



Solving Equations

I can solve one-step and two-step missing number equations using inverse operations.



1. Use the diagrams to help you work out the value of x . Show your working out.

<p>a) $x + 12 = 19$</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 5px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-bottom: 5px;">?</div> <div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> </div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px 5px;">$x + 12$</div> <div style="text-align: center; margin: 0 10px;">=</div> <div style="border: 1px solid black; padding: 2px 5px;">19</div> </div>	<p>b) $x - 3 = 18$</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <div style="border: 1px solid black; padding: 5px; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center; margin-bottom: 5px;">?</div> <div style="display: flex; gap: 5px;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">-1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">-1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">-1</div> </div> </div> <div style="text-align: center;"> <div style="border: 1px solid black; 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margin: 0 10px;">=</div> <div style="border: 1px solid black; padding: 2px 5px;">18</div> </div>	<p>c) $20 = 4x$</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; border-radius: 50%; padding: 2px 5px;">+1</div> <div style="border: 1px solid black; 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<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;"> $x = \underline{\hspace{2cm}}$ </div>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;"> $x = \underline{\hspace{2cm}}$ </div>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;"> $x = \underline{\hspace{2cm}}$ </div>



2. Complete the balance diagrams to show the following equations and find the value of x .

<p>a) $x + 8 = 21$</p> <p>A balance scale with a fulcrum in the center. The right pan contains 21 units, represented by a 4x2 grid of circles (each containing '+1') and one additional circle to the right. The left pan contains x units, represented by a rectangular box with a horizontal line and a triangle below it containing an equals sign.</p>	<p>b) $x - 7 = 15$</p> <p>A balance scale with a fulcrum in the center. The right pan contains 15 units, represented by a 5x2 grid of circles (each containing '+1') and one additional circle to the right. The left pan contains x units, represented by a rectangular box with a horizontal line and a triangle below it containing an equals sign.</p>	<p>c) $21 = 3x$</p> <p>A balance scale with a fulcrum in the center. The right pan contains 21 units, represented by a 4x2 grid of circles (each containing '+1') and one additional circle to the right. The left pan contains $3x$ units, represented by a rectangular box with a horizontal line and a triangle below it containing an equals sign.</p>
<p>A 10x10 grid for working out the solution to equation a). At the bottom right, there is a box containing the text $x =$ followed by a horizontal line.</p>	<p>A 10x10 grid for working out the solution to equation b). At the bottom right, there is a box containing the text $x =$ followed by a horizontal line.</p>	<p>A 10x10 grid for working out the solution to equation c). At the bottom right, there is a box containing the text $x =$ followed by a horizontal line.</p>



Solving Equations

I can solve one-step and two-step missing number equations using inverse operations.

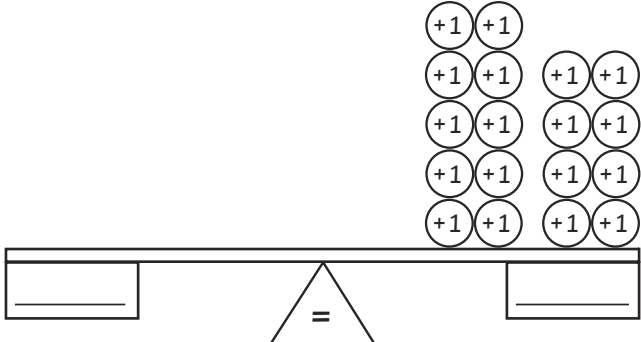
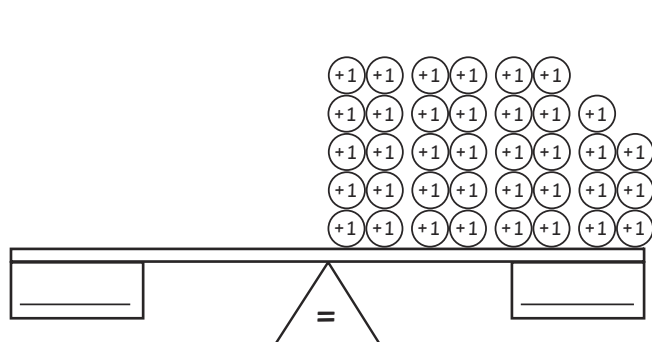
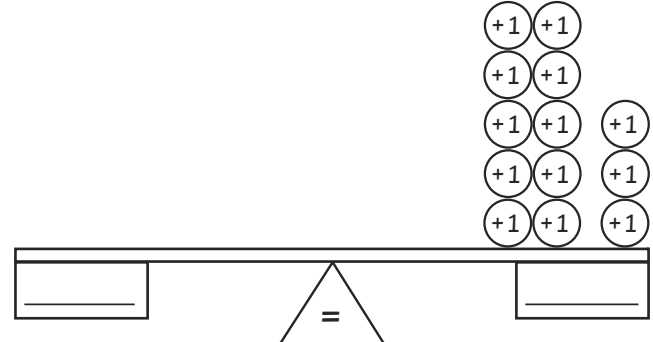
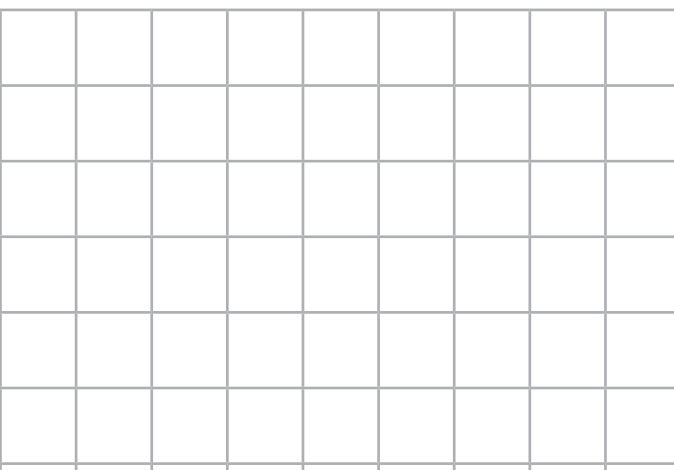
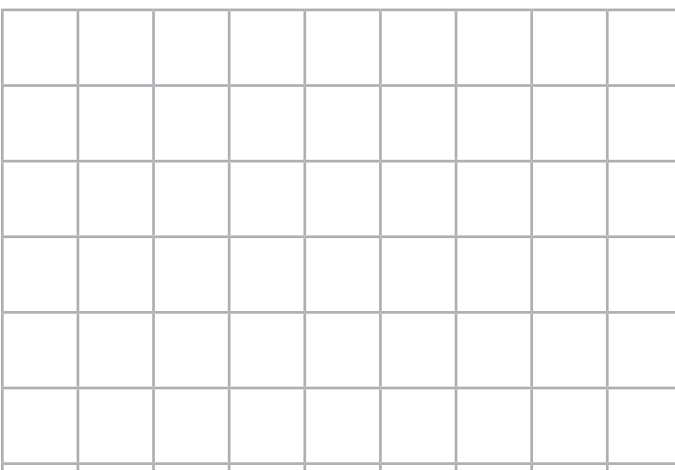
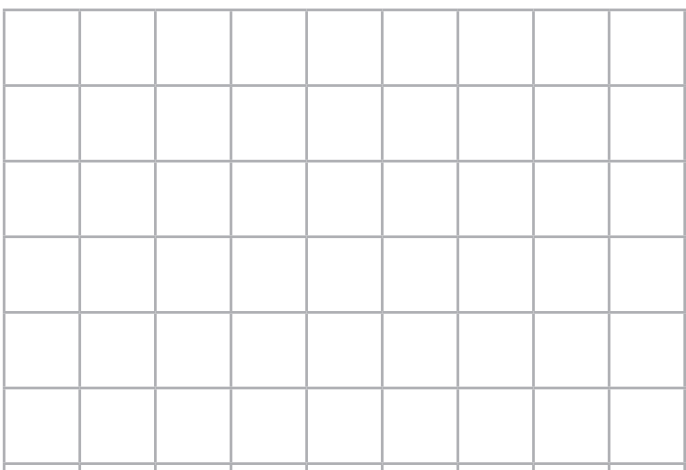


1. Use the diagrams to help you work out the value of x . Show your working out.

<p>a) $2x + 10 = 26$</p>	<p>b) $3x + 9 = 30$</p>	<p>c) $27 = 4x + 11$</p>
<div style="border: 1px solid black; width: 100px; height: 20px; margin-left: auto; margin-bottom: 10px;">$x = \underline{\hspace{2cm}}$</div>	<div style="border: 1px solid black; width: 100px; height: 20px; margin-left: auto; margin-bottom: 10px;">$x = \underline{\hspace{2cm}}$</div>	<div style="border: 1px solid black; width: 100px; height: 20px; margin-left: auto; margin-bottom: 10px;">$x = \underline{\hspace{2cm}}$</div>



2. Draw your own balancing diagrams to show the following equations and find the value of x .

<p>a) $2x + 8 = 18$</p>  <p>_____</p> <p>_____</p>	<p>b) $3x + 7 = 37$</p>  <p>_____</p> <p>_____</p>	<p>c) $13 = 4x + 5$</p>  <p>_____</p> <p>_____</p>
 <p>$x =$ _____</p>	 <p>$x =$ _____</p>	 <p>$x =$ _____</p>



Solving Equations

I can solve one-step and two-step missing number equations using inverse operations.

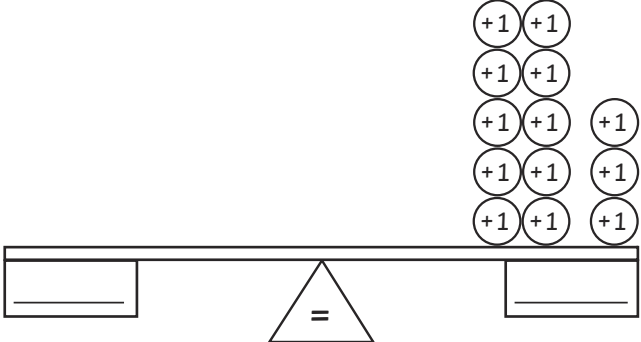
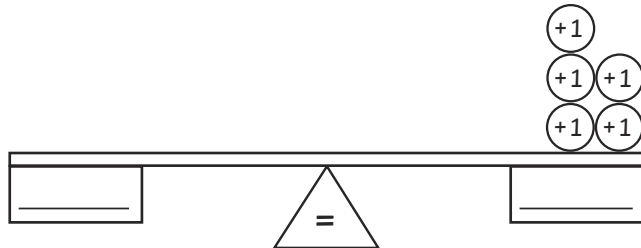
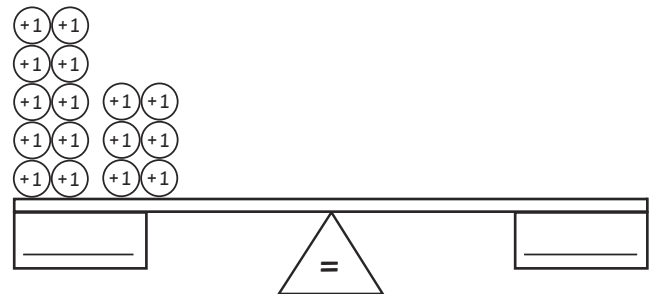
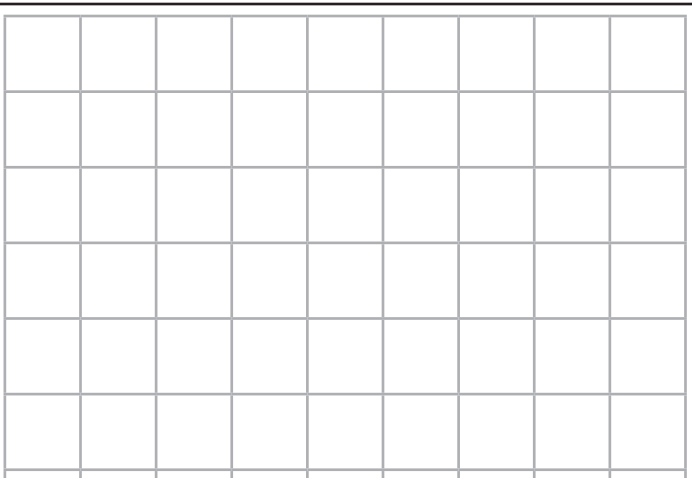
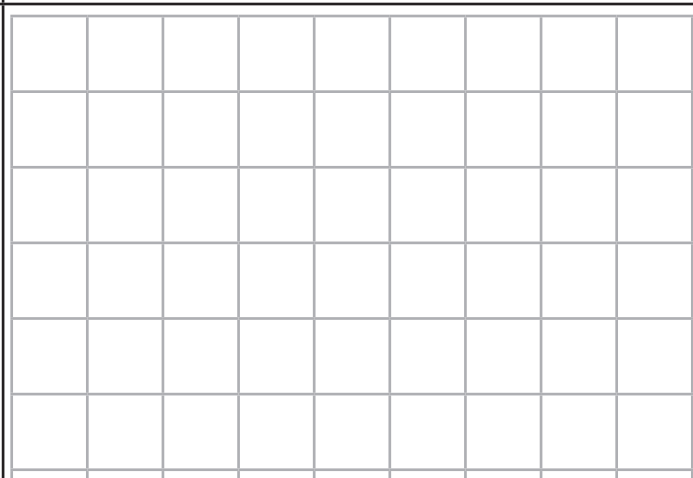
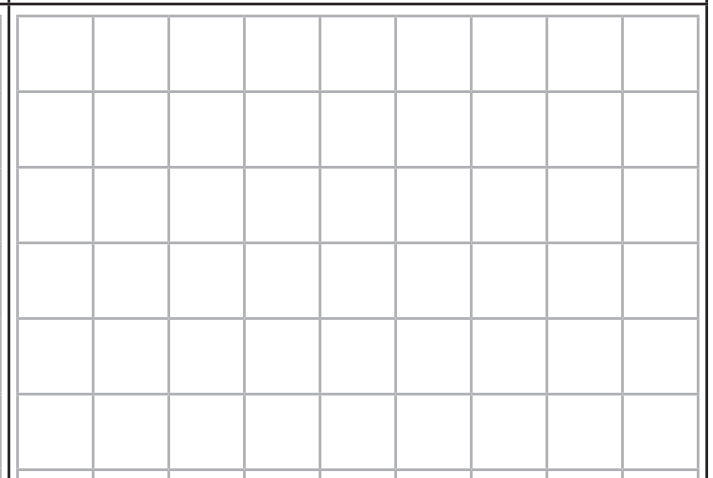


