A teacher asked her students to use estimation to decide if the sum of the problem below is closer to 4,000 or 5,000.

$$496 + 1,404 + 2,605 + 489 =$$

One student replied that she thinks the sum is closer to 4,000. She used the estimation shown below to support her reasoning.

$$496 + 1,404 + 2,605 + 489 =$$

$$0 + 1,000 + 3,000 + 0 = 4,000$$

Is the student's reasoning correct? In the space below, use numbers and words to explain why or why not. If the student's reasoning is not correct, explain how she should have estimated.

STATION #1

Ava's height is 3 feet, 6 inches.

Which other measurement could be used to describe Ava's height? Click all that apply.

(A)   1 yard, 6 inches

(B) $1\frac{1}{2}$ yards

(C) $3\frac{1}{2}$ feet

(D)   3.6 feet

(E)   36 inches

(F)   42 inches

STATION #2

Sort these five shapes according to the characteristics labeled in the boxes below. Some figures may belong in more than one box.

| Rectangle | Rhombus | Right Triangle | Square | Trapezoid |

Click on a shape and then click inside a box to place the shape in the box. Continue as many times as necessary.

Shapes with at least one right angle	Shapes with perpendicular sides	Shapes with parallel sides

STATION #3

Sarah is 12 years old.

- George is g years old.
- Sarah is 3 times as old as George.

For numbers 1a – 1c, choose Yes or No to indicate whether each statement is true.

1a. George's age, in years, can be represented
by the expression 12 ÷ 3.   ○ Yes   ○ No

1b. George is 15 years old.   ○ Yes   ○ No

1c. Sarah's age, in years, can be represented
by the equation 12= 3 × g.   ○ Yes   ○ No

STATION #4

Pablo solved a multiplication problem using two different methods. He made a mistake in either Method W or Method Z.

Method W	Method Z	
23×49	23×49	
$20 \times 9 = 180$ $3 \times 9 = 27$ $20 \times 4 = 80$ $3 \times 4 = + 12$ $\overline{ 299}$	**Area Model**	**Rectangle Sections**

Area Model:

	40	+ 9
20	800	180
+ 3	120	27

Rectangle Sections:

$\overset{1}{}800$
120
180
+ 27
$\overline{1,127}$

Identify the method where Pablo made a mistake and explain what he should do to correct it.

STATION #5

Part A:

On the coordinate grid, plot the following points in order and connect each plotted point to the previous one in the order shown to form a figure.

1. Point A (2, 5)

2. Point B (2, 9)

3. Point C (5, 7)

4. Point D (8, 9)

5. Point E (8, 5)

6. Point A (2, 5)

Part B:

What is the area, in square units, of the enclosed figure?

STATION #6

The table below shows the length of ribbon, in yards, needed to make different art projects.

Art Projects

Project	Length of Ribbon (in yards)
Flower	$1\frac{3}{4}$
Bulletin Board	$3\frac{1}{3}$
Pillow	2
Mask	$\frac{1}{6}$
Puppet	$2\frac{1}{2}$
Bookmark	$\frac{1}{4}$

Part A

Joan is making a bulletin board and a mask. How much ribbon, in yards, will she use in all? Show or explain how you found your answer.

Part B

Lance has $3\frac{2}{3}$ yards of ribbon. He is making a puppet. How much ribbon, in yards, will Lance have left? Show or explain how you found your answer.

Part C

Susan wants to use **exactly** 4 yards of ribbon to make as many **different** art projects as possible. Which art projects should she make?

STATION #7

Samantha did an addition problem and then used subtraction to check her work. These problems are shown below.

$$\begin{array}{r} 8,\!047 \\ +\ 1,\!299 \\ \hline 9,\!346 \end{array} \qquad \begin{array}{r} 9,\!346 \\ -\ 1,\!299 \\ \hline 8,\!153 \end{array}$$

For each statement below, choose Yes or No to show whether or not a statement is true.

