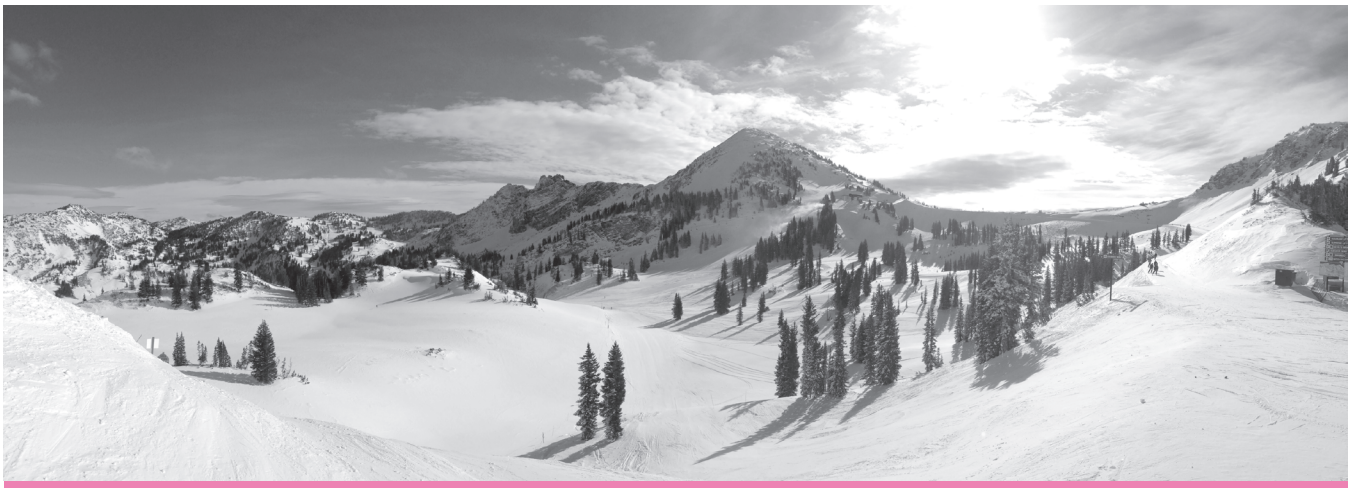
Colorado Measures of Academic Success



Grade 6

Mathematics

Paper Practice Resource for Students

Paper Practice Resource for Students

The Colorado Measures of Academic Success (CMAS) is Colorado's standards-based assessment program designed to measure the Colorado Academic Standards (CAS) in the content areas of science, social studies, English language arts, and mathematics. The sample items included in this resource provide students with an opportunity to become familiar with the format of test items that appear in the paper-based test books.

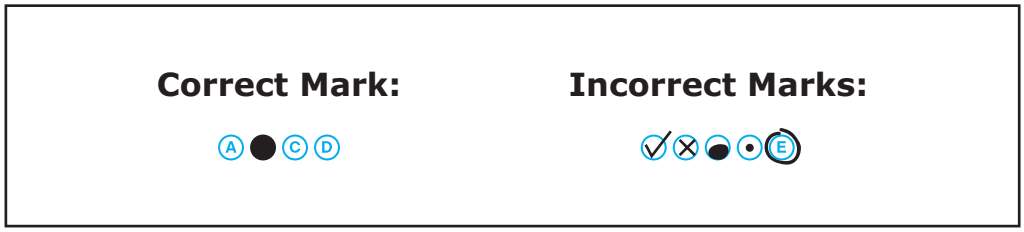
While the use of the sample items is not required, it is strongly encouraged to help ensure students are familiar with the types of items they may encounter while taking the paper-based test.

The sample item sets in the CMAS Practice Resources are not intended to be representative of a complete unit or test, nor are they intended to cover all assessed content or item types. To view assessment frameworks, high level blueprints, scoring rubrics, evidence statements and standards for the CMAS assessments, visit: https://www.cde.state.co.us/assessment/cmas_testdesign.

