

Name: _____
Algebra 1

Date: _____
Band: _____

Unit 2: Solving Equations

Instructions: Choose one performance task. Write all your work on a separate clean piece of paper and attach it to this page.

Big Idea: Equivalence

You can represent an equation in many ways. Equivalent representations have the same solution as the original equation.

Performance Task 1

The solution of the equation $*\triangle + \heartsuit = \color{red}{\text{flower}}$ is shown at the right. Use mathematical properties to explain your answers in each part below.

a. Explain why you can subtract \heartsuit from each side in Step 2.

$$\begin{aligned} * \triangle + \heartsuit &= \color{red}{\text{flower}} \\ * \triangle + \heartsuit - \heartsuit &= \color{red}{\text{flower}} - \heartsuit \end{aligned}$$

Subtract \heartsuit from each side.

b. Write another equation that is equivalent to $*\triangle + \heartsuit = \color{red}{\text{flower}}$. Justify your answer.

$$\begin{aligned} * \triangle &= \color{blue}{\text{diamond}} \\ \frac{* \triangle}{*} &= \frac{\color{blue}{\text{diamond}}}{*} \\ \triangle &= \color{green}{\text{circle}} \end{aligned}$$

Simplify.
Divide each side by $*$.
Simplify.

Big Idea: Solving Equations and Inequalities

You can use properties of numbers and equality to transform equations into equivalent, simpler equations and find solutions.

Performance Task 2

Solve using two different methods. Explain which method you prefer to use.

a. $24 = \frac{2}{3}x + 12$

b. $0.5(y + 12) = -2.5y - 8$

c. $\frac{x-3}{5} = \frac{3x}{7}$

Big Idea: Proportionality

In a proportional relationship, the ratios of two quantities are equal. You can use this relationship to describe similar figures, scale models, and rates.

Performance Task 3

Solve. Show all your work and explain your steps.

A family rents a truck to move from Buffalo to Chicago. The rental has a base cost of \$49.95, plus an additional cost of \$1.19 per mile driven. The family also pays for gas, which costs \$3.89 per gallon. The truck’s average gas mileage is 18 miles per gallon. What is the total cost of the move? (*Hint:* Use the map to estimate the driving distance.)



Performance Task Assessment: Analytic Holistic Scoring

Developing Autonomy—The student

3	Persevered to complete the problem without help
2	Completed most of the problem without help
1	Needed key hints to complete the problem
0	Needed extensive guidance to work the problem

The Solution Process—The student's work showed

3	A complete and appropriate solution process
2	An appropriate solution process that is almost complete
1	An appropriate process that is partially complete
0	An inappropriate process or no evidence of a process

The Conclusion/Answer—The student's answer is an

3	Accurate conclusion, supported by valid evidence and reasons, appropriate to this problem and context
2	Inaccurate but logical conclusion, supported by evidence and reasoning but incorrect due to a minor factual error (in details of problem, in computation, recall a formula, etc.) or minor mistake in reasoning
1	Inaccurate but logical conclusion that overlooks, or gets wrong significant facts (about the problem, the rule, computation, etc.)
0	Inappropriate conclusion: not supported by facts and logic, or there is no conclusion

Teacher Comments: