



# Colorado Measures of Academic Success



## Grade 5 Mathematics



Paper Practice Resource for Students



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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.

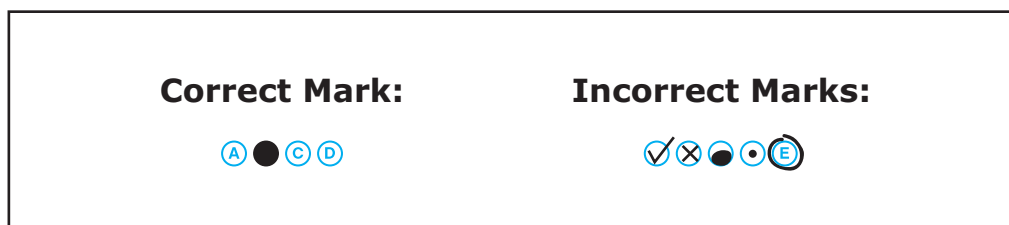
While the use of the sample items is not required, it is strongly encouraged to help ensure students are familiar with the types of items they may encounter while taking the paper-based test.

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](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 632 in a question, fill in the answer grid as shown below.

6	3	2			
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 0	<input type="radio"/> 0	<input type="radio"/> 0	<input type="radio"/> 0	<input type="radio"/> 0	<input type="radio"/> 0
<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1
<input type="radio"/> 2	<input type="radio"/> 2	<input checked="" type="radio"/>	<input type="radio"/> 2	<input type="radio"/> 2	<input type="radio"/> 2
<input type="radio"/> 3	<input checked="" type="radio"/>	<input type="radio"/> 3	<input type="radio"/> 3	<input type="radio"/> 3	<input type="radio"/> 3
<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4
<input type="radio"/> 5	<input type="radio"/> 5	<input type="radio"/> 5	<input type="radio"/> 5	<input type="radio"/> 5	<input type="radio"/> 5
<input checked="" type="radio"/>	<input type="radio"/> 6	<input type="radio"/> 6	<input type="radio"/> 6	<input type="radio"/> 6	<input type="radio"/> 6
<input type="radio"/> 7	<input type="radio"/> 7	<input type="radio"/> 7	<input type="radio"/> 7	<input type="radio"/> 7	<input type="radio"/> 7
<input type="radio"/> 8	<input type="radio"/> 8	<input type="radio"/> 8	<input type="radio"/> 8	<input type="radio"/> 8	<input type="radio"/> 8
<input type="radio"/> 9	<input type="radio"/> 9	<input type="radio"/> 9	<input type="radio"/> 9	<input type="radio"/> 9	<input type="radio"/> 9

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

.	7	5			
<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 0	<input type="radio"/> 0	<input type="radio"/> 0	<input type="radio"/> 0	<input type="radio"/> 0	<input type="radio"/> 0
<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1
<input type="radio"/> 2	<input type="radio"/> 2	<input type="radio"/> 2	<input type="radio"/> 2	<input type="radio"/> 2	<input type="radio"/> 2
<input type="radio"/> 3	<input type="radio"/> 3	<input type="radio"/> 3	<input type="radio"/> 3	<input type="radio"/> 3	<input type="radio"/> 3
<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4
<input type="radio"/> 5	<input type="radio"/> 5	<input checked="" type="radio"/>	<input type="radio"/> 5	<input type="radio"/> 5	<input type="radio"/> 5
<input type="radio"/> 6	<input type="radio"/> 6	<input type="radio"/> 6	<input type="radio"/> 6	<input type="radio"/> 6	<input type="radio"/> 6
<input type="radio"/> 7	<input checked="" type="radio"/>	<input type="radio"/> 7	<input type="radio"/> 7	<input type="radio"/> 7	<input type="radio"/> 7
<input type="radio"/> 8	<input type="radio"/> 8	<input type="radio"/> 8	<input type="radio"/> 8	<input type="radio"/> 8	<input type="radio"/> 8
<input type="radio"/> 9	<input type="radio"/> 9	<input type="radio"/> 9	<input type="radio"/> 9	<input type="radio"/> 9	<input type="radio"/> 9