1. Use the diagrams to help you work out the value of x . Show your working out.

<p>a) $2x - 8 = 10$</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">?</div> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">?</div> <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; gap: 5px;">-1-1</div> <div style="display: flex; gap: 5px;">-1-1</div> <div style="display: flex; gap: 5px;">-1-1</div> <div style="display: flex; gap: 5px;">-1-1</div> </div> </div> <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px;">$2x - 8$</div> <div style="text-align: center;">=</div> <div style="border: 1px solid black; padding: 5px;">10</div> </div> </div>	<p>b) $3x - 6 = 9$</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">?</div> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">?</div> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">?</div> <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; gap: 5px;">-1-1</div> <div style="display: flex; gap: 5px;">-1-1</div> <div style="display: flex; gap: 5px;">-1-1</div> </div> </div> <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px;">$3x - 6$</div> <div style="text-align: center;">=</div> <div style="border: 1px solid black; padding: 5px;">9</div> </div> </div>	<p>c) $22 = 4x - 6$</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> </div> <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; gap: 5px;">+1+1</div> <div style="display: flex; gap: 5px;">+1+1</div> </div> <div style="display: flex; justify-content: space-around;"> <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">?</div> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">?</div> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">?</div> <div style="border: 1px solid black; width: 30px; height: 30px; display: flex; align-items: center; justify-content: center;">?</div> </div> <div style="display: flex; flex-direction: column; gap: 5px;"> <div style="display: flex; gap: 5px;">-1-1</div> <div style="display: flex; gap: 5px;">-1-1</div> <div style="display: flex; gap: 5px;">-1-1</div> </div> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; padding: 5px;">22</div> <div style="text-align: center;">=</div> <div style="border: 1px solid black; padding: 5px;">$4x - 6$</div> </div>
<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;">$x = \underline{\hspace{2cm}}$</div>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;">$x = \underline{\hspace{2cm}}$</div>	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto;">$x = \underline{\hspace{2cm}}$</div>



2. Draw your own balancing diagrams to show the following equations and find the value of x .

<p>a) $2x - 9 = 13$</p>  <p>_____</p> <p>_____</p>	<p>b) $3x - 10 = 5$</p>  <p>_____</p> <p>_____</p>	<p>c) $16 = 2(x - 12)$</p>  <p>_____</p> <p>_____</p>
 <p>$x =$ _____</p>	 <p>$x =$ _____</p>	 <p>$x =$ _____</p>

Solving Equations Answers

★		
1.	a	$x + 12 = 19$ $x = 19 - 12$ $x = 7$
	b	$x - 3 = 18$ $x = 18 + 3$ $x = 21$
	c	$20 = 4x$ $20 \div 4 = x$ $5 = x$
2.	a	$x + 8 = 21$ $x = 21 - 8$ $x = 13$
	b	$x - 7 = 15$ $x = 15 + 7$ $x = 22$
	c	$21 = 3x$ $21 \div 3 = x$ $7 = x$

★★		
1.	a	$2x + 10 = 26$ $2x = 26 - 10$ $2x = 16$ $x = 16 \div 2$ $x = 8$
	b	$3x + 9 = 30$ $3x = 30 - 9$ $3x = 21$ $x = 21 \div 3$ $x = 7$
2.	a	$27 = 4x + 11$ $27 - 11 = 4x$ $16 = 4x$ $16 \div 4 = x$ $4 = x$
	b	$3x + 7 = 37$ $3x = 37 - 7$ $3x = 30$ $x = 30 \div 3$ $x = 10$

★★		
1.	a	$2x + 8 = 18$ $2x = 18 - 8$ $2x = 10$ $x = 10 \div 2$ $x = 5$
	b	$3x + 7 = 37$ $3x = 37 - 7$ $3x = 30$ $x = 30 \div 3$ $x = 10$
2.	a	$2x - 8 = 10$ $2x = 10 + 8$ $2x = 18$ $x = 18 \div 2$ $x = 9$
	b	$3x - 6 = 9$ $3x = 9 + 6$ $3x = 15$ $x = 15 \div 3$ $x = 5$

★★★		
1.	a	$2x - 8 = 10$ $2x = 10 + 8$ $2x = 18$ $x = 18 \div 2$ $x = 9$
	b	$3x - 6 = 9$ $3x = 9 + 6$ $3x = 15$ $x = 15 \div 3$ $x = 5$
2.	a	$2x - 9 = 13$ $2x = 13 + 9$ $2x = 22$ $x = 22 \div 2$ $x = 11$
	b	$3x - 10 = 5$ $3x = 5 + 10$ $3x = 15$ $x = 15 \div 3$ $x = 5$

★★★		
1.	a	$2x - 8 = 10$ $2x = 10 + 8$ $2x = 18$ $x = 18 \div 2$ $x = 9$
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