

5.1

(6) CST items

Students solve multistep problems, including word problems, involving linear equations and linear inequalities in one variable and provide justification for each step.

Key Vocabulary

Linear

Consecutive

Justification

Independent Variable

Dependent Variable

Algebraic Equation

Instructional Objectives

<p>1 Solve multistep linear equations for the value of an unknown variable.</p>	<p>1 Solve for x: $3(x + 5) = 2x + 35$</p> <p>2 Solve for x: $2x + x + 3x = 120$</p> <p>3 Solve for n: $360 = 120 + 60n$</p> <p>4 Solve for n: $2n + 2(n + 3) = n - 9$</p>
<p>2 State justifications for each step of the solution to a multistep linear equation.</p>	<p>1 Simplify: $5(2x + 12)$</p> <p>2 Simplify: $-3(-7x + 2y - 4)$</p> <p>3 Simplify: $6x(3x + 8)$</p> <p>4 Jodi was solving the following equation for y: $5y = 3x + 20$ Explain Jodi's error in the following steps. $\left(\frac{1}{5}\right) 5y = 3x + 20 \left(\frac{1}{5}\right)$ $y = 3x + 4$</p>
<p>3 Create algebraic equations to model verbal scenarios and word problems.</p>	<p>1 Write an equation to model the following: A number, n, increased by 3 is 12.</p> <p>2 Write an equation to model the following: The product of 4 and x, decreased by 7, is 13.</p> <p>3 Write an equation to model the following: The combined weight of 5 identical bowling balls (b) is 60 pounds.</p> <p>4 Write an equation to model the following: The total cost (c) of a trip to an amusement park is \$12 to enter the park and an additional \$2 per ride ($r$).</p>
<p>4 Solve word problems that can be modeled using linear equations in one or two variables.</p>	<p>1 Write an equation to model the following, and then solve: The number of chairs (c) in a room is 4-times the number of tables (t). If there are 80 chairs, how many tables are in the room?</p> <p>2 Write an equation to model the following, and then solve: Alex (a) is 3 years more than twice as old as Charlie (c). If Alex is 45 years old, how old is Charlie?</p> <p>3 Write an equation to model the following, and then solve: An empty bag weighs 3 ounces. Patrice placed 2 marbles into the bag, and Dewayne added 5 marbles to the bag, at which point the bag weighed 87 ounces. If all the marbles weigh the same, what is the weight of each marble?</p> <p>4 Write an equation to model the following, and then solve: A 240-inch-long board is cut into three unequal pieces. The second piece is twice as long as the first piece. The third piece is five times as long as the first piece. How long is the shortest piece?</p>

5 Given a linear equation, use the value of one variable to determine the value of the other.

1 Consider the equation shown: $2x + 8y = 40$

If $x = 12$, what is the value of y ?

2 The number of tennis balls (b) in a bag is five more than three times the number of cans (c), as shown: $b = 3c + 5$

If the total number of tennis balls is 23, how many cans are there?

3 The temperature (t) at which water will boil is a function of altitude (f), in feet. The relationship between altitude and boiling point is: $t = 212 - (f \div 500)$

What is the boiling temperature of water at an altitude of 2000 feet?

4 The total cost (c) in dollars of renting a truck and driving it m miles is given by the equation: $c = 25 + .5m$

If the total cost was \$58, for how many miles was the truck driven?