OR

0	.	7	5		
<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/> 0	<input type="radio"/> 0	<input type="radio"/> 0	<input type="radio"/> 0	<input type="radio"/> 0	<input type="radio"/> 0
<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1	<input type="radio"/> 1
<input type="radio"/> 2	<input type="radio"/> 2	<input type="radio"/> 2	<input type="radio"/> 2	<input type="radio"/> 2	<input type="radio"/> 2
<input type="radio"/> 3	<input type="radio"/> 3	<input type="radio"/> 3	<input type="radio"/> 3	<input type="radio"/> 3	<input type="radio"/> 3
<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4	<input type="radio"/> 4
<input type="radio"/> 5	<input type="radio"/> 5	<input type="radio"/> 5	<input checked="" type="radio"/>	<input type="radio"/> 5	<input type="radio"/> 5
<input type="radio"/> 6	<input type="radio"/> 6	<input type="radio"/> 6	<input type="radio"/> 6	<input type="radio"/> 6	<input type="radio"/> 6
<input type="radio"/> 7	<input type="radio"/> 7	<input checked="" type="radio"/>	<input type="radio"/> 7	<input type="radio"/> 7	<input type="radio"/> 7
<input type="radio"/> 8	<input type="radio"/> 8	<input type="radio"/> 8	<input type="radio"/> 8	<input type="radio"/> 8	<input type="radio"/> 8
<input type="radio"/> 9	<input type="radio"/> 9	<input type="radio"/> 9	<input type="radio"/> 9	<input type="radio"/> 9	<input type="radio"/> 9

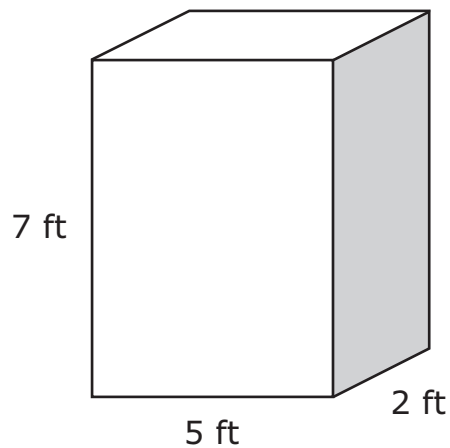


# ITEM SET 1

1. What is the value of  $46.8 \div 6$ ?

- (A) 7.1
- (B) 7.8
- (C) 71
- (D) 78

2. The dimensions of a right rectangular prism are shown in the diagram.



What is the volume, in cubic feet, of the prism?

- (A) 10
- (B) 14
- (C) 35
- (D) 70



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

A store sells shoes.

**3. Part A**

One day, a delivery of shoes contains  $\frac{2}{3}$  dress shoes and  $\frac{1}{6}$  slippers.

Which equation can be used to find the fraction of shoes that are both dress shoes and slippers?

☐ A  $\frac{2}{6} + \frac{1}{6} = \frac{3}{6}$

☐ B  $\frac{4}{6} + \frac{2}{6} = \frac{6}{6}$

☐ C  $\frac{1}{12} + \frac{2}{12} = \frac{3}{12}$

☐ D  $\frac{8}{12} + \frac{2}{12} = \frac{10}{12}$

**Part B**

The next day, another delivery of shoes arrives. In the delivery,  $\frac{5}{12}$  are running shoes and  $\frac{1}{4}$  are sandals.

What is the difference between the fraction of running shoes and the fraction of sandals in the delivery?

