**Patterning and Algebra**

# Activity 6 Assessment
## Solving Addition and Subtraction Equations

## Variables and Equations

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

## Observations/Documentation

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# Activity 6 Assessment
## Solving Addition and Subtraction Equations

## Variables and Equations (cont'd)

| Solves equations involving two operations using different strategies | Verifies the solution to an equation | Solves problems using equations involving one or two operations | Flexibly works with equations to solve problems using a variety of strategies |
|---|---|---|---|
| $29 = 3z + 2$ <br> $29 - 2 = 3z + 2 - 2$ <br> $27 = 3z$ <br> $\dfrac{27}{3} = \dfrac{3z}{3}$ <br> $9 = z$ <br><br> "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." | $29 = 3z + 2$ <br><br> "To verify, substitute $z = 9$. <br><br> Left side = 29 <br> Right side = $3(9) + 2$ <br> $= 27 + 2$ <br> $= 29$ <br><br> Since the left side equals the right side, my solution is correct." | Kairis sold 16 tickets. That is twice as many tickets as Grace sold. How many tickets did Grace sell? <br><br> Let $t$ represent the number of tickets Grace sold. <br><br> $2t = 16$ <br> $\dfrac{2t}{2} = \dfrac{16}{2}$ <br> $t = 8$ <br><br> "So, Grace sold 8 tickets." | 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 $n$ represent the number of people in each line. <br><br> $5n + 6 = 51$ <br> $5n + 6 - 6 = 51 - 6$ <br> $5n = 45$ <br> $n = 9$ <br><br> "I know $5 \times 9 = 45$, so $n = 9$. There are 9 people in each line." |

## Observations/Documentation

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