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Algebraic Equations

Algebraic equations allow you to solve for an unknown. For example, if you have $62 and you want to buy a game that costs $79, how much more money do you need? You could write this as an algebraic equation in order to find you answer:

$62 + x = 79$

In order to solve the problem, you need to get x to be by itself. In order to do this, you would need to get the 62 on the left to be on the other side of the = sign. When you move a number from one side of the equals sign to another, you need to perform the opposite operation of the original. In other words, since 62 is a positive number, you would need to make it a negative number when you move it to the other side of the equals sign. You would write:

$x = 79 – 62$

All you would need to do now is solve for x. $79 – 62 = 17$. In other words, $x = 17$. Therefore, you know that you would need an additional $17 in order to purchase the game that you want.

In some algebraic equations, the unknown number can also be represented by a y or another letter.

$y – 32 = 51$
$y = 51 + 32$
$y = 83$

Some algebraic equations involve multiple steps.

$4y – 7 = 5$

Again, you need to try to get y by itself. You would start by getting the 7 to the right side:

$4y = 5 + 7$
$4y = 12$

When a number is directly next to an unknown, it is the same as multiplying the unknown by the number in front of it. As stated above, when you move something from one side of the equals sign to the other, you need to perform the opposite function. In order to finish solving the problem above, you would need to move the 4 to the other side of the equals sign. You write this as:

$y = 12/4$

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Algebraic Equations (Cont'd)

Since 12 ÷ 4 = 3, you would simplify your answer to say: $y = 3$.

Algebraic equations can also use the >, <, ≥, or ≤ symbols instead of an equals sign. You would still solve these equations the same way.

Example:

$7y + 7 > 42$
$7y > 42 + 7$
$7y > 49$
$y > 49/7$
$y > 7$

Solving this equation does not tell us *exactly* what number y represents. It simply tells us that y is some number that is greater than 7.

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Algebraic Equations Questions

Solve the following algebraic equations (You can use the space below the question to work out your answer):

1. $x + 4 = 9$
   $x =$ ____

2. $2x + 5 = 17$
   $x =$ ____

3. $x - 14 = 49$
   $x =$ ____

4. $5x + 10 = 90$
   $x =$ ____

5. $2x - 30 = 56$
   $x =$ ____

6. $x + 10 - 3 = 22$
   $x =$ ____

7. $7x + 5 = 12$
   $x =$ ____

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Algebraic Equations Answers

Solve the following algebraic equations (You can use the space below the question to work out your answer):

1. $x + 4 = 9$
   $x = 5$

2. $2x + 5 = 17$
   $x = 6$

3. $x - 14 = 49$
   $x = 63$

4. $5x + 10 = 90$
   $x = 16$

5. $2x - 30 = 56$
   $x = 43$

6. $x + 10 - 3 = 22$
   $x = 15$

7. $7x + 5 = 12$
   $x = 1$