

You will need 2 different colored pencils, pens, markers (that will not bleed through paper). There are colored pencils in the desk that you may borrow.

You will need your A.N. wb.

Open to page 31 and start working on S2T2.

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Section 2 – Topic 2 pg.31
Identifying Properties When Solving Equations

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The following equations are equivalent. Describe the operation that occurred in the second equation. pg.31
 $\times, +, -, \div$

$3 + 5 = 8$ and $3 + 5 - 5 = 8 - 5$

Subtracted 5 from both sides of the equation

$x - 3 = 7$ and $x - 3 + 3 = 7 + 3$

Added 3 to both sides of the equation

$2(4) = 8$ and $\frac{2(4)}{2} = \frac{8}{2}$

Divided both sides of the equation by 2

$\frac{x}{2} = 3$ and $2 \cdot \frac{x}{2} = 2 \cdot 3$

Multiplied both sides of the equation by 2

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This brings us to some more properties that we can use to write equivalent equations.

Properties of Equality pg. 32

If x is a solution to an equation, then x will also be a solution to the new equation formed when the same number is added to each side of the original equation.

These are the **addition and subtraction properties of equality**.

- If $a = b$, then $a + c = b + c$ and $a - c = b - c$.
- Give examples of this property.

If $x - 2 = 5$, then $x - 2 + 2 = 5 + 2$.
 If $x + 2 = 5$, then $x + 2 - 2 = 5 - 2$.

$x - 2 + 2 = 5 + 2$
 $x = 7$



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Properties of Equality pg. 32

If x is a solution to an equation, x will also be a solution to the new equation formed when each side of the original equation is multiplied by the same number.

These are the **multiplication and division properties of equality**.

- If $a = b$, then $a \cdot c = b \cdot c$ and $\frac{a}{c} = \frac{b}{c}$.
- Give examples of this property.

$$\text{If } \frac{x}{2} = 30, \text{ then } 2 \cdot \frac{x}{2} = 2 \cdot 30$$

$$\text{If } 2x = 30, \text{ then } \frac{2x}{2} = \frac{30}{2}$$



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Let's Practice!

1. The following equations are equivalent. Determine the property that was used to create the second equation.

a. $x - 5 = 3x + 7$ and $x - 5 + 5 = 3x + 7 + 5$

Addition property of equality



b. $x = 3x + 12$ and $x - 3x = 3x - 3x + 12$

Subtraction property of equality or Addition property of equality if you consider that you are adding $-3x$ both sides.



c. $-2x = 12$ and $\frac{-2x}{-2} = \frac{12}{-2}$

Division property of equality

or Multiplication property of equality because you multiply by the reciprocal of -2 , which is $-\frac{1}{2}$

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Try It! pg. 33

2. The following pairs of equations are equivalent. Determine the property that was used to create the second equation in each pair.

a. $2(x + 4) = 14 - 6x$ and $2x + 8 = 14 - 6x$

Distributive property of equality

b. $2x + 8 = 14 - 6x$ and $2x + 8 + 6x = 14 - 6x + 6x$

Addition property of equality

c. $2x + 8 + 6x = 14$ and $2x + 6x + 8 = 14$

Commutative property of addition

d. $8x + 8 = 14$ and $8x + 8 - 8 = 14 - 8$

Subtraction property of equality

e. $8x = 6$ and $\frac{1}{8} \cdot 8x = \frac{1}{8} \cdot 6$

Division property of equality
Handwritten notes: "Addition", "Subtraction", "multiplication", "division", $\frac{8x}{8} = \frac{6}{8}$

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<https://www.youtube.com/watch?v=l3XzepN03KQ>

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$3 + x = 7$

+	+
+	-
+	-

=

+	+	+
+	+	+
+	+	+

$x = 4$

3 + x = 7
-3
x = 4

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$-2 = y + 4$

=	=
---	---

=

y	+	+	-
+	+	-	-
+	+	-	-
+	+	-	-

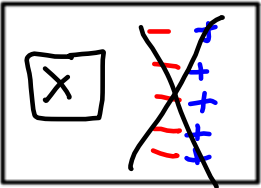
$-6 = y$

-2 = y + 4
-4
-6 = y

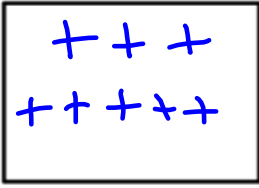
$\checkmark -2 = -6 + 4$
 $-2 = -2$

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$X - 5 = 3$



=

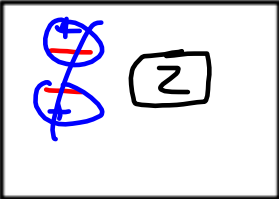


$X = 8$

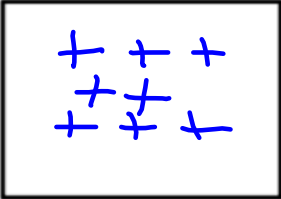
$$\begin{array}{r} X \overline{\overline{5}} = 3 \\ + 5 \quad + 5 \\ \hline X = 8 \end{array}$$

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$-2 + z = 6$



=



$z = 8$

$$\begin{array}{r} -2 + z = 6 \\ + 2 \quad + 2 \\ \hline z = 8 \end{array}$$

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