KeyConcept Properties of Real Numbers	
The following properties are true for any real numbers a, b, and c.	
Addition Property of Equality	If $a = b$, then $a + c = b + c$.
Subtraction Property of Equality	If $a = b$, then $a - c = b - c$.
Multiplication Property of Equality	If $a = b$, then $a \cdot c = b \cdot c$.
Division Property of Equality	If $a = b$ and $c \neq 0$, then, $\frac{a}{c} = \frac{b}{c}$.
Reflexive Property of Equality	$a = a$
Symmetric Property of Equality	If $a = b$, then $b = a$.
Transitive Property of Equality	If $a = b$ and $b = c$, then $a = c$.
Substitution Property of Equality	If $a = b$, then a may be replaced by b in any equation or expression.
Distributive Property	$a(b + c) = ab + ac$

Property	Segments	Angles
Reflexive	$AB = AB$	$m\angle 1 = m\angle 1$
Symmetric	If $AB = CD$, then $CD = AB$.	If $m\angle 1 = m\angle 2$, then $m\angle 2 = m\angle 1$.
Transitive	If $AB = CD$ and $CD = EF$, then $AB = EF$.	If $m\angle 1 = m\angle 2$ and $m\angle 2 = m\angle 3$, then $m\angle 1 = m\angle 3$.

1. Solve $5x - 18 = 3x + 2$ and write a reason for each step.

$5x - 18 = 3x + 2$

$+18 \quad +18$ Addition Prop of Equality

$5x = 3x + 20$

$-3x \quad -3x$ subtraction Prop of Equality

$\frac{2x}{2} = \frac{20}{2}$ Division Prop of Equality

$x = 10$

2. Solve $55z - 3(9z + 12) = -64$ and write a reason for each step.

$55z - 27z - 36 = -64$ Distributive Prof of Eq

$+36 \quad +36$ Addition Prop of Eq

$55z - 27z = -28$

$28z = -28$ Combine like terms

$z = -1$ Division Prop of Eq