Item Types:

Selected Response Items

Selected response items are multiple choice questions. To respond, the student indicates their response in an answer grid or by filling in the circle(s) next to their answer choice.



Constructed Response Items

Constructed response items are questions or prompts that require an independent, written response. To respond, the student writes his or her answer in the response box in the test book.

Converted Online Technology-Enhanced Item Types

Online technology-enhanced items converted to the paper testing format may ask students to:

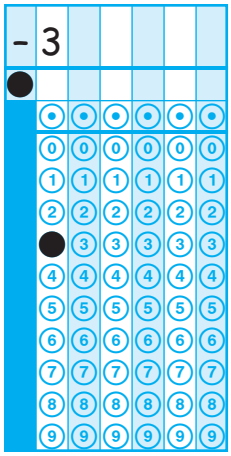
- Circle the correct answer
- Complete a table with checkmarks, Xs, or letters from a list of answer choices
- Fill in the blank
- Draw lines from boxes to correct answers
- Complete a bar graph or histogram
- Interact with a number line
- Graph points and lines on a coordinate grid
- Divide and shade shapes to indicate fractions

Directions for Completing the Answer Grids

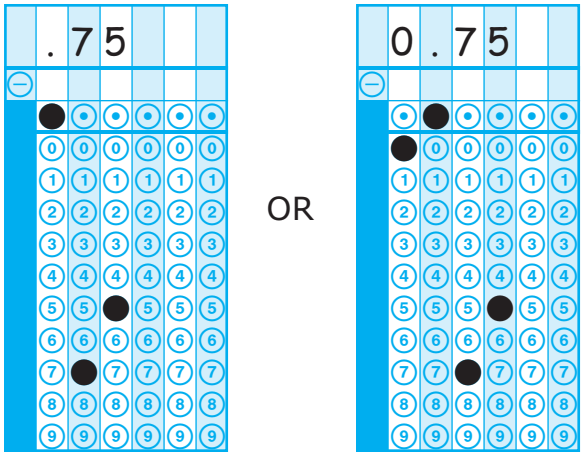
1. Work the problem and find an answer.
2. Write your answer in the boxes at the top of the grid.
3. Print only one number or symbol in each box. Do not leave a blank box in the middle of an answer.
4. Under each box, fill in the circle that matches the number or symbol you wrote above. Make a solid mark that completely fills the circle.
5. Do not fill in a circle under an unused box.
6. Fractions cannot be entered into an answer grid and will not be scored. Enter fractions as decimals.
7. See below for examples on how to correctly complete an answer grid.

EXAMPLES

To answer –3 in a question, fill in the answer grid as shown below.



To answer .75 in a question, fill in the answer grid as shown below.



ITEM SET 1 - SECTION 1 (Non-Calculator)

Directions:

This Item Set has two sections: a non-calculator section and a calculator section. You will now take the non-calculator section. You may not use a calculator.

1. Which number is closest to zero on a number line?

Ⓐ $-\frac{3}{5}$

Ⓑ $-\frac{2}{5}$

Ⓒ $\frac{1}{5}$

Ⓓ $\frac{4}{5}$

2. The point $(-2, 6)$ is plotted on a coordinate plane.

Which statements are true?

Select the **two** statements that are true.

Ⓐ The reflection point across the y-axis is $(2, 6)$.

Ⓑ The reflection point across the y-axis is $(2, -6)$.

Ⓒ The reflection point across the y-axis is $(-2, -6)$.

Ⓓ The reflection point across the x-axis is $(2, 6)$.

Ⓔ The reflection point across the x-axis is $(2, -6)$.

Ⓕ The reflection point across the x-axis is $(-2, -6)$.

3. Which question is a statistical question?

Ⓐ Which students in an elementary school class can speak another language?

Ⓑ How many students in a middle school class like each type of food?

Ⓒ Which elementary classes is the principal visiting this week?

Ⓓ How many students are in a middle school?

