Solve 2x=8

1. Notice that 2 is multiplying x. The inverse or opposite operation is division. So divide both sides by 2.

$$\frac{2x}{2} = \frac{8}{2}$$

2. Simplify the step above by noting that $\frac{2}{2} = 1$ so in front of the x is now the number 1.

$$1x = 4$$

3. It is convention to write $1x$ as just x .

So the final result is x=4

4. Now you can confirm that this is the correct value of x by replacing x with 4 and showing the left side equals the right side. This confirms that x=4 is the correct solution.

$$2(4) = 8$$

Solve 3x=9

Solve $x - 4 = 10$

1. Because 4 is being subtracted from x,
we reverse this operation by adding 4 to both sides.

$x - 4 + 4 = 10 + 4$

2. Because -4+4=0, all that remains on the left side
is x.

$x = 10 + 4$

3. Because 10+4=14, we can conclude that x=14 is
the solution.

4. To check, we can replace x with 14, and confirm that
the left side equals the right side. This confirms that
x=14 is the correct value.

$14 - 4 = 10$

$10 = 10$

Solve x+4=12

Solve $2x + 4 = 8$

1. You can begin by subtracting 4 from both sides of the equation.

$$2x + 4 - 4 = 8 - 4$$

2. Because 4-4=0, all that remains on the left side is 2x.

$$2x = 8 - 4$$

3. Because 8-4=4, all that remains on the right side is 4.

$$2x = 4$$

4. Because 2 is multiplying x, the inverse operation is division.
So divide both sides by 2.

$$\frac{2x}{2} = \frac{4}{2}$$

5. Because $\frac{2}{2} = 1$ you can conclude that 1x=2

6. It's convention to write just x rather than 1x, so write x=2.

7. To check, replace x with 2, and show that the left side equal 8.
Therefore we can conclude that x=2 is the correct value of x.

$$2(2) + 4 = 4 + 4 = 8$$

Solve 3x-2=7

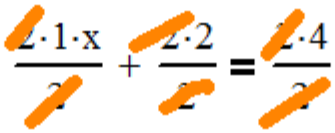
Solve 2x+4=8

1. We can also solve this equation by first dividing by 2.
We can do this because 2 is a common factor of 2, 4 and 8.
Below, you see 2 written as 2 times 1, 4 as 2 times 2 and 8
as 2 times 4.

$$2 \cdot 1x + 2 \cdot 2 = 2 \cdot 4$$

2. Divide both sides of the equation by 2, and cross off matching 2's.

$$\frac{2 \cdot 1 \cdot x}{2} + \frac{2 \cdot 2}{2} = \frac{2 \cdot 4}{2}$$



3. At this point, you have the equivalent equation 1x+2=4

4. Now simply subtract 2 from both sides, getting 1x+2-2=4-2
5. This turns into 1x=2
6. Finally, it's convention to write 1x as just x, so x=2 is the solution, as before.

Solve 3x+6=9 using the method outlined above.

Solve 2x+4x=12

1. First add the two terms on the left side, getting

$$6x = 12$$

2. Once you have the two terms added, divide both sides by 6.

$$\frac{6x}{6} = \frac{12}{6}$$

3. Because $\frac{6}{6} = 1$ in front of x you have 1, so at this point we have

$$1x = 2$$

4. Lastly, because it's convention to write x rather than 1x, you can write

$$x = 2$$

5. To confirm this value of x is the correct one, replace x with 2 in the original equation, and show the left and right sides are equal.

$$2 \cdot 2 + 4 \cdot 2 = 4 + 8 = 12$$

So we can be confident that x=2 is the correct solution.

Solve 3x+2x=10 using the method outlined above.

Solve 2x+5x+8x=15

1. First, as in the example above, add the terms on the left side.

$$15x = 15$$

2. Now divide both sides by 15, remembering that $\frac{15}{15} = 1$

$$\frac{15x}{15} = \frac{15}{15}$$

3. So at this opint we have 1x=1. Becuase it's convention to write x instead of 1x, we then have x=1 as the solution.

4. To confirm, replace x with 1 in the original equation and show that the left and right sides are equal.

$$2(1) + 5(1) + 8(1) = 2 + 5 + 8 = 7 + 8 = 15$$

This confirms that 1 is the correct value of x.

