

24: Reasoning with Properties from Algebra

Objective: Use properties from Algebra

Warm up: Solve for x

$$3x = 27 \quad x + 6 = -17 \quad x - 9 = 18 \quad \frac{2}{3}x = 6 \quad -x = 4$$

Algebra Properties of Equality

Addition Property - If $a = b$, then $a + c = b + c$

Subtraction Property - If $a = b$, then $a - c = b - c$

Multiplication - If $a = b$, then $ac = bc$

Division - If $a = b$ and $c \neq 0$, then $\frac{a}{c} = \frac{b}{c}$

Reflexive - For any real $\#a$, $a = a$

Symmetric - If $a = b$ then $b = a$

Transitive - If $a = b$ and $b = c$ then $a = c$

Substitution - If $a = b$, then a can be substituted for b in any equation or expression

Writing Reasons

Solve for x in $5x - 18 = 3x + 2$ and write the reasons for each step

$$5x - 18 = 3x + 2$$

$$5x - 18 = 3x + 2 \quad \text{Given}$$

$$2x - 18 = 2 \quad \text{Subtraction property of equality}$$

$$2x = 20 \quad \text{Addition property of equality}$$

$$x = 10 \quad \text{Division property of equality}$$

Now try $2x + 3 = 7y$ $6x - 2 = -4(x - 1)$

$$4 + 2(3x + 5) = 11 - y$$

Using Properties of Length and Measure



$WY = XZ$ Show $WX = YZ$

$WY = XZ$
 $WY = WX + XY$
 $XZ = XY + YZ$
 $WX + XY = XY + YZ$
 $WX = YZ$

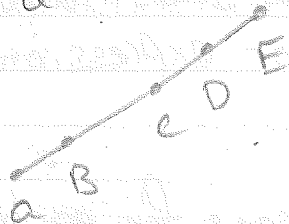
Given
 Segment addition postulate
 Segment addition postulate
 Substitution property of equality
 Subtraction property of equality

Now try:

* Print 2.4 Reteach pg 2



Given: $MN = PA$
 Show: $MP = NA$



Given $AB = DE$ and

Closure: