

CHECKING YOUR ANSWER

Example: Frodo solve the following equation and found out that $x = -2$
 Check if his answer is right.

$$4x + 25 = 17$$

Left Side	Right Side
$4x + 25$	17
$= 4(-2) + 25$	
$= -8 + 25$	
$= 17$	

NO CROSSING

Left Side = Right Side

∴ RIGHT

Steps:

1. Write down the equation
2. Draw a vertical line where the equal sign is to make a T-chart
3. Sub the answer in for x
4. Solve each side separately to see if they are equal
5. If both sides are equal, the answer is RIGHT
6. If both sides are not equal, the answer is WRONG

Determine if each of the following answers is right by checking.

<p>a) $x^2 + 9 = 16$ Answer $x = 5$</p> <table border="1"> <thead> <tr> <th>LS</th> <th>RS</th> </tr> </thead> <tbody> <tr> <td>$x^2 + 9$</td> <td>16</td> </tr> <tr> <td>$= (5)^2 + 9$</td> <td></td> </tr> <tr> <td>$= 25 + 9$</td> <td></td> </tr> <tr> <td>$= 34$</td> <td></td> </tr> </tbody> </table> <p>LS ≠ RS ∴ WRONG because LS ≠ RS is not equal to</p>	LS	RS	$x^2 + 9$	16	$= (5)^2 + 9$		$= 25 + 9$		$= 34$		<p>b) $\frac{x}{3} - 1 = 13$ Answer $x = 36$</p> <table border="1"> <thead> <tr> <th>LS</th> <th>RS</th> </tr> </thead> <tbody> <tr> <td>$\frac{x}{3} - 1$</td> <td>13</td> </tr> <tr> <td>$= \frac{36}{3} - 1$</td> <td></td> </tr> <tr> <td>$= 12 - 1$</td> <td></td> </tr> <tr> <td>$= 11$</td> <td></td> </tr> </tbody> </table> <p>LS ≠ RS ∴ WRONG</p>	LS	RS	$\frac{x}{3} - 1$	13	$= \frac{36}{3} - 1$		$= 12 - 1$		$= 11$		<p>c) $5x - 2 = 18 + 4x$ Answer $x = 20$</p> <table border="1"> <thead> <tr> <th>LS</th> <th>RS</th> </tr> </thead> <tbody> <tr> <td>$5x - 2$</td> <td>$18 + 4x$</td> </tr> <tr> <td>$= 5(20) - 2$</td> <td>$18 + 4(20)$</td> </tr> <tr> <td>$= 100 - 2$</td> <td>$18 + 80$</td> </tr> <tr> <td>$= 98$</td> <td>98</td> </tr> </tbody> </table> <p>LS = RS ∴ RIGHT</p>	LS	RS	$5x - 2$	$18 + 4x$	$= 5(20) - 2$	$18 + 4(20)$	$= 100 - 2$	$18 + 80$	$= 98$	98
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SOLVING EQUATIONS WITH BRACKETS

Steps:

1. Apply the distributive property
2. Solve for x

1. Solve the following equations:

Teacher	Your Turn
$3(x - 2) = 9$ $3x - 6 = 9$ $+6 \quad +6$ $3x = 15$ $\frac{3x}{3} = \frac{15}{3}$ $x = 5$	<p>a) $4(5 + x) = -32$</p> $+20 + 4x = -32$ $-20 \quad -20$ $4x = -52$ $\frac{4x}{4} = \frac{-52}{4}$ $x = -13$
	<p>b) $40 = 10(3x^2 - 8)$</p> $40 = 30x^2 - 80$ $+80 \quad +80$ $120 = 30x^2$ $\frac{120}{30} = \frac{30x^2}{30}$ $4 = x^2$ $\sqrt{4} = \sqrt{x^2}$ $2 = x \rightarrow x = 2$

2. Solve and check the following equation.

$2(5x + 4) = 68$

Step 1 $10x + 8 = 68$
 $-8 \quad -8$
 $10x = 60$
 $\frac{10x}{10} = \frac{60}{10}$
 $x = 6$

Step 2 $2(5x + 4) = 68$

$2(5 \cdot 6 + 4)$ $= 2(30 + 4)$ $= 2(34)$ $= 68$	$\frac{68}{RS}$ <hr style="width: 100%;"/> 68
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$\therefore LS = RS, x = 6.$

SOLVING EQUATIONS WITH LIKE TERMS

Steps:

1. Collect like terms
2. Solve for x

1. Solve the following equations:

Teacher	Your Turn
$3x + 2 + 5x + 7 = 49$ $3x + 5x + 2 + 7 = 49$ $8x + 9 = 49$ $-9 \quad -9$ $8x = 40$ $\frac{8x}{8} = \frac{40}{8}$ $x = 5$	<p>a) $-12 = -22 - x + 2 - 3x$</p> $-12 = -x - 3x - 22 + 2$ $-12 = -4x - 20$ $+20 \quad +20$ $8 = -4x$ $\frac{8}{-4} = \frac{-4x}{-4}$ $-2 = x$ $x = -2$
	<p>b) $6x^2 + 1 - x^2 + 5 + 3x^2 = 206$</p> $6x^2 - x^2 + 3x^2 + 1 + 5 = 206$ $8x^2 + 6 = 206$ $-6 \quad -6$ $8x^2 = 200$ $\frac{8x^2}{8} = \frac{200}{8}$ $x^2 = 25$ $\sqrt{x^2} = \sqrt{25}$ $x = 5$

2. Solve and check the following equation.

$10x - 12 - 3x = 10 - 1$

Step 1 $7x - 12 = 9$
 $+12 \quad +12$
 $7x = 21$
 $\frac{7x}{7} = \frac{21}{7}$
 $x = 3$

