

1.1 Basic Algebraic Presentation - Worksheet 1

- 1 Circle and identify the two features that make the equations below make a complete presentation of the mathematical manipulation.

$$-6x + 16 = -8$$

$$-6x = -24$$

$$x = 4$$

Subtract 16 from both sides

Divide both sides by 6

- 2 Solve the equation $5x + 9 = 34$ using a complete presentation.

- 3 Solve the equation $4x - 13 = 8$ using a complete presentation.

Don't assume that if you end up with a fraction that you must have done something wrong! You will need to develop the self-confidence to assess your work based on the logic and not the answer.

- 4 Work backwards from the given information to derive the original presentation.

$$x = -3$$

Add 8 to both sides

Divide both sides by 5

Problem solving is an important life skill. If you can only work with information when it's presented in one specific way, you don't have a complete understanding of it.

1.2 Basic Algebraic Presentation - Worksheet 2

1 Solve the equation $6x + 9 = -21$ using a complete presentation.

2 Solve the equation $4x + 7 = 7$ using a complete presentation.

3 Solve the equation $-5t - 27 = -6t$ using a complete presentation.

4 Work backwards from the given information to derive the original presentation.

	Add $3y$ to both sides
	Subtract 6 from both sides
$7 = y$	Divide both sides by -2
$y = 7$	Rewrite in the conventional order

Students sometimes get confused when division involves the number zero. We'll look into division in detail later. For now, just remember that zero divided by anything is zero and that you should never divide by zero.

While we traditionally use the variable x , we can and will use many other symbols as our variables.

Sometimes, in the process of solving an equation, you may end up with the variable on the right side. It is conventional to have your final answer written with the variable on the left side, even if both $7 = y$ and $y = 7$ mean the same thing. It's not a big deal if you don't do this, but it's a nice thing to do.

1.3 Basic Algebraic Presentation - Worksheet 3

1 Solve the equation $-9x + 3 = 66$ using a complete presentation.

2 Solve the equation $3x + 9 = -9$ using a complete presentation.

If you get $x = 0$, then you made an error. Be careful because this is a common mistake!

3 Solve the equation $-8x + 17 = -4x + 41$ using a complete presentation.

4 Check the presentation for errors. If you find one, circle it and describe the mistake in words.

$$-9x + 16 = 7x - 8$$

$$-9x = 7x - 24$$

$$-2x = -24$$

$$x = 12$$

Subtract 16 from both sides

Subtract $7x$ from both sides

Divide both sides by -2

It is usually much easier for us to see errors in other people's work than it is to see them in our own. One way to help find your own errors is to walk away for a while and come back later. This gives your brain a chance to "forget" what you did so that you can rethink everything from the beginning. Wait... did you think this is a discussion about algebra?

1.4 Basic Algebraic Presentation - Worksheet 4

1 Solve the equation $-3x + 12 = 5x - 8$ using a complete presentation.

2 Solve the equation $4x + 7 = -3x + 7$ using a complete presentation.

3 Perform the indicated algebraic manipulations.

$$x^2 = 6x + 7$$

Subtract $6x$ from both sides

Add 9 to both sides

This is known as “completing the square.” You may not know what it is or why you’re doing it right now, but this is an important algebraic concept that will likely see later. For now, just focus on practicing your algebra.

4 Check the presentation for errors. If you find one, circle it and describe the mistake in words.

$$5x + 8 = -2x - 8$$

$$5x = -2x$$

$$7x = 0$$

$$x = 0$$

Subtract 8 from both sides

Add $2x$ to both sides

Divide both sides by 7

1.5 Basic Algebraic Presentation - Worksheet 5

1 Solve the equation $7x - 15 = -2x + 7$ using a complete presentation.

Don't assume you've made a mistake just because you got a fraction.

2 Solve the equation $-5x - 3 = -3x + 3$ using a complete presentation.

3 Work backwards from the given information to derive the original presentation.

There is no rhyme or reason to the manipulations for this one. It's just an exercise in thinking carefully.

$$2x + 1 = 5x - 4$$

Subtract $3x$ from both sides

Add 9 to both sides

4 Check the presentation for errors. If you find one, circle it and describe the mistake in words.

$$6x + 4 = -3x - 10$$

$$6x = -3x - 14$$

$$9x = -14$$

$$x = \frac{14}{9}$$

Subtract 4 from both sides

Add $3x$ to both sides

Divide both sides by 9