4. What is the value of this expression?

$$1{,}224 \div 16$$

Ⓐ 76.0

Ⓑ 76.2

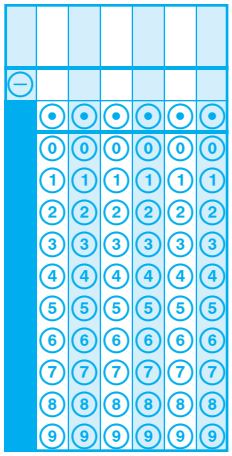
Ⓒ 76.5

Ⓓ 76.8

5. A baker mixes 42.68 grams of flour and 19.125 grams of sugar in a bowl. The baker then uses 52.76 grams of the mixture in a cake.

How many grams of the mixture does the baker still have?

Enter your answer in the box.



6. An expression is shown.

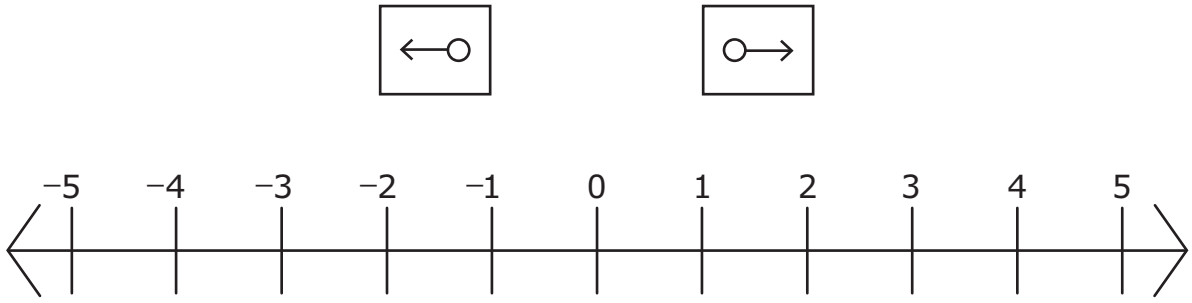
$$19 \times 19 \times 19 \times 19 \times 19 \times 19 \times 19$$

Using a base and an exponent, write an expression that is equivalent to the one shown.

Enter your expression in the space provided. Enter **only** your expression.

7. Graph the inequality that shows all the possible values of $-1 > x$.

Select the correct ray and then graph the ray beginning at the correct place on the number line.



8. The width of a postage stamp is $1\frac{1}{5}$ inches and its area is $1\frac{1}{3}$ square inches.

What is the length of the postage stamp in inches?

Ⓐ $\frac{2}{15}$

Ⓑ $\frac{9}{10}$

Ⓒ $1\frac{1}{9}$

Ⓓ $1\frac{3}{5}$

9. Which group of numbers is arranged from least to greatest?

Select **all** that apply.

Ⓐ $-7,\ -5,\ 1$

Ⓑ $|-7|,\ |-5|,\ |1|$

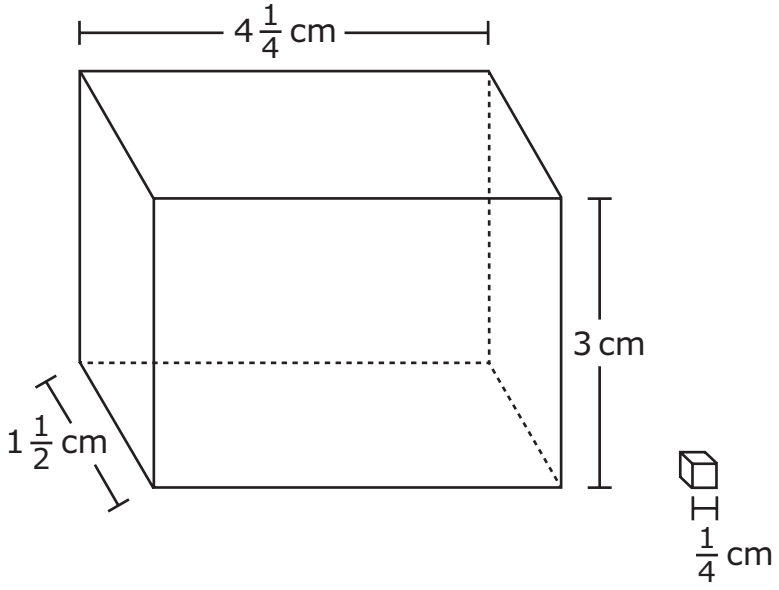
Ⓒ $-5,\ 7,\ 1$

Ⓓ $|-5|,\ |7|,\ |1|$

Ⓔ $-1,\ 5,\ -7$

Ⓕ $|-1|,\ |5|,\ |-7|$

10. A right rectangular prism is made up of cubes. Each cube in the prism has an edge length of $\frac{1}{4}$ centimeter.