1a. Samantha made mistakes in her
    addition problem.   ○ Yes   ○ No

1b. Samantha should have regrouped
    in her subtraction problem.   ○ Yes   ○ No

1c. The correct answer for the addition
    problem should be 9,236.   ○ Yes   ○ No

1d. The correct answer to the subtraction
    problem should be 8,047.   ○ Yes   ○ No

STATION #8

Read the following word problem.

In the morning John hiked $4\frac{8}{10}$ miles. In the afternoon he hiked $2\frac{1}{2}$ miles. How many miles did John hike altogether?

For numbers 1a – 1d, select Yes or No to indicate whether each equation can be used to solve the word problem shown above.

1a. $4\frac{8}{10} + 2\frac{5}{10} = \boxed{?}$ ○ Yes   ○ No

1b. $4\frac{8}{10} + 2\frac{9}{10} = \boxed{?}$ ○ Yes   ○ No

1c. $\frac{10}{48} + \frac{10}{4} = \boxed{?}$ ○ Yes   ○ No

1d. $\frac{48}{10} + \frac{25}{10} = \boxed{?}$ ○ Yes   ○ No

STATION #9

Select the equations where $x = 5$ is true. Click all that apply.

(A) $2x + 4 = 14$

(B) $5x = 55$

(C) $6x + 3 = 14$

(D) $8 + 3x = 23$

(E) $6x = 30$

(F) $5x = 1$

STATION #10

Juan needs a right cylindrical storage tank that holds between 110 and 115 cubic feet of water.

Using whole numbers only, provide the radius and height for 3 different tanks that hold between 110 and 115 cubic feet of water.

Tank #1   Tank #2   Tank #3

radius = [   ] ft   radius = [   ] ft   radius = [   ] ft

height = [   ] ft   height = [   ] ft   height = [   ] ft

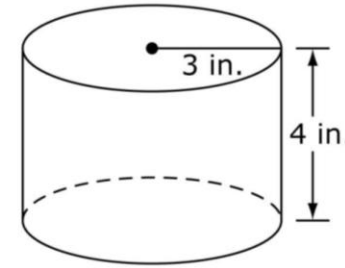## STATION #11

Part A:

What is the volume, in cubic inches, of a sphere that has a 3-inch radius, as shown below?
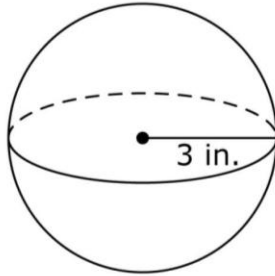
Volume = [   ] cubic inches

Part B:

What is the volume, in cubic inches, of a right cylinder that has a radius of 3 inches and height of 4 inches, as shown below?

Volume = [   ] cubic inches

[Directions to students on the computer before progressing to Part C]

You will not be allowed to return to Part A or Part B of this task after submitting your answers and clicking on "Next."

Part C:

Lin claims that the volume of any sphere with radius r inches is always **equal** to the volume of a cylinder with radius r inches and height h inches, when $h = \dfrac{4}{3}r$.

Show all work necessary to justify Lin's claim.
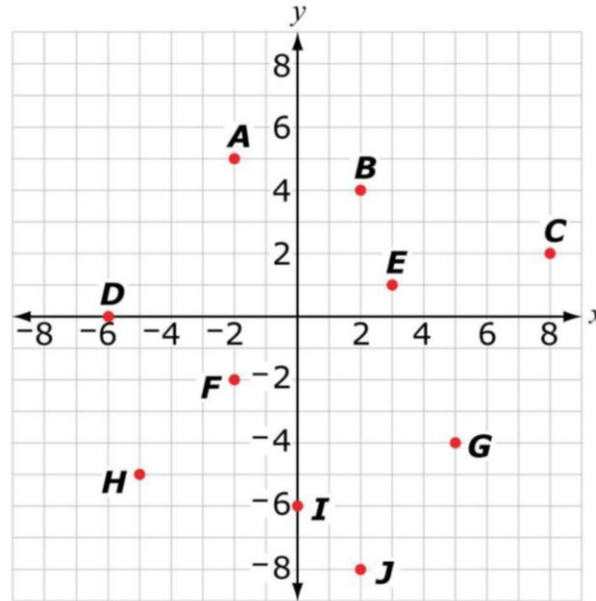
STATION #12

Part A

Triangle *STV* has side lengths of 7, 11, and 14 units. Determine whether or not this triangle is a right triangle.