Step 2 $10x - 12 - 3x = 10 - 1$

$10(3) - 12 - 3(3)$ $= 30 - 12 - 9$ $= 18 - 9$ $= 9$	$\frac{9}{RS}$ <hr style="width: 100%;"/> 9
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$\therefore x \text{ is } 3$

$LS = RS$

You can use this equation as well

PRACTICE

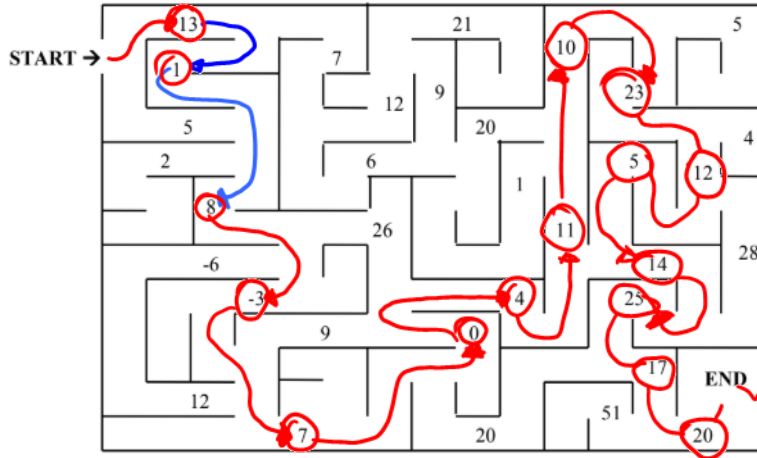
1. Solve the following equations:

a) $5(3x + 1) = 35$ $15x + 5 = 35$ $\quad -5 \quad -5$ $\frac{15x}{15} = \frac{30}{15}$ $x = 2$	b) $3(4x - 3) = -69$ $12x - 9 = -69$ $\quad +9 \quad +9$ $\frac{12x}{12} = \frac{-60}{12}$ $x = -5$
c) $3(4x^2 - 5) = 33$ $12x^2 - 15 = 33$ $\quad +15 \quad +15$ $\frac{12x^2}{12} = \frac{48}{12}$ $\sqrt{x^2} = \sqrt{4}$ $x = 2$	d) $2(8 + 2x^2) = 212$ $16 + 4x^2 = 212$ $\quad -16 \quad -16$ $\frac{4x^2}{4} = \frac{196}{4}$ $\sqrt{x^2} = \sqrt{49}$ $x = 7$

2. Solve each of the following equations:

a) $12x + 4 - 5x + 1 = 19$ <i>* Rearrange</i> $12x - 5x + 4 + 1 = 19$ <i>* Collect like terms</i> $7x + 5 = 19$ $\quad -5 \quad -5$ $\frac{7x}{7} = \frac{14}{7}$ $x = 2$	b) $x + 9 + 4x = -31$ $x + 4x + 9 = -31$ $5x + 9 = -31$ $\quad -9 \quad -9$ $\frac{5x}{5} = \frac{-40}{5}$ $x = -8$
c) $7x^2 + 11 - 2x^2 + x^2 - 4 = 61$ $7x^2 - 2x^2 + x^2 + 11 - 4 = 61$ $6x^2 + 7 = 61$ $\quad -7 \quad -7$ $\frac{6x^2}{6} = \frac{54}{6}$ $\sqrt{x^2} = \sqrt{9}$ $x = 3$	d) $14 = 9x + 15 - 7x - 1$ $14 = 9x - 7x + 15 - 1$ $14 = 2x + 14$ $\quad -14 \quad -14$ $\frac{0}{2} = \frac{2x}{2}$ $0 = x$ $x = 0$

3. Solve each of the following equations. Complete the maze by following your answers in order.



<p>a) $x^2 - 40 = 129$ $+40 +40$ $\sqrt{x^2} = \sqrt{169}$ $x = 13$</p>	<p>b) $9x + 25 = 34$ $-25 -25$ $\frac{9x}{9} = \frac{9}{9}$ $x = 1$</p>	<p>c) $\frac{x}{2} + 33 = 37$ $-33 -33$ $2 \cdot \frac{x}{2} = 4 \cdot 2$ $x = 8$</p>
<p>d) $2(x - 5) = -16$ $2x - 10 = -16$ $+10 +10$ $\frac{2x}{2} = \frac{-6}{2}$ $x = -3$</p>	<p>e) $4(3x - 1) = 80$ $12x - 4 = 80$ $+4 +4$ $\frac{12x}{12} = \frac{84}{12}$ $x = 7$</p>	<p>f) $20 = 5(4 + 2x)$ $20 = 20 + 10x$ $-20 -20$ $\frac{0}{10} = \frac{10x}{10}$ $0 = x$ $x = 0$</p>
<p>g) $11(x - 2) = 22$ $11x - 22 = 22$ $+22 +22$ $\frac{11x}{11} = \frac{44}{11}$ $x = 4$</p>	<p>h) $2(x + 8) = 38$ $2x + 16 = 38$ $-16 -16$ $\frac{2x}{2} = \frac{22}{2}$ $x = 11$</p>	<p>i) $5x + 3 - x - 2 = 41$ $4x + 1 = 41$ $-1 -1$</p>

j) $3x - 14 - 2x = 9$

k) $-7x + 18 + 3x = -30$

l) $-y + 18 + 6y = 43$

m) $5(x + 1) + 3(3 - x) = 42$

n) $13(x + 2) + 2(7 - 6x) = 65$

o) $5x + 14 - 3x - 10 - x = 21$

p) $-9 + 7x^2 + 41 - 5x^2 - 10 = 822$