What is the number of cubes that fit inside the prism with no gaps?

Ⓐ 77

Ⓑ 102

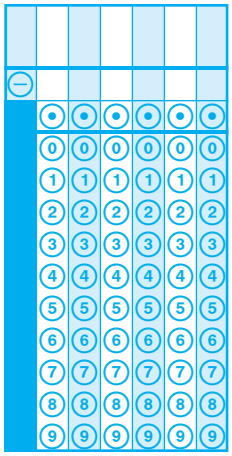
Ⓒ 1,224

Ⓓ 2,240

11. What is the value of the expression 1,362 ÷ 12?

Write your answer as a decimal.

Enter your answer in the box.



12. Which expression uses the greatest common factor to show the sum of 48 + 64?

Ⓐ 4(12 + 16)

Ⓑ 8(6 + 8)

Ⓒ 16(3 + 4)

Ⓓ 24(2 + 3)

This is the end of Item Set 1 Section 1.

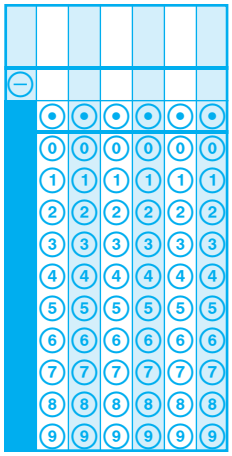
ITEM SET 1 - SECTION 2 (Calculator)

You may use a calculator for Item Set 1 - Section 2.

13. Evaluate the expression $4x + y^2$ when $x = 1.8$ and $y = 3$.

Write your answer as a decimal.

Enter your answer in the box.



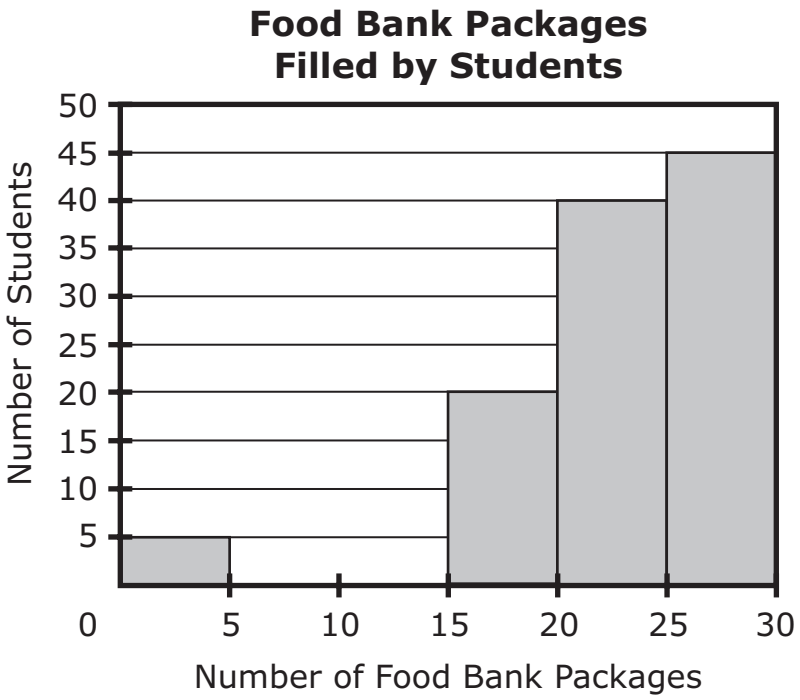
This is the end of Item Set 1 Section 2.

ITEM SET 2 (Calculator)

You may use a calculator for Item Set 2.

Use the information provided to answer Part A and Part B for question 1.

Students volunteered to fill packages for a food bank. The manager recorded the number of packages filled by the students. The results are shown in this histogram.



1. Part A

Based on the histogram, how many students volunteered at the food bank?

Ⓐ 30

Ⓑ 45

Ⓒ 105

Ⓓ 110

Part B

Which statement about the data shown in the histogram is correct?

Ⓐ The number of students who filled packages for the food bank in the interval 20–25 is twice the number of students who filled packages in the interval 15–20.

Ⓑ The number of students who filled packages for the food bank in the interval 25–30 is greater than the number of students in all the other intervals combined.

Ⓒ There are no outliers in the data set.

Ⓓ The data is symmetrical.

2. A farmer plants tomatoes, carrots, and corn in a rectangular garden.

- The tomato section covers $\frac{2}{7}$ of the total area of the garden.
- The area of the tomato section is 68 square feet.
- The area of the entire garden is x square feet.

Write and solve an equation to determine the total area, in square feet, of the garden.

Enter your equation and your solution in the space provided. Enter **only** your equation and your solution.

Equation: _____

Solution: x = _____

Use the information provided to answer Part A through Part D for question 3.

The table shows the number of words four students can type in a given amount of time.

Typing Speeds for Students

Student	Typing Speed
W	225 words in 5 minutes
X	246 words in 6 minutes
Y	266 words in 4 minutes
Z	303 words in 6 minutes

3. Part A

Which student can type the **fewest** number of words in 60 minutes?

Ⓐ Student W

Ⓑ Student X

Ⓒ Student Y

Ⓓ Student Z

Part B

How many words could students X and Y type together in 2 hours?

Ⓐ 12,900

Ⓑ 10,750

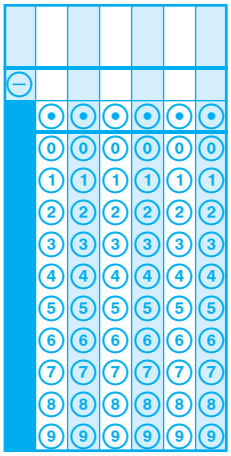
Ⓒ 9,675

Ⓓ 6,450

Part C

Student Z is typing a document with 5,454 words. How many minutes will it take this student to type this document?

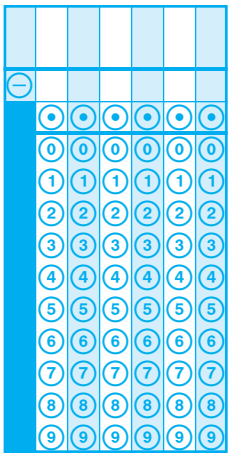
Enter your answer in the box.



Part D

How many more words can Student Y type in 20 minutes compared to Student W?

Enter your answer in the box.



4. Which value of x makes each equation true?

Write **one** letter for each value of x in the appropriate box. Each value of x may be used once, more than once, or not at all.