☐ A  $\frac{4}{8}$

☐ B  $\frac{2}{12}$

☐ C  $\frac{8}{12}$

☐ D  $\frac{6}{16}$

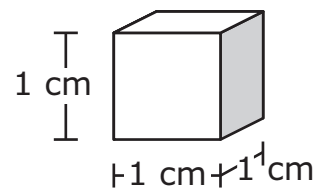
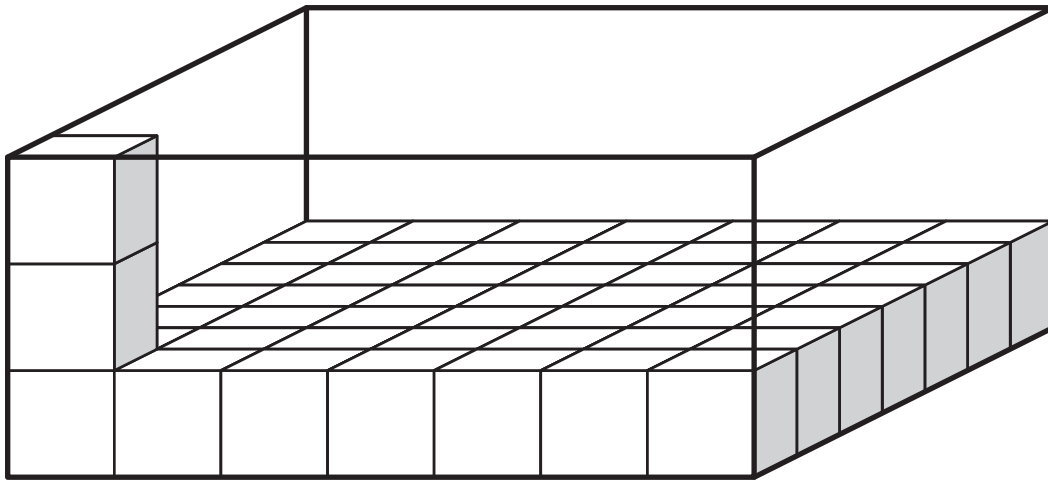
4. There are 4 pieces of carpet that are each  $\frac{3}{4}$  foot wide. A person multiplies the numerator and denominator of  $\frac{3}{4}$  by 4 and determines the total width of the 4 pieces of carpet is  $\frac{12}{16}$  foot.

$$4 \times \frac{3}{4} = \frac{4 \times 3}{4 \times 4} = \frac{12}{16}$$

- Explain the mistake the person made in finding the total width of the 4 pieces of carpet.
- Explain how to find the correct total width, in feet, of the 4 pieces of carpet.
- What is the total width, in feet, of 15 same-sized pieces of carpet? Show your work.

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

5. A right rectangular prism is being filled with unit cubes. Each unit cube measures 1 centimeter on each side.



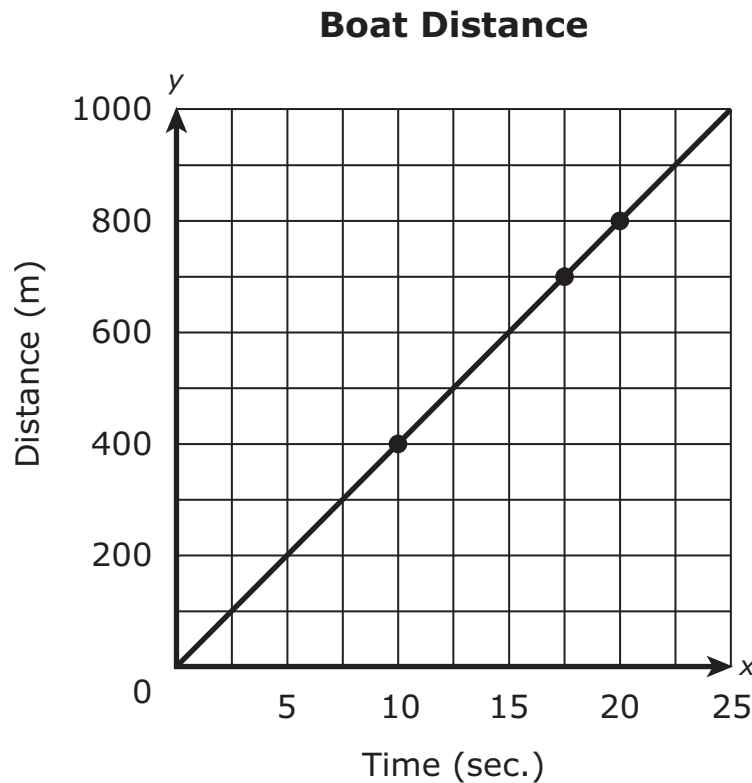
What is the total volume, in cubic centimeters, of this right rectangular prism?

Enter your answer in the box.

•	•	•	•	•	•
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

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

The line on the coordinate plane shows the time and distance of a boat race.



**6. Part A**

Which coordinate pairs represent points on the graph?

Select the **two** coordinate pairs.

