

## Unit 4 Lesson 15: All, Some, or No Solutions

### 1 Which One Doesn't Belong: Equations (Warm up)

#### Student Task Statement

Which one doesn't belong?

1.  $5 + 7 = 7 + 5$

2.  $5 \cdot 7 = 7 \cdot 5$

3.  $2 = 7 - 5$

4.  $5 - 7 = 7 - 5$

## 2 Thinking About Solutions

### Student Task Statement

$$n = n$$

$$5 - 9 + 3x = -10 + 6 + 3x$$

$$2t + 6 = 2(t + 3)$$

$$\frac{1}{2} + x = \frac{1}{3} + x$$

$$3(n + 1) = 3n + 1$$

$$y \cdot -6 \cdot -3 = 2 \cdot y \cdot 9$$

$$\frac{1}{4}(20d + 4) = 5d$$

$$v + 2 = v - 2$$

1. Sort these equations into the two types: true for all values and true for no values.
2. Write the other side of this equation so that this equation is true for all values of  $u$ .  
 $6(u - 2) + 2 =$
3. Write the other side of this equation so that this equation is true for no values of  $u$ .  
 $6(u - 2) + 2 =$

### 3 What's the Equation?

#### Student Task Statement

1. Complete each equation so that it is true for all values of  $x$ .

a.  $3x + 6 = 3(x + \underline{\quad})$

b.  $x - 2 = -(\underline{\quad} - x)$

c.  $\frac{15x-10}{5} = \underline{\quad} - 2$

2. Complete each equation so that it is true for no values of  $x$ .

a.  $3x + 6 = 3(x + \underline{\quad})$

b.  $x - 2 = -(\underline{\quad} - x)$

c.  $\frac{15x-10}{5} = \underline{\quad} - 2$

3. Describe how you know whether an equation will be true for all values of  $x$  or true for no values of  $x$ .