A.	B.	C.	D.	E.
$x = \frac{1}{9}$	$x = \frac{1}{3}$	$x = 3$	$x = 4$	$x = 9$

$20 = 5x$	$\frac{12}{x} = 4$	$27x = 3$
_____	_____	_____

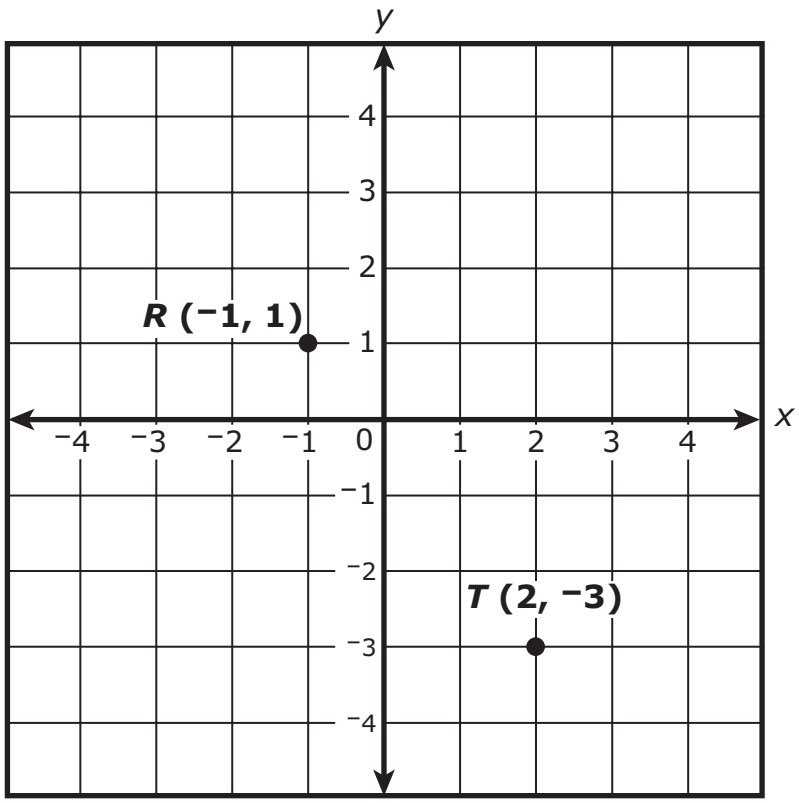
5. There are x dollars in a cash register at the beginning of the day. By noon, there is an additional $292.14 in the cash register. By the end of the day, $186.95 more is added to the cash register. The total amount in the cash register at the end of the day is $727.15. Use estimation to write an equation and your answers.

- Write an equation to estimate the amount of money in the cash register at the beginning of the day.
- Show your steps or explain how you found your equation.
- Determine an estimate of the original amount in the cash register. Round to the nearest hundred dollars in your estimation.

Enter your equation, your work or explanation, and your answer in the space provided.

Use the information provided to answer Part A and Part B for question 6.

Points *R* and *T* are plotted on a coordinate grid.



6. Part A

In right triangle *RST*, point *T* is graphed at (2, −3), and point *R* is graphed at (−1, 1).

Which coordinate pair describes the location of point *S*?

Ⓐ (−1, −3)

Ⓑ (−1, 3)

Ⓒ (1, 2)

Ⓓ (1, 3)

Part B

Triangle *MRT* is graphed with point *M* at (−4, −3).

What is the length, in units, of side $\overline{MT}$?

Ⓐ 3

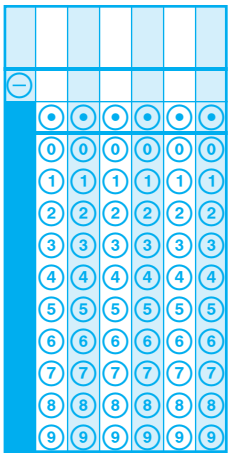
Ⓑ 4

Ⓒ 6

Ⓓ 7

7. What is 45% of 320?

Enter your answer in the box.



This is the end of Item Set 2.

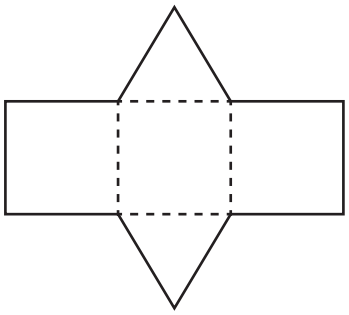
ITEM SET 3 (Calculator)

You may use a calculator for Item Set 3.

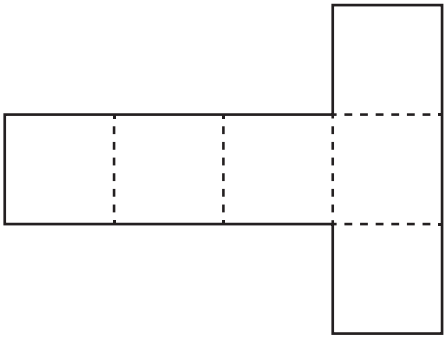
1. Part A

Which net represents a square pyramid?

