Math
Spring Operational 2015

Grade 6
Performance Based Assessment
Released Items

1. Heather drove at a constant rate. She traveled 162 miles in 3 hours. How far did Heather travel in 1 hour?

Enter your answer in the box.

$\boxed{}$ miles

2. Water freezes at 0° Celsius. The table shows five different temperatures in degrees Celsius. Indicate whether each temperature is above or below freezing.
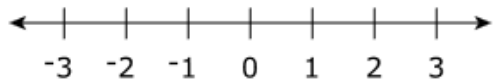
Select one cell per row.

Temperature	Above Freezing	Below Freezing
$0.5\,^{\circ}\mathrm{C}$	☐	☐
$-13\,^{\circ}\mathrm{C}$	☐	☐
$100\,^{\circ}\mathrm{C}$	☐	☐
$5.5\,^{\circ}\mathrm{C}$	☐	☐
$-2.25\,^{\circ}\mathrm{C}$	☐	☐

3. Mia has $\frac{7}{8}$ pound of bird food. She puts an equal portion into 4 bird feeders. How much bird food, in pounds, does she put into each bird feeder?

○ A. $\frac{7}{8}$

○ B. $\frac{7}{32}$

○ C. $3\frac{1}{2}$

○ D. $3\frac{1}{8}$

4. Select the point that represents the opposite of $\frac{3}{2}$.

Select a place on the number line to plot the point.

5. An expression is shown.

$$12 \cdot 12 \cdot 12 \cdot 12 + 7(\, 3 \cdot 3 \cdot 3 \cdot 3 + 3 \,)$$

Which of the following shows this expression written using exponents?

- A. $4^{12} + 7(5^3)$

- B. $4^{12} + 7(4^3 + 3)$

- C. $12^4 + 7(3^5)$

- D. $12^4 + 7(3^4 + 3)$

6. Evaluate the expression $120n + 160{,}500$ when $n = 32$.

Enter your answer in the box.

7. Which verbal expression best represents the algebraic expression $3n - 4$?

- A. three less than four times a number

- B. four less than three times a number

- C. three times four subtracted from a number

- D. four times the difference of a number and three

8. The variable x represents a value in the set $\{4, 6, 7, 8\}$. Which value of x makes $2(x - 4) + 3 = 7$ a true statement?

⊙ A. 4

⊙ B. 6

⊙ C. 7

⊙ D. 8

9. Melanie is making necklaces in four different lengths. In each necklace, the ratio of blue beads to orange beads remains the same as shown in the diagram.

Blue Beads

Orange Beads

The table shows the number of blue beads and the number of orange beads that Melanie will use on each of the four necklaces.

Necklace	Number of Blue Beads	Number of Orange Beads
1	20	4
2	45	
3	30	6
4		8

Part A

Based on the ratio, what will be the number of blue beads on Necklace 4?

Enter your answer in the box.

Part B

Based on the ratio, what will be the number of orange beads on Necklace 2?

Enter your answer in the box.

10. A student purchased 7 binders for a total of $8.61. Write an equation that can be used to find the cost of each binder, n, in dollars. What is the cost, in dollars, of each binder?

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

Equation: ☐

Cost: $☐

11. Megan spent $9.85 on ingredients and made one pan of cereal bars. The pan has a length of 24 inches and a width of 16 inches.
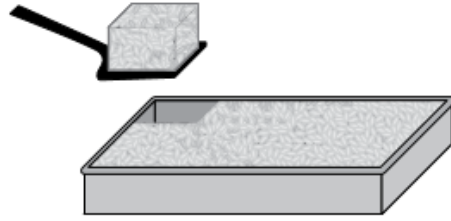

Megan needs to cut individual cereal bars from the pan. Each cereal bar should be the same size and shape and should represent a reasonable serving.

Estimate an appropriate length and width for each cereal bar and explain your assumptions.

Based on your estimate, determine the amount each cereal bar will cost Megan to make. Show your work or explain your reasoning.

Enter your answers and your work or explanations in the space provided.

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▾ Math symbols

+	−	×	÷
±	‾	·	/
=	≠	▯/▯	▯▯
y^x	√	∛	π
(·)	°	∣·∣

▸ Relations

▸ Geometry

12. One size of cardboard can be purchased in sheets that are $\frac{3}{16}$ inch thick. The sheets of cardboard are stacked on top of each other in packages. The height of each stack is $2\frac{1}{4}$ inches.

- Use the model of a ruler to determine the number of sheets of cardboard in a stack.
- Explain how you used the model to find your answer.
- Write an expression that can be used to determine the number of sheets of cardboard in a stack.
- Explain how your expression relates to the model.

Enter your answer, your expression, and your explanations in the space provided.
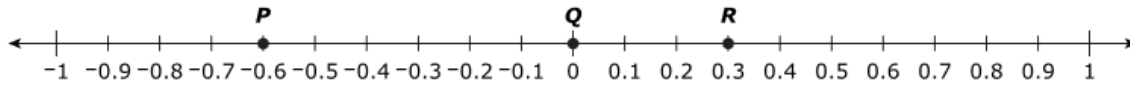
Math symbols

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y^x √ ∛ π

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▸ Relations

▸ Geometry

13. Points *P*, *Q*, and *R* are shown on the number line.

Part A

Find the distances between points *P* and *Q* and between points *R* and *Q*. Show your work or explain your answers. Refer to the number line in your explanation.

Enter your answers and your work or explanation in the space provided.
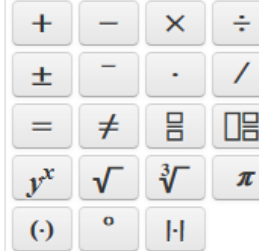
Part B

Point *S* is a different point on the number line. Point *S* and point *R* are the same distance from point *Q*. Explain how to determine the location of point *S* on the number line.

Enter your explanation in the space provided.

14. A student made two patterns to show multiplication of a decimal by powers of ten. The equations shown for both patterns are incorrect.

Pattern A

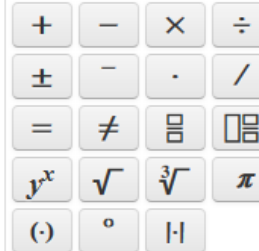$3.675 \cdot 10 = 3.6750$
$3.675 \cdot 100 = 3.67500$
$3.675 \cdot 1,000 = 3.675000$

Pattern B

$3.675 \cdot 0.1 = 3.0675$
$3.675 \cdot 0.01 = 3.00675$
$3.675 \cdot 0.001 = 3.000675$

Explain why the equations in each of the patterns are false. Include in your explanation the values that should appear on the right side of each equation in both patterns to make the equations true.

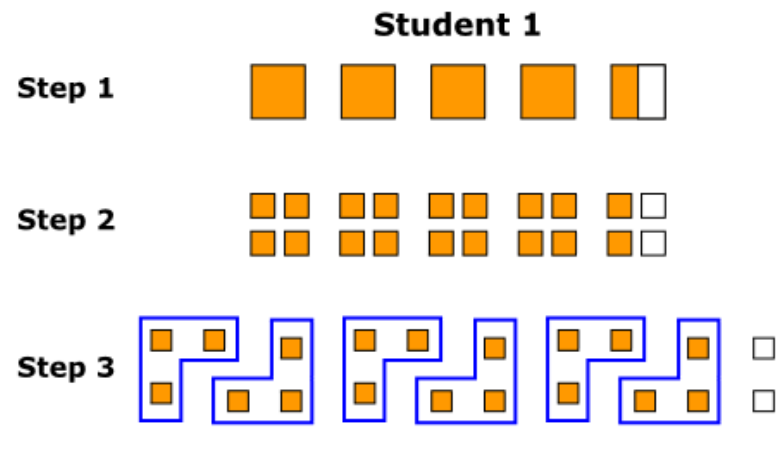Enter your explanation in the space provided.

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Math symbols

+ − × ÷

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y^x √ ∛ π

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▸ Relations

▸ Geometry

15. Two students used different methods to evaluate $4\frac{1}{2} \div \frac{3}{4}$.

	Student 1	**Student 2**
Step 1		$4\frac{1}{2} \div \frac{3}{4}$
Step 2		$4\frac{2}{4} \div \frac{3}{4}$
Step 3		$\frac{18}{4} \div \frac{3}{4}$

For each step shown, explain how the diagram drawn by Student 1 relates to the expression written by Student 2. Show your work.

Enter your explanations and your work in the space provided.
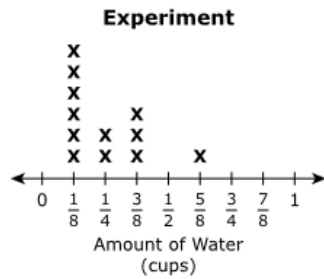
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Math symbols

+	−	×	÷
±	−	·	/
=	≠	▯/▯	▯▯
y^x	$\sqrt{\ }$	$\sqrt[3]{\ }$	π
(·)	°	|·|

▶ Relations

▶ Geometry

16. The line plot shows the amount of water used by 12 students during an experiment.
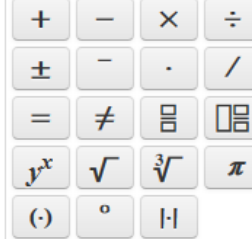
Experiment

Amount of Water
(cups)

Part A

Write and evaluate an expression using addition and multiplication to determine the total number of cups of water used by the 12 students during the experiment. Show or explain each step you used to evaluate the expression.

Enter your expression and your work or explanation in the space provided.

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▼ Math symbols

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y^x	$\sqrt{}$	$\sqrt[3]{}$	π
(·)	°	|·|

▸ Relations
▸ Geometry

Part B

The water used by the 12 students during the experiment was poured from a beaker. After the water was poured, $\frac{1}{4}$ gallon of water was left in the beaker.
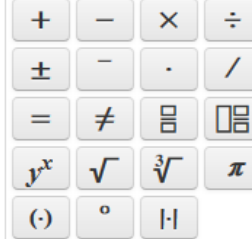
What was the total number of **fluid ounces** of water in the beaker before the water was poured by the 12 students? (Use 1 gallon = 128 fluid ounces.) Show or explain each step you used to determine your answer.

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

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▼ Math symbols

+	−	×	÷
±	−	·	/
=	≠	▤	▤
y^x	$\sqrt{}$	$\sqrt[3]{}$	π
(·)	°	|·|

▸ Relations
▸ Geometry

17. The students in a club are selling flowerpots to raise money. Each flowerpot sells for $15.

Part A

Write an expression that represents the total amount of money, in dollars, the students raise from selling x flowerpots.

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

Part B

The goal of the students in the club was to raise $500. They sold 43 flowerpots. By what amount did the students exceed their goal of raising $500? Show or explain all your work.

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

▼ Math symbols

▸ Relations

▸ Geometry