Lesson 4 - SOLVING LINEAR EQUATIONS

Grade 9

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an equation of the form **ax=b**, where a and b are numbers and x is the unknown, is called a **linear equation**

in the equation, you can move the addends to either side of the equal sign, changing their signs to the opposite in the process

both sides of the equation could be multiplied or divided by any number (except 0)

Solving Linear Equations

- ☑ if an equation contains operations involving brackets, eliminate them on both sides of the equation
- ☑ collect all of the terms containing variables on the left of the equal sign and constants - on the right
- ☑ collect like terms on each side of the equation
- ☑ divide both sides of the equation by the coefficient of the unknown variable (as long as it is not 0)

Solve the following equation

$$2x(x+5)+3=3(x-1)+2(x^2-4)$$

eliminate the brackets by applying the distributive property

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

collect the terms containing the variables on the left of the equal sign and the constants - on the right
remember to change the sign when moving the terms

$$\cancel{2x^2}+10x-3x-\cancel{2x^2}=-3-3-8$$

$$7x=-14$$

$$x=\frac{-14}{7}$$

$$\boxed{x=-2}$$

RECALL

$$\frac{a}{b} = \frac{c}{d} \Leftrightarrow ad = bc$$

Solve the following equation $\frac{3x+2}{8} = \frac{9-2x}{5}$

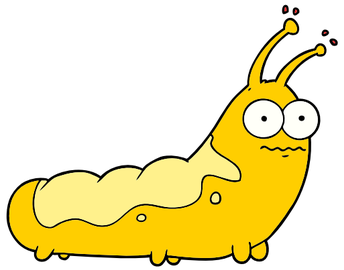
$$5(3x+2) = 8(9-2x);$$

$$15x + 10 = 72 - 16x;$$

$$15x + 16x = -10 + 72;$$

$$31x = 62;$$

$$\boxed{x = 2.}$$



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MOVE ON TO GRADE 9 LESSON 5