Show all work necessary to justify your answer.

Part B

A right triangle has a hypotenuse of length 15. The lengths of the legs are whole numbers. What are the lengths of the legs?

STATION #13

The coordinate grid below shows points A through J.

Given the system of inequalities shown below, select all the points that are solutions to this system of inequalities.

$$\begin{cases} x + y < 3 \\ 2x - y > 6 \end{cases}$$

○ A   ○ B   ○ C   ○ D   ○ E

○ F   ○ G   ○ H   ○ I   ○ J

STATION #14

Given:
$$(x + 4)^2 - (x - 2)(x + 4)$$

Select all the expressions below that are equivalent to the given expression.

(A)   24

(B) $2(x + 4)$

(C) $-2(x - 12)$

(D) $6(x + 4)$

(E) $(x + 4) - (x - 2)$

(F) $(x + 4)[(x + 4) - (x - 2)]$

STATION #15

Which of the following equations have equivalent zeros?
(Select all that apply.)
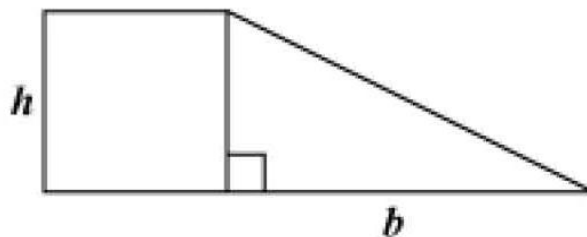
Ⓐ $y = \left(\dfrac{1}{2}x + 7\right)(2x + 2)$

Ⓑ $y = x^2 + 14$

Ⓒ $y = (x + 7)(x + 2)$

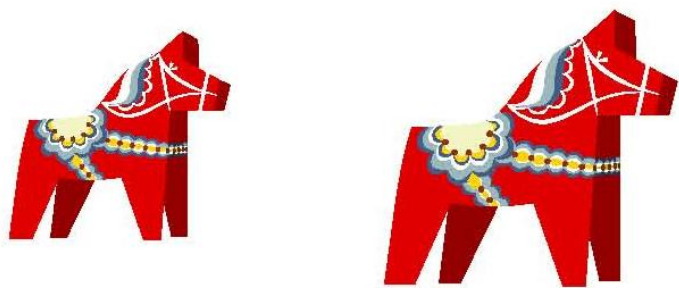Ⓓ $y = \left(x - \dfrac{9}{2}\right)^2 - \dfrac{25}{4}$

Ⓔ $y = x^2 + 9x + 14$

STATION #16

The figure below is made up of a square with height, h units, and a right triangle with height, h units, and base, b units.

The area of this figure is 80 square units.

Write an expression that equals the height, h, in terms of b. Show all work necessary to justify your answer.

STATION #17

"Toys for Charity" **(First-year Algebra)**

Phil and Cathy want to raise money for charity.
They decide to make and sell wooden toys.
They could make them in two sizes: small and large.

Phil will carve them from wood.
A small toy takes 2 hours to carve and a large toy takes 3 hours to carve.
Phil only has a total of 24 hours available for carving.

Cath will decorate them.
She only has time to decorate 10 toys.

The small toy will make $8 for charity.
The large toy will make $10 for charity.

They want to make as much money for charity as they can.

How many small and large toys should they make?

How much money will they then make for charity?

STATION #18

Ms. Olsen is having a new house built on Ash Road. She is designing a sidewalk from Ash Road to her front door. Ms Olsen wants the sidewalk to have an end in the shape of an isosceles trapezoid, as shown.

The contractor charges a fee of $200 plus $12 per square foot of sidewalk. Based on the diagram, what will the contractor charge Ms. Olsen for her sidewalk?