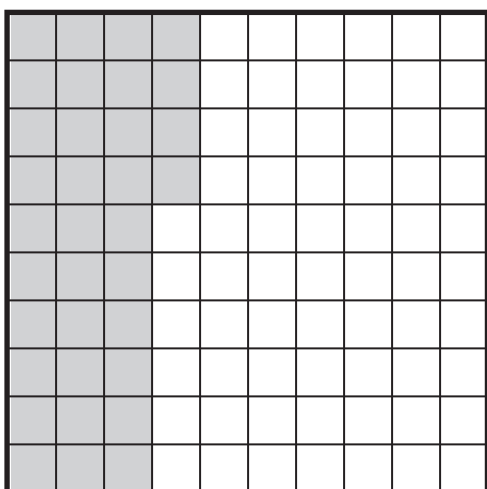
- ☐ A (5, 200)
- ☐ B (8, 300)
- ☐ C (10, 400)
- ☐ D (12, 500)
- ☐ E (25, 900)

## Part B

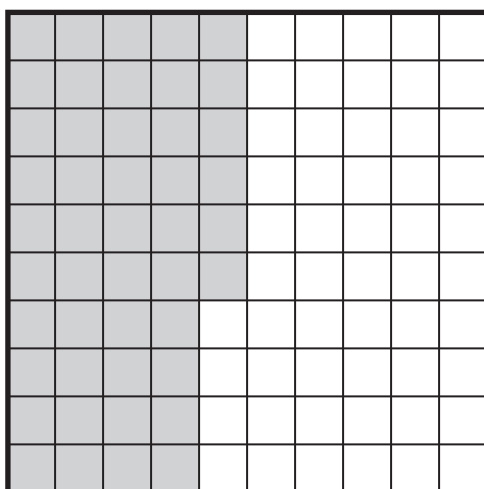
Which statement could the coordinate pair (15, 600) represent on the coordinate plane?

- ☐ A The boat has been racing for 600 seconds since the beginning point of the race.
- ☐ B The boat is 15 meters from the beginning point of the race after 600 seconds.
- ☐ C The boat is 600 meters from the beginning point of the race after 15 seconds.
- ☐ D The boat is 15 meters from the beginning point of the race.

7. The shaded parts of the models show 0.34 and 0.46.



0.34



0.46

What is the value of  $0.34 + 0.46$ ?

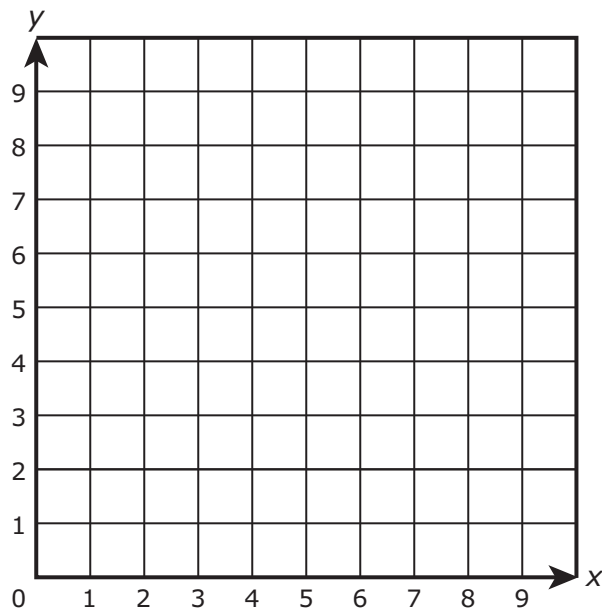
Enter your answer in the box.

•	•	•	•	•	•
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

**8.** Coordinates for two points on the coordinate plane are listed:

- Point  $P$  is 3 units to the right of the origin along the  $x$ -axis and 9 units up from the origin along the  $y$ -axis.
- Point  $R$  is located at  $(0, 6)$ .

Plot the two points on the coordinate plane.



Use the information provided to answer Part A and Part B for question 9.

A person built a sandbox in the shape of a rectangular prism.

**9. Part A**

The base of the sandbox has an area of 1,260 square inches. The height of the sandbox is 30 inches.

What is the volume, in cubic inches, of the sandbox?

•	•	•	•	•	•
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9



**Part B**

The person wants to fill the sandbox with 13 cubic feet of sand. She has 16 bags of sand that each contain  $\frac{3}{4}$  cubic foot of sand.

- Find the total amount of extra sand in the bags or the amount of additional sand needed to determine whether there is enough sand in the bags to fill the sandbox.
- Show your work.

Enter your answers and work in the space provided.

**This is the end of Item Set 1.**



# ITEM SET 2

**1.** A girl bought 1 pound of spinach. The following amounts were used.

- She used  $\frac{3}{8}$  pound of spinach in a chicken dish.
- She used  $\frac{2}{5}$  pound of spinach in a pasta dish.

