Student Activity: To solve equations of the form ax + b =c
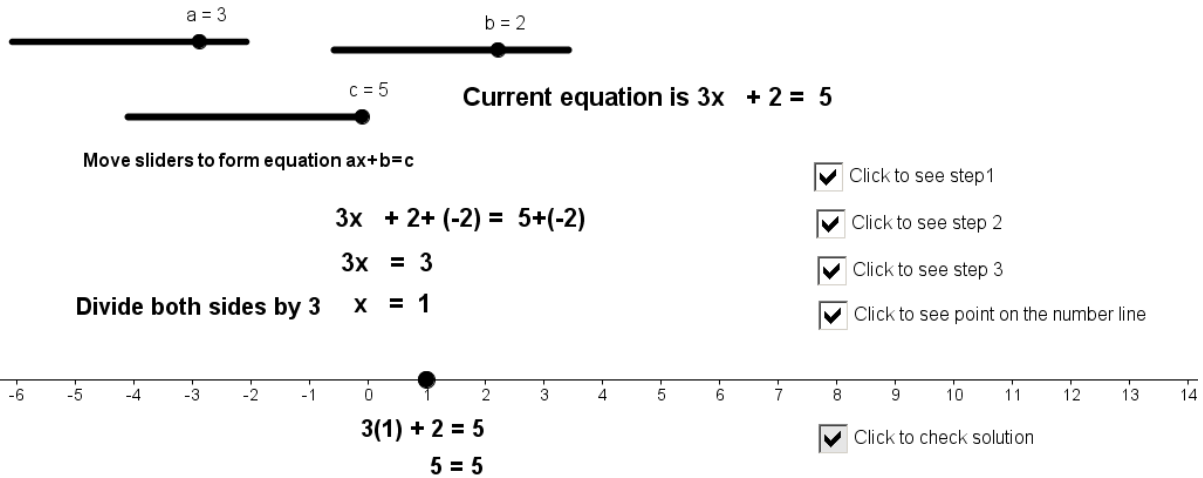
Use in connection with the Interactive file, ' ax + b =c', on the Student's CD.

$a = 3$

$b = 2$

$c = 5$ **Current equation is $3x + 2 = 5$**

Move sliders to form equation ax+b=c

☑ Click to see step1

$3x + 2 + (-2) = 5 + (-2)$

☑ Click to see step 2

$3x = 3$

☑ Click to see step 3

Divide both sides by 3 $x = 1$

☑ Click to see point on the number line

-6 -5 -4 -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14

$3(1) + 2 = 5$

☑ Click to check solution

$5 = 5$

1. Using algebra **solve** the following equations where $x \in Z$, **show your solution on the number line** provided and **check solution**:

    a.

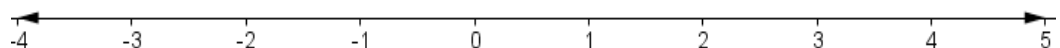|	Action to the left hand side of the equation.	$2x + 3 = 7$	Action to the right hand side of the equation.
Step 1			
Step 2			
Step 3			

-4   -3   -2   -1   0   1   2   3   4   5

Check solution.

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    b.

	Action to the left hand side of the equation.	$3x - 3 = 9$	Action to the right hand side of the equation.
Step 1			
Step 2			
Step 3			

-4   -3   -2   -1   0   1   2   3   4   5

Check solution.

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c.

	Action to the left hand side of the equation.	$4x + 5 = 17$	Action to the right hand side of the equation.
Step 1			
Step 2			
Step 3			
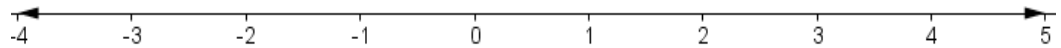
Check solution.

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d.

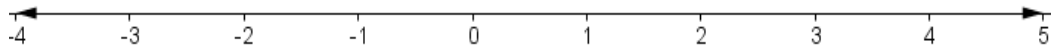|	Action to the left hand side of the equation.	$4x - 5 = 19$	Action to the right hand side of the equation.
Step 1			
Step 2			
Step 3			
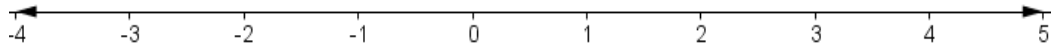
Check solution.

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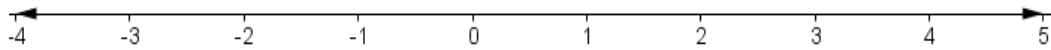
2. What do you notice about the action on the left hand side and the action on the right hand side when solving the equations in number 1 above?

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3. Solve the following equations using algebra where $x \in Z$, show your solution on the number line provided and check solution:
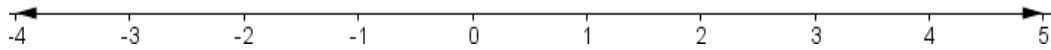
a) $4x - 5 = 27$

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←————————————————————————————————————————→
 -4      -3      -2      -1       0       1       2       3       4       5
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b) 4(*x*+2)=16

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←————————————————————————————————————————→
 -4      -3      -2      -1       0       1       2       3       4       5
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c) -3(*x* + 2) = 9

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←————————————————————————————————————————→
 -4      -3      -2      -1       0       1       2       3       4       5
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4. When solving the equation $3x + 4 = 10$ $x \in Z$:

   a.   Why do you add $- 4$ to each side?

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   b.   Why do you then divide by 3?

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   c.   Why is the order of these operations important?

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5. Brendan thinks of a number then adds 3. The total now equals 15. Represented this as an equation? Solve the equation and check your solution.

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6. Joanne thinks of a number then subtracts 5 and the result is 10. Show how this can be represented as an equation? Solve the equation and check your solution.

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7. A farmer has a number of cows and he plans to double that number next year, so that he will then have 24. Write an equation to represent this. Solve the equation and check your solution.

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8. A new student enters a class and the class now has 25 students. Let *x* represent the number of students that were in the class at first. Write this as an equation. Solve the equation and check your solution.

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9. Martha has a certain number of sweets in a bag and she gives half of them to John. If John receives 20, show how this can this be represented as an equation? Solve the equation and check your solution.

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10. The temperature increases by 18 degrees and the temperature is now 15. Show how this can be represented as an equation? Solve the equation and check your solution.

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11. A farmer doubles the amount of cows he has and then buys 3 more, he now has 29. Represent this as an equation and solve this equation. How many cows did he originally have?

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