



Math Study Strategies

Properties of Equality

▶ **The Reflexive Property**

$$a = a$$

▶ **The Symmetric Property**

$$\text{If } a=b, \text{ then } b=a$$

▶ **The Transitive Property**

$$\text{If } a=b \text{ and } b=c, \text{ then } a=c$$

▶ **The Substitution Property**

If $a=b$, then a can be substituted for b in any equation

▶ **The Addition and Subtraction Properties**

$$\text{If } a=b, \text{ then } a+c = b+c \text{ and } a-c = b-c$$

$$\text{If } a=b \text{ and } c=d, \text{ then } a+c = b+d \text{ and } a-c = b-d$$

▶ **The Multiplication Properties**

$$\text{If } a=b, \text{ then } ac=bc$$

$$\text{If } a=b \text{ and } c=d, \text{ then } ac=bd$$

▶ **The Division Properties**

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

$$\text{If } a=b \text{ and } c=d \neq 0, \text{ then } \frac{a}{c} = \frac{b}{d}$$

▶ **The Square Roots Property***

$$\text{If } a=b \geq 0, \text{ then } \sqrt{a} = \sqrt{b}$$

* assume only the principal of positive square root

Example Problem

Equation:

$$7 + x = 4(x - 2)$$

Solution:

$$7 + x = 4(x - 2)$$

Distributive property

$$7 + x = 4x - 8$$

Transitive property

$$7 = 3x - 8$$

Subtraction property

$$15 = 3x$$

Addition property

$$5 = x$$

Division property

$$x = 5$$

Symmetric property