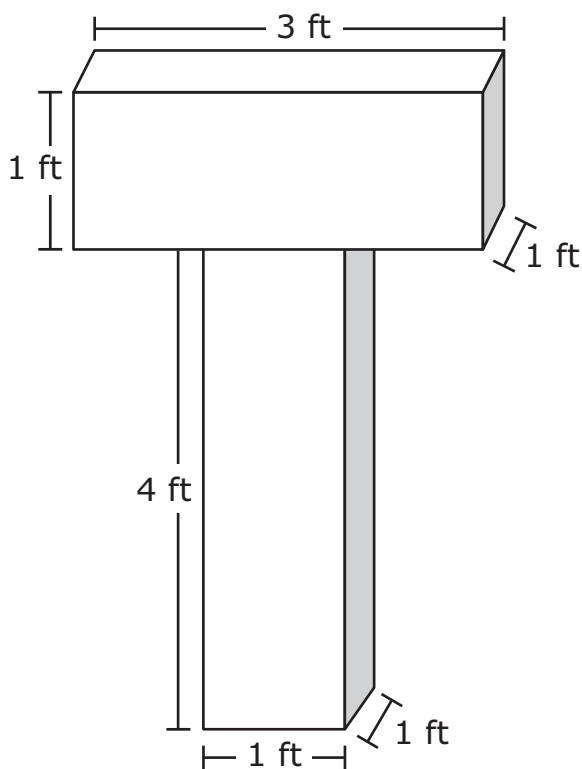
How much spinach did she use for these two dishes?

- Ⓐ  $\frac{5}{13}$  pound
- Ⓑ  $\frac{6}{13}$  pound
- Ⓒ  $\frac{27}{40}$  pound
- Ⓓ  $\frac{31}{40}$  pound

**TURN THE PAGE AND  
CONTINUE WORKING**

## 2. Part A

The school mascot is a tiger. Students build a "T" for their gym. The dimensions of the "T" are given in the diagram.



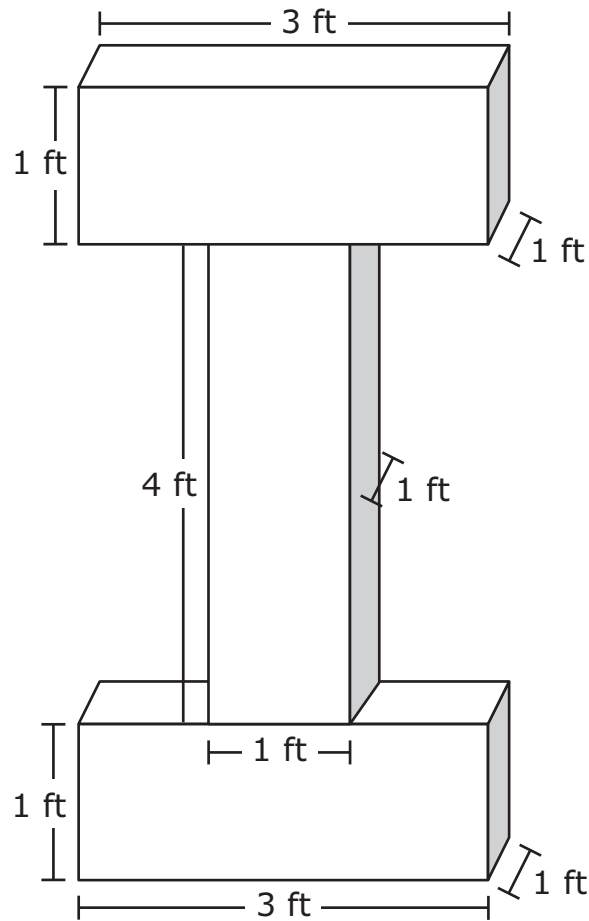
What is the volume, in cubic feet, of the "T"?

Enter your answer in the box.

•	•	•	•	•	•
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

## Part B

The school mascot changes to an iguana. The students change the "T" into an "I."



Which statement describes the volume of the "I" compared to the volume of the "T"?

- ☐ A The volume of the "I" is 1 cubic foot more than the volume of the "T."
- ☐ B The volume of the "I" is 3 cubic feet more than the volume of the "T."
- ☐ C The volume of the "I" is 5 cubic feet more than the volume of the "T."
- ☐ D The volume of the "I" is 6 cubic feet more than the volume of the "T."