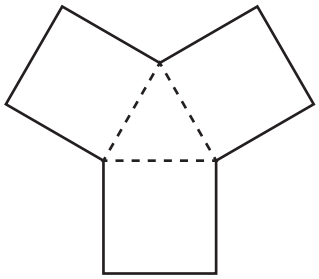
Ⓐ



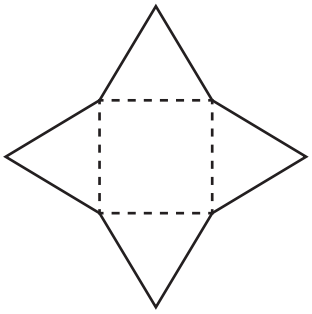
Ⓑ



Ⓒ

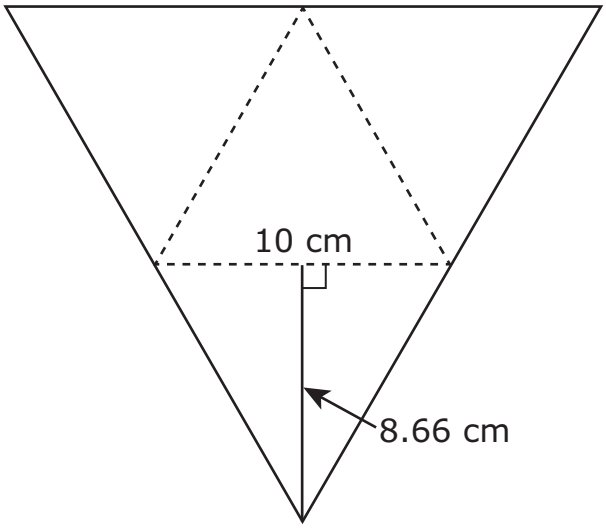


Ⓓ



Part B

This net shows how to make a three-dimensional figure. Each triangular face of the net has an approximate height of 8.66 centimeters and a side length of 10 centimeters.



Which value **best** approximates the total surface area, in square centimeters, of the figure?

Ⓐ 75

Ⓑ 150

Ⓒ 173

Ⓓ 346

2. An expression that represents the perimeter of a quadrilateral is $x + x + x + 6$. A student claims that it is possible to write the expression for the perimeter in two more ways and still get the same perimeter.

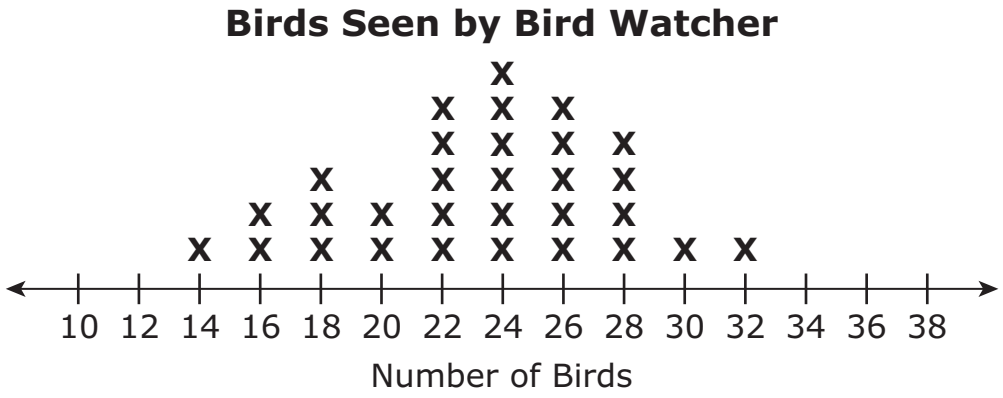
- Show or explain why the expression $3(x + 2)$ is equivalent to the given expression.
- Write a different expression that represents the perimeter of the quadrilateral.
- Explain why the expression you wrote also represents the perimeter of the quadrilateral.
- Show or explain how to find the perimeter for all three expressions when $x = 13$.