Show your work or explain how you found your answer.

House

25.0 ft

—4.5 ft—

7.2 ft

├——8.5 ft——┤

Ash Road

STATION #19
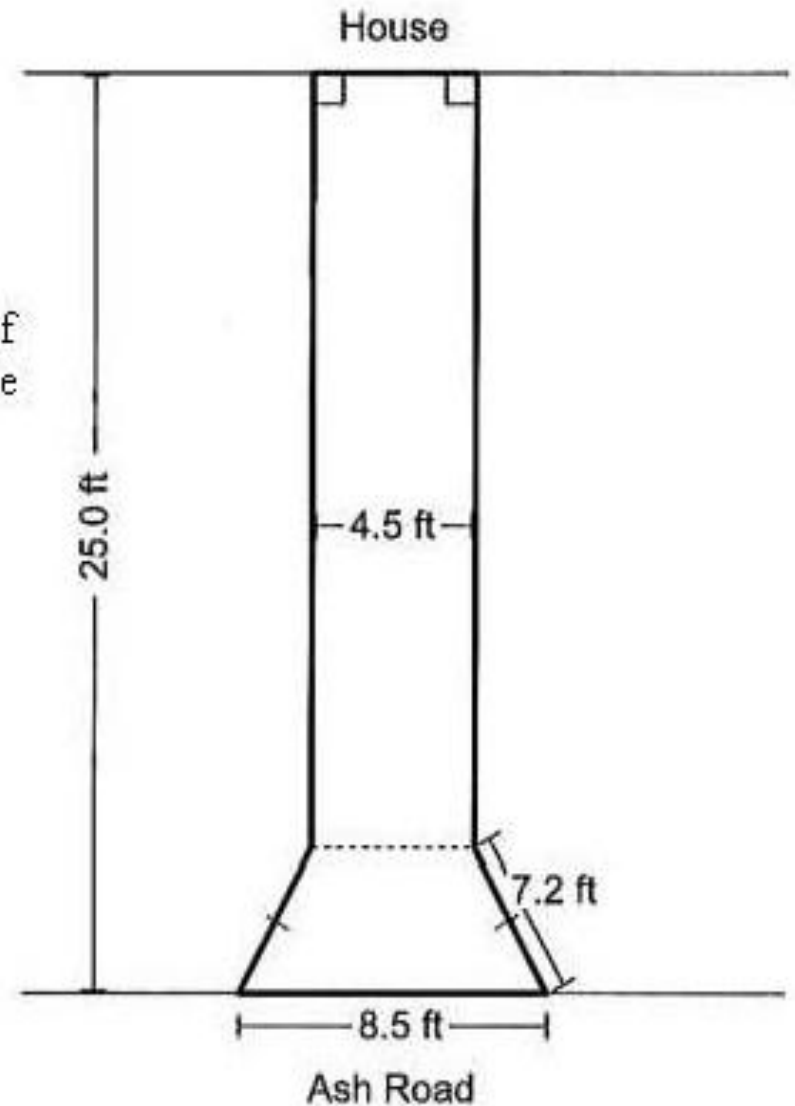
An object has a density measured in $\dfrac{g}{mL}$. The equation below

models the conversion of this measure to $\dfrac{kg}{L}$.

$$\dfrac{g}{mL} \times \underline{\quad 1 \quad} \times \underline{\quad 2 \quad} = \underline{\quad\quad} \dfrac{kg}{L}$$

From the set of choices in the box below, select the correct unit
ratios that belong on line 1 and line 2 of the equation.

$\dfrac{1000\ g}{1\ mL}$	$\dfrac{1000\ g}{1\ kg}$	$\dfrac{1\ mL}{1000\ g}$	$\dfrac{1\ kg}{1000\ g}$
$\dfrac{1\ kg}{1000\ L}$	$\dfrac{1000\ mL}{1\ L}$	$\dfrac{1000\ L}{1\ kg}$	$\dfrac{1\ L}{1000\ mL}$

1. Line 1 unit ratio: _____

2. Line 2 unit ratio: _____

STATION #20