3. Which numbers are needed to complete the expression so that the expression has a value of 8?

Write the correct numbers from the list in the blank boxes. Each number may be used once or not at all.

2
---

9
---

10
----

12
----

$$(14 + \boxed{\phantom{00}}) \times \boxed{\phantom{00}} \div (18 - 12)$$

4. A bottle has  $\frac{3}{10}$  liter of tea. A second bottle has  $\frac{3}{5}$  of that amount of tea. How many liters of tea are in the second bottle?

- (A)  $\frac{3}{50}$
- (B)  $\frac{3}{25}$
- (C)  $\frac{9}{50}$
- (D)  $\frac{9}{10}$



**5.** What is the value of each equation?

Circle the answer option to correctly complete each equation.

$$8.29 + 1.71 = \underline{\hspace{2cm}}$$

- |       |
|-------|
| 9     |
| 9.91  |
| 10    |
| 10.01 |

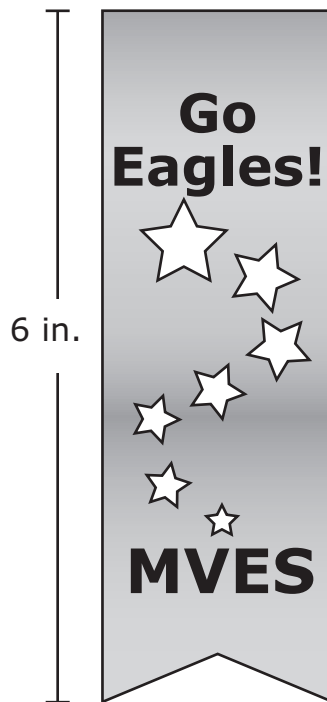
$$8.09 + 1.92 = \underline{\hspace{2cm}}$$

- |       |
|-------|
| 9     |
| 9.91  |
| 10    |
| 10.01 |

**6. Part A**

A fifth-grade class at Middle Valley Elementary School is selling school ribbons to raise money for a field trip. The school ribbons will have a length of 6 inches. The cost of 5 yards of ribbon is \$6.

**1 yard = 36 inches**



- Determine how many school ribbons can be made from the 5 yards of ribbon. Show your work.
- Show how to find the cost of each 6-inch school ribbon. Include your work.
- Write an equation that represents the cost of 5 school ribbons.

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

## Part B

The class wants to buy additional supplies and add an eagle sticker to each ribbon.

The additional supplies are shown.

- 30 yards of green ribbon that cost \$3 for each yard
- 40 yards of white ribbon that cost \$2 for each yard
- 10 packages of eagle stickers for \$2 a package

The parents contribute \$145 to help pay for the supplies.

- Write an equation that can be used to determine  $c$ , the total cost of the ribbons and stickers.
- Determine the value of  $c$  in your equation.
- Explain or show how to determine the money still needed to pay for the additional supplies.

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

**7.** The rules for two different number patterns are given.

- Pattern A: Start with 0, and then add 2 to get the next number.
- Pattern B: Start with 2, and then multiply by 2 to get the next number.

How does the fourth number in Pattern B compare to the fourth number in Pattern A?

- ☐ A The fourth number in Pattern B is 10 more than the fourth number in Pattern A.
- ☐ B The fourth number in Pattern B is 2 more than the fourth number in Pattern A.
- ☐ C The fourth number in Pattern B is 2 times the fourth number in Pattern A.
- ☐ D The fourth number in Pattern B is 4 times the fourth number in Pattern A.

**8.** How many  $\frac{1}{6}$ -cup servings are in 12 cups of juice?

- ☐ A  $\frac{1}{72}$
- ☐ B  $\frac{1}{2}$
- ☐ C 2
- ☐ D 72

9. A fish tank is in the shape of a right rectangular prism. The fish tank has a length of 6 feet, a width of 2 feet, and a height of 3 feet.

What is the volume, in cubic feet, of the fish tank?

- ☐ A 11
- ☐ B 18
- ☐ C 30
- ☐ D 36

**This is the end of Item Set 2.**

# ITEM SET 3

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

A farmer has two different-sized rectangular gardens.

**1. Part A**

The smaller garden has a length of 24 feet and a width of 9 feet.

What is the area, in square feet, of the smaller garden?

Enter your answer in the box.

•	•	•	•	•	•
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

**Part B**

The larger garden has a length of 132 feet and a width of 24 feet.

What is the area, in square feet, of the larger garden?

Enter your answer in the box.

•	•	•	•	•	•
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9



## 2. Part A

Which amount is greater than four hundred forty-five and fifty-seven hundredths?

- (A) Four hundred forty-five and five tenths
- (B) Four hundred forty-five and seven tenths
- (C) Four hundred forty-five and five thousandths
- (D) Four hundred forty-five and fifty-seven thousandths

## Part B

What is four hundred forty-five and fifty-seven hundredths rounded to the nearest tenth?

Enter your answer in the box.

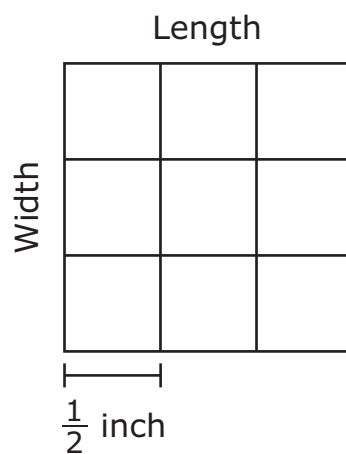
•	•	•	•	•	•
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

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

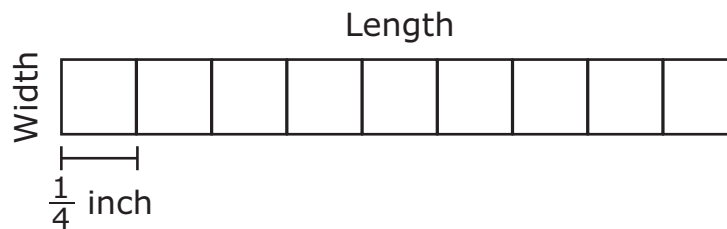
Student A and Student B created patterns using square tiles.

- The pattern created by each student is made up of 9 square tiles.
- Each tile in the pattern for Student A has a side length of  $\frac{1}{2}$  inch.
- Each tile in the pattern for Student B has a side length of  $\frac{1}{4}$  inch.

### Student A Pattern



### Student B Pattern

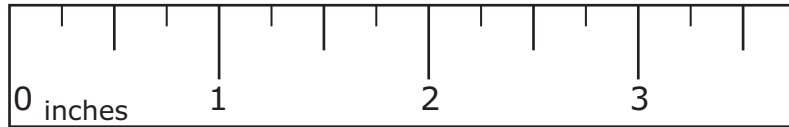


not to scale

### 3. Part A

What is the length, in inches, of the pattern for Student B?

Draw a line and shade the ruler to the correct length.



### Part B

- Find the area, in square inches, of the pattern for Student A.
- Explain how to find the area of the pattern for Student B using a different method than the one used to find the area of the pattern for Student A.

Enter your answer and your explanation in the space provided.

4. What is the value of the expression  $\frac{11}{8} + \frac{1}{5}$ ?

(A)  $\frac{3}{10}$

(B)  $\frac{12}{13}$

(C)  $\frac{63}{40}$

(D)  $\frac{15}{8}$

**5. Part A**

A frog wants to reach a pond that is 10 feet away. The frog hops 5 times. Each hop is 18 inches.

How many more inches does the frog need to travel to reach the pond?

- ☐ A 30
- ☐ B 90
- ☐ C 102
- ☐ D 138

**Part B**

The frog has two ways to reach the pond. The frog could hop on grass for 10 feet or hop on the sidewalk for 4 yards and 1 foot to reach the pond.

Which statement is true?

- ☐ A The grass route is 72 inches shorter than the sidewalk route.
- ☐ B The sidewalk route is 5 feet shorter than the grass route.
- ☐ C The sidewalk route is 1 yard longer than the grass route.
- ☐ D The sidewalk route is 2 feet longer than the grass route.

**6.** Which inequalities are correct?

Select the **three** correct inequalities.

- ☐ A  $12.012 > 12.12$
- ☐ B  $12.071 < 12.12$
- ☐ C  $12.07 > 12.054$
- ☐ D  $12.076 > 12.54$
- ☐ E  $12.012 < 12.076$

**7.** Create a fraction model to show the answer to  $\frac{1}{2} \times \frac{3}{4}$ .

Divide the figure into the correct number of equal parts and then shade the correct number of parts.



**This is the end of Item Set 3.**