Enter your answer and explanations in the space provided.

TURN THE PAGE AND CONTINUE WORKING

Use the information provided to answer Part A and Part B for question 3.

The number of birds seen by a bird watcher each day for 30 days is recorded in a line plot.



3. Part A

What is the mean number of birds seen by the bird watcher each day?

Ⓐ 18

Ⓑ 21.81

Ⓒ 23.27

Ⓓ 24

Part B

The bird watcher describes the center of the data set as the mean.

Which statement explains a reason the bird watcher would choose the mean to describe the center of the data set?

Ⓐ More than half of the recorded number of birds seen by the bird watcher are less than the mean.

Ⓑ The line plot showing the number of birds seen by the bird watcher is equally distributed.

Ⓒ There are about the same number of data points above and below the mean.

Ⓓ The mean is lower than all the data points.

4. An equation is shown.

$$x + 9.3 + 15 = 50$$

- Show the steps you can use to determine the value of x.
- Find the value of x in your last step.
- Explain or show how the value of x makes the equation true.

Enter your work, your answer, and your explanation in the space provided.

Use the information provided to answer Part A and Part B for question 5.

A store sells cherries for $3.70 per pound.

5. Part A

A person buys x pounds of cherries for $7.56.

Which equation can be used to find the number of pounds of cherries the person buys?

Ⓐ $3.70 + x = 7.56$

Ⓑ $7.56 + x = 3.70$

Ⓒ $3.70x = 7.56$

Ⓓ $7.56x = 3.70$

Part B

The store changes the price of the cherries. The equation $3.70 + p = 4.66$ represents the relationship between the old and new prices of cherries, where p is the change in the price per pound of cherries.

What is the value of p in this equation?

Ⓐ 0.81

Ⓑ 0.90

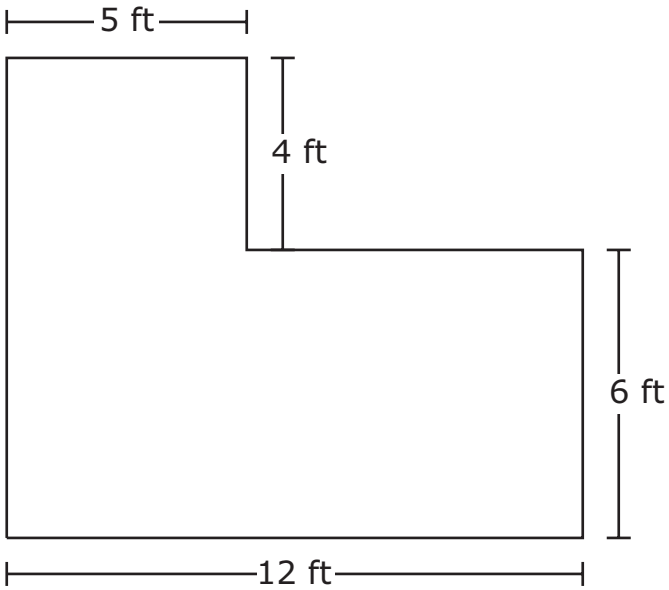
Ⓒ 0.96

Ⓓ 1.23

6. Part A

An L-shaped pool is made of two right rectangular prisms. The figure shows a top view of this pool. The pool height is the same for the entire pool.

Top View



The pool is filled with water to a height of 4 feet.

- Create an equation or set of equations that can be used to find the volume, in cubic feet, of the pool.
- Explain how you created the equation or set of equations.
- Find the volume, in cubic feet, of the pool.

Enter your equation or set of equations, your explanation, and your answer in the space provided.

Part B

A different pool is in the shape of a right rectangular prism and has a volume of 192 cubic feet. The area of the base of the pool is 32 square feet.

- Create an equation to find the height, in feet, of the water in the pool.
- Find the height, in feet, of the water in the pool. Show your work.

Enter your equation, your answer, and your work in the space provided.

Equation: _____

Height of water: _____ **feet**

Your Work:

This is the end of Item Set 3.

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