

# Activity 9 Assessment

## Using Equations with Two Operations to Solve Problems

Variables and Equations			
<p>Evaluates a numerical expression using the order of operations</p> $2 \times (30 + 18) - 3 = 2 \times 48 - 3$ $= 96 - 3$ $= 93$ <p>“I have to do the operation in brackets first, then the multiplication, and then the subtraction.”</p>	<p>Writes an algebraic expression to describe an unknown value</p> <p>Subtract five from a number, then multiply by two</p> $(n - 5) \times 2$ <p>“I let <math>n</math> represent the number. I used brackets so 5 would be subtracted first.”</p>	<p>Evaluates an algebraic expression using substitution</p> $(n - 5) \times 2$ <p>“To find the value of the expression when <math>n</math> equals 12, I substitute 12 for <math>n</math>.”</p> $(n - 5) \times 2 = (12 - 5) \times 2$ $= 7 \times 2$ $= 14$	<p>Solves equations involving one operation using different strategies</p> $23 = e + 15$ $23 - 15 = e + 15 - 15$ $8 = e$ <p>“I used the inverse operation, subtracting 15 from each side.”</p>
Observations/Documentation			

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## Using Equations with Two Operations to Solve Problems

Variables and Equations (cont'd)			
<p>Solves equations involving two operations using different strategies</p> $29 = 3z + 2$ $29 - 2 = 3z + 2 - 2$ $27 = 3z$ $\frac{27}{3} = \frac{3z}{3}$ $9 = z$ <p>“I performed the order of operations in the reverse order to isolate the variable. I subtracted 2 from each side, then divided each side by 3.”</p>	<p>Verifies the solution to an equation</p> $29 = 3z + 2$ <p>“To verify, substitute <math>z = 9</math>.</p> <p>Left side = 29            Right side = <math>3(9) + 2</math>  <math>= 27 + 2</math>  <math>= 29</math></p> <p>Since the left side equals the right side, my solution is correct.”</p>	<p>Solves problems using equations involving one or two operations</p> <p>Kairis sold 16 tickets.            That is twice as many tickets as Grace sold.            How many tickets did Grace sell?</p> <p>Let <math>t</math> represent the number of tickets Grace sold.</p> $2t = 16$ $\frac{2t}{2} = \frac{16}{2}$ $t = 8$ <p>“So, Grace sold 8 tickets.”</p>	<p>Flexibly works with equations to solve problems using a variety of strategies</p> <p>At the grocery store, there are 5 lines of people at the checkouts. There are the same number of people in each line. The manager counts to determine the total number of people at the checkouts, including 6 employees (including the manager). They counted 51 people. How many people are in each line? Let <math>n</math> represent the number of people in each line.</p> $5n + 6 = 51$ $5n + 6 - 6 = 51 - 6$ $5n = 45$ $n = 9$ <p>“I know <math>5 \times 9 = 45</math>, so <math>n = 9</math>. There are 9 people in each line.”</p>
Observations/Documentation			