Skills Practice

Name _____ Date _____

Collecting Road Tolls
Solving One-Step Equations

Vocabulary

Write the term from the box that best completes each statement.

algebraic	equivalent	graphical
inverse	one-step equation	solve an equation

1. A(n) _____ check of a solution involves substituting an obtained value into an equation to determine if it produces a true statement.
2. Two equations are _____ if they have the same solution or solutions.
3. A(n) _____ check of a solution involves using the graph of an equation to determine if a value is a solution to an equation.
4. Operations that undo each other are known as _____ operations.
5. If only one operation is required to solve an equation, then it is a(n) _____.
6. To _____ means to find values that produce a true statement.

Problem Set

Write an equation to represent each situation. Do not solve.

7. Every student in Mr. Allen's class has 2 pencils. His class has a total of 48 pencils. How many students are in Mr. Allen's class? Use s to represent the number of students.

$2s = 48$

8. Each gallon of milk costs $3. You spent a total of $12 on milk. How many gallons of milk did you buy? Use g to represent the number of gallons.

9. Carly took 8 more photos than Chen. Carly took a total of 32 photos. How many photos did Chen take? Use p to represent the number of photos taken by Chen.

10. Maria is 5 years younger than Graham. Maria is 12 years old. How old is Graham? Use g to represent Graham's age.

Complete each solution.

11. $x - 7 = 15$ Original equation

$x - 7 + \quad = 15 +$ Add 7 to each side.

$\quad = \quad$ Equivalent equation

The solution of $x - 7 = 15$ is $x =$.

12. $x + 18 = 34$ Original equation

$x + 18 - \quad = 34 -$ Subtract 18 from each side.

$\quad = \quad$ Equivalent equation

The solution of $x + 18 = 34$ is $x =$.

13. $9x = 54$ Original equation

$\frac{9x}{\quad} = \frac{54}{\quad}$ Divide each side by 9.

$\quad = \quad$ Equivalent equation

The solution of $9x = 54$ is $x =$.

14. $\frac{x}{10} = 4$ Original equation

$\frac{x}{10} \cdot \quad = 4 \cdot$ Multiply each side by 10.

Equivalent equation

The solution of $\frac{x}{10} = 4$ is $x =$.

Identify the operation you would use to get *x* by itself on one side of each equation. (A, S, M, D) Then solve the equation.

15. $x + 30 = 120$ S

$-30 \quad -30$

$x + 0 = 90$

$x = 90$

16. $x + 11 = 21$

17. $x - 8 = 40$

18. $x - 15.5 = 45$

19. $4x = 360$

20. $5x = 60$

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21. $\frac{x}{8} = 3.5$

22. $\frac{x}{11} = 26$

Algebraically determine whether each answer is a solution of the equation.

23. The equation $3g = 45$ can be used to determine how many gallons of gasoline, g, you purchased for \$45, if the gasoline cost \$3 per gallon. You thought you purchased 15 gallons. Is this correct?

$3g = 45$
$3(15) = 45$

$g = 15$

yes

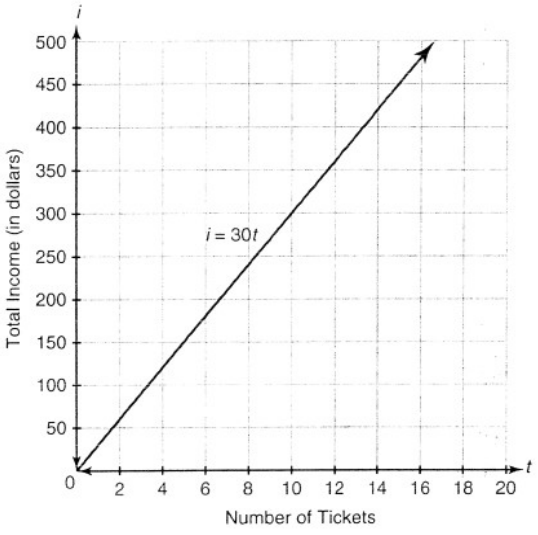
24. Your dad is baking 3 cookies for every student in your class. He bakes 105 cookies. The total number of students n can be determined using the equation $3n = 105$. Are there 30 students in your class?

25. Two divers are scuba diving. The first diver is 30 meters under water, which is 12 meters deeper under water than the second diver. The second diver's depth, d, can be determined using the equation $d + 12 = 30$. The gauge on the second diver's equipment says he is 16 meters under water. Is his gauge correct?

26. Two birds lay eggs. The first bird lays 8 eggs, which is 3 less eggs than the second bird. The number of eggs laid by the second bird, b, can be determined by the equation $b - 3 = 8$. You thought you counted 11 eggs in the second bird's nest. Is this correct?

Graphically determine whether each answer is a solution to the equation.

27. A band's total income, p, is based on the equation $p = 30t$, where t is the number of tickets sold to a show. Using the graph below, if the band's income is \$450, did they sell 20 tickets?



28. The total weight, w, in pounds, of a shipment is determined by the equation $w = 5p$, where p is the number of packages shipped. According to the graph below, if the shipment weighed 225 pounds, did it contain 45 packages?