Solve 6x+4x+4x=20 using the method outlined above.

Solve 2x+3x+5=20

1. Gather like terms on the left first.

$$5x + 5 = 20$$

2. Subtract 5 from both sides.

$$5x + 5 - 5 = 20 - 5$$

3. Simplify the steps above. Becuase 5-5=0, all that remains on the left is 5x, and the right side 20-5=15

$$5x = 15$$

4. Because 5 is multiplying x, divide both sides by 5. Division is the inverse operation. Remember that $\frac{5}{5} = 1$

$$\frac{5x}{5} = \frac{15}{5} \qquad 1x = 3$$

5. It's convention to write 1x as x, so just write x=3 as the solution.

6. To check, replace x with 3 and show the left and right sides are equal. Always use the original equation to check.

$$2(3) + 3(3) + 5 = 6 + 9 + 5 = 15 + 5 = 20$$

So we can feel confident that x=3 really does solve the equation.

Solve 3x+4x+6=20 using the method outlined above.

Solve 2(x+4)=10

1. Because 2 is multiplying x+4, divide both sides by 2.

$$\frac{2(x+4)}{2} = \frac{10}{2}$$

2. Cancel the 2's on the left side and write 5 for $\frac{10}{2}$

$$\frac{2(x+4)}{2} = 5$$

3. At this point, you have x+4=5 left. Subtract 4 from both sides.

$$x + 4 - 4 = 5 - 4$$

4. Because 4-4=0, on the left you have only x left, and the right is 5-4=1.
So we can feel confident that x=1 is the solution.

5. To check, replace x with with 1, and show that the left and right sides are equal.
Always use the original equation to check. This shows that x=1 is the correct solution.

$$2(1+4) = 2(5) = 10$$

Solve 3(x-2)=9 using the procedure outlined above.

Solve 2(x+4)=10 by using the distributive property.

1. Distribute the 2 on the left into the parenthesis.

   $2 \cdot x + 2 \cdot 4 = 10$

2. Simplify the left side by performing the multiplications.

   $2x + 8 = 10$

3. Subtract 8 from from both sides.

   $2x + 8 - 8 = 10 - 8$

4. Becuase 8-8=0, only 2x is left on the left.
   On the right, you have 10-8, which is 2.

   $2x = 2$

5. Because 2 is multiplying x, divide both sides by 2.

   $\frac{2x}{2} = \frac{2}{2}$ Remeber that $\frac{2}{2} = 1$

   $1x = 1$

6. Since it's convention to write x instead of 1x, write x=1 as the solution.

Solve 3(x-2)=9 using the method outlined above.

Solve 3-2(x+5)=8

1. Distribute -2 intot he parenthesis.

$$3 - 2\cdot x - 2\cdot 5 = 8$$

2. Simplify the left side by doing the multiplications.

$$3 - 2x - 10 = 8$$

3. Simplify the left side further by gatheing like terms.

$$3 - 10 - 2x = 8$$

$$-7 - 2x = 8$$

4. Add 7 to both sides and simplify.

$$-7 + 7 - 2x = 8 + 7$$

$$-2x = 15$$

5. Becuase -2 is multiplying x, divide both sides by -2.

$$\frac{-2x}{-2} = \frac{15}{-2}$$

$$x = -7.5$$

Remember that $\frac{-2}{-2} = 1$

Solve 4-3(x-2)=7 using the method outlined above.

Solve 2(x-4)+3(x-5)=10

1. Distribute 2 into x-4 and distribute 3 into x-5

$$2x - 2 \cdot 4 + 3x - 3 \cdot 5 = 10$$

2. Perform the multiplications.

$$2x - 8 + 3x - 15 = 10$$

3. Gather like terms on the left side.

$$2x + 3x - 8 - 15 = 10$$

$$5x - 23 = 10$$

4. Add 23 to both sides to reverse the operation of subtraction.

$$5x - 23 + 23 = 10 + 23$$

$$5x = 33$$

5. Divide both sides by 5 to reverse the operation of multiplication by 5.

$$\frac{5x}{5} = \frac{33}{5}$$ Remember that $$\frac{5}{5} = 1$$

$$x = \frac{33}{5}$$

Solve 3(x-2)+2(x-4)=15 by following the method outlined above.

Solve x-1=-x

1. Rewirte the equation as 1x-1=-1x. This way you can clearly see that the coefficient on x on the right side is -1.

2. Add 1x to both sides of the equation. This will put all the x's on the left.

$$1x - 1 + 1x = -1x + 1x$$

3. 1x and 1x is 2x, so now we have the equation shown below.

$$2x - 1 = 0$$ remeber that -1x+1x=0

4. Add 1 to both sides.

$$2x - 1 + 1 = 1$$

5. Because -1+1=0 on the left, all that remains is 2x on the left.

$$2x = 1$$

6. Becuase 2 is multiplying x, divide both sides by 2.

$$\frac{2x}{2} = \frac{1}{2}$$

$$x = \frac{1}{2}$$

7. To check, replace x with $\frac{1}{2}$ in the original equation, and show that the left side is equal to the right side.

$$\frac{1}{2} - 1 = \frac{1}{2} - \frac{2}{2} = \frac{-1}{2}$$ this is the left side

$$-1 \cdot \frac{1}{2} = \frac{-1}{2}$$ this is the right side

Solve -x+1=x using the steps outlined above.

Solve 2x-1=x

1. Rewrite to show the coefficent of 1 on the x on the right.

$$2x - 1 = 1x$$

2. Subtract 1x from both sides.

$$2x - 1x - 1 = 1x - 1x$$

3. Simplify the step above. Remembrer that 1x-1x=0

$$1x - 1 = 0$$

4. Add 1 to both sides to reverse subtraction.

$$1x - 1 + 1 = 1$$

5. Because -1+1=0, on the left we have only 1x

$$1x = 1$$

6. Because it's convention to write x instead of 1x, write x=1.

7. To check, replace x with 1 on the left and right sides, and show they're equal in value.

$$2(1) - 1 = 1$$

$$2 - 1 = 1$$

$$1 = 1$$

Solve 3x-2=4x using the method outlined above

Solve x-1=2x+4

1. Subtract 2x from both sides in order to get all the variable terms on the left.

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

2. 2x-2x=0, so on the right we have only 4 left.

$$x - 1 - 2x = 4$$

3. On the left, write x as 1x and subtract 2x from it.

$$1x - 2x - 1 = 4$$

4. 1x-2x=-1x, so now we have the equation below.

$$-1x - 1 = 4$$

5. Now add 1 to both sides. This gives a 5 on the right.

$$-1x = 5$$

6. Now divide both sides by -1.

$$\frac{-1}{-1}x = \frac{5}{-1}$$

7. Remember that $\frac{-1}{-1} = 1$ so that we have 1x=-5.

$1x = -5$ is the same as $x = -5$

8. To check, replace x with -5 in both sides of the equation, and show that the left side is equal to the right side.

$-5 - 1 = -6$ so the left side is -6

$2(-5) + 4 = -10 + 4 = -6$ so the right side is also -6

Solve 2(x-4)=3(x-5)

1. Distribute 2 into x-4 and distribute 3 into x-5

$$2x - 2 \cdot 4 = 3x - 3 \cdot 5$$

2. Now do the multiplications.

$$2x - 8 = 3x - 15$$

3. Subtract 3x from both sides

$$2x - 3x - 8 = 3x - 3x - 15$$

4. 3x-3x on the right side is 0, so only -15 is left on the right.

$$2x - 3x - 8 = -15$$

5. On the left, we have 2x-3x=-1x

$$-1x - 8 = -15$$

6. Now add 8 to both sides.

$$-1x = -7$$

7. Divide both sides by -1.

$$\frac{-1}{-1}x = \frac{-7}{-1}$$

8. Lastly, we have x=7.

Solve x+(x+1)+(x+2)=10

1. Drop the parenthesis on the left.

$$x + x + 1 + x + 2 = 10$$

2. Combine the x's on the left, and add the 1 and 2.

$$3x + 3 = 10$$

3. Subtract 3 from both sides.

$$3x + 3 - 3 = 10 - 3$$

4. Becasue 3-3=0, we have the equation below.

$$3x = 7$$

5. Now we divide both sides by 3.

$$x = \frac{7}{3}$$

Solve 2x+(2x+1)+(2x+2)=6 using the method shown above.

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