Lesson 12: Solving Equations

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| Solve an Equation | Isolate the variable so that it has a coefficient of 1. |

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| --- | --- |
| Addition Property  of Equality | Subtraction Property  of Equality |
| For any numbers a, b, c, if a = b, then  a + c = b + c | For any numbers a, b, c, if a = b, then  a - c = b - c |
| x – 7 = 21 | x + 7 = 21 |

|  |  |
| --- | --- |
| Multiplication Property  of Equality | Division Property  of Equality |
| For any numbers a, b, c, if a = b, then  ac = bc. | For any numbers a, b, c, with c ≠ 0, if a = b, then  a = b  c c |
| x = 21  7 | 7x = 21 |

Solve each equation.

a. 6m + 7 = 19 b. 4 – 3x = 5 c. 2x + 7 = 13 d. x – 1 = 5

3 3 3 4 3 12

|  |  |  |
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| e. Solve for : | f. Solve for : | g. Solve for : |

Consider the equation . Solve for using the given starting point.

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| --- | --- | --- | --- |
| **Group 1** | **Group 2** | **Group 3** | **Group 4** |
| *Subtract from both sides* | *Subtract from both sides* | *Subtract from both sides* | *Add to both sides* |
|  |  |  |  |

**Consider the equation .**

a. Verify that this has the solution set .

b. Let’s add four to both sides of the equation

The new equation is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Verify 2 and -3 are still solutions.

c. Let’s now add to both sides of the equation

The new equation is

Are 2 and -3 still solutions?

d. Let’s now subtract from both sides of the equation

The new equation

Are 2 and -3 still solutions?

Problem Set 12A

Solve the following equations, distribute first to remove parentheses, check your solutions. Show work!!!

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| ck. 2 ck.  ck. 4. ck.  ck. ck  7. ck. ck.  9. Consider the equation -11 – 2p = 11p + 15. Solve for *p* using the given starting point.   |  |  |  |  | | --- | --- | --- | --- | | **Group 1** | **Group 2** | **Group 3** | **Group 4** | | *Add to both sides* | *Subtract from both sides* | *Subtract 11p from both sides* | *Add to both sides* | |  |  |  |  | |

10. Which of the following equations have the same solution set? Match equations below to each other. Give reasons for your answers that do not depend on solving the equations.

I. II. III.

IV V. VI.