Lesson 8: Equal and Equivalent

Cool Down: Decisions About Equivalence

Decide if the expressions in each pair are equivalent. Explain how you know.

1. $x + x + x + x$ and $4x$

2. $5x$ and $x + 5$

Learning goals:
-Draw a diagram to represent the value of an expression for a given value of its variable.
-Explain (in writing) that some pairs of expressions are equal for one value of their variable but not for other values.
-Justify (orally, in writing, and through other representations) whether two expressions are "equivalent".

Lesson 10: Different Options for Solving One Equation

Cool Down: Solve Two Equations

Solve each equation. Show or explain your method.

1. $8.88 = 4.44(x - 7)$

2. $5\left(y + \frac{2}{5}\right) = -13$

Learning goals:
-Critique (orally and in writing) a given solution method for an equation of the form p (x + q) = r.
-Evaluate (orally) the usefulness of different approaches for solving a given equation of the form p (x + q) = r.
-Recognize that there are two common approaches for solving an equation of the form p (x + q) = r
(i.e., expanding using the distributive property or dividing each side by p).

Lesson 5: Solving Any Linear Equation

Cool Down: Check It

Noah wanted to check his solution of $x = \frac{14}{5}$ for the equation $\frac{1}{2}(7x - 6) = 6x - 10$. Substituting $\frac{14}{5}$ for x, he writes the following:

$$\begin{aligned}
\tfrac{1}{2}\left(7\left(\tfrac{14}{5}\right) - 6\right) &= 6\left(\tfrac{14}{5}\right) - 10 \\
\left(7\left(\tfrac{14}{5}\right) - 6\right) &= 12\left(\tfrac{14}{5}\right) - 20 \\
5\left(7\left(\tfrac{14}{5}\right) - 6\right) &= 5\left(12\left(\tfrac{14}{5}\right) - 20\right) \\
7 \cdot 14 - 6 &= 12 \cdot 14 - 20 \\
98 - 6 &= 168 - 20 \\
92 &= 148
\end{aligned}$$

Find the incorrect step in Noah's work and explain why it is incorrect.

Learning goals:
-Calculate a value that is a solution to a linear equation in one variable, and explain (orally) the steps used to solve.
-Create an expression to represent a number puzzle, and justify (orally) that it is equivalent to another expression.
-Justify (orally) that each step used in solving a linear equation maintains equality.