Balancing Equations **Name: _____**

*Important note: You are learning the **balancing method** for solving equations (since it is much more versatile and useful in the long run). You must show that you have used this. Therefore single number answers won't get any marks even if they are correct.*

1. The equations below have been solved using the balancing method.
Write next to each arrow what has been done to both sides of each equation.

a)

$x + 12 = 20$

$x = 8$

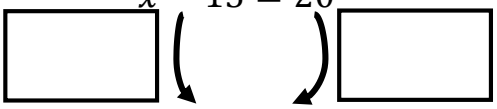
b)

$6x = 48$

$x = 8$

c)

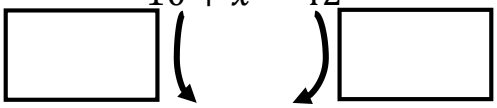
$x - 15 = 20$



$x = 35$

d)

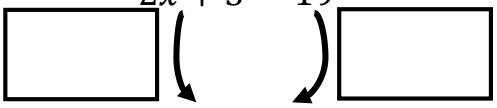
$10 + x = 42$



$x = 32$

e)

$2x + 5 = 19$

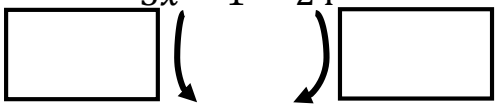


$2x = 14$

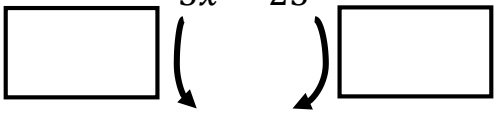
$x = 7$

f)

$5x - 1 = 24$



$5x = 25$



$x = 5$

2. Solve the following equations, using the balancing method.
Make sure you write down what you have done to each side at every step as well as the equation you get after every change (just as in the question above)

a)

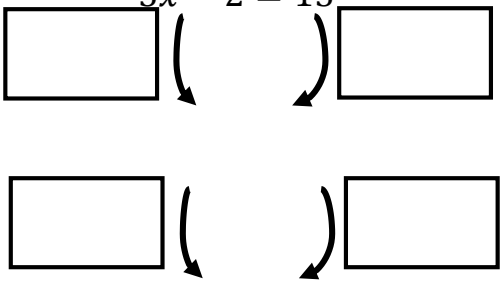
$x + 15 = 18$

b)

$9x = 36$

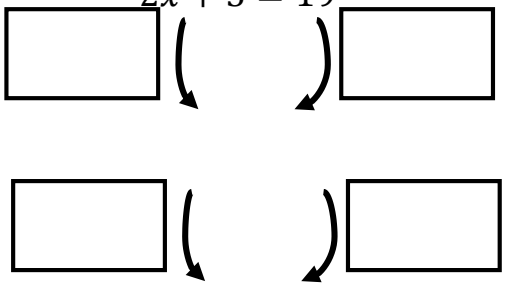
c)

$3x - 2 = 13$



d)

$2x + 5 = 19$



3. Solve the following equations, using the balancing method.

Don't forget to include arrows showing what you are doing to each side.

a) $4x + 10 = 410$

b) $10x - 6 = 34$

c) $6x - 3 = 21$

d) $11x - 10 = 67$

4. The equations below have been solved using the balancing method.

Write next to each arrow what has been done to both sides of each equation.

a)

$2x + 5 = x + 9$

$x + 5 = 9$

$x = 4$

b)

$4x + 1 = 6x - 5$

$1 = 2x - 5$

$6 = 2x$

$3 = x$

c)

$10x + 14 = 6x + 34$

$4x + 14 = 34$

$4x = 20$

$x = 5$

d)

$7x + 9 = 12x + 4$

$9 = 5x + 4$

$5 = 5x$

$1 = x$

Balancing Equations SOLUTIONS

*Important note: You are learning the **balancing method** for solving equations (since it is much more versatile and useful in the long run). You must show that you have used this. Therefore single number answers won't get any marks even if they are correct.*

1. The equations below have been solved using the balancing method.
Write next to each arrow what has been done to both sides of each equation.

a)

$x + 12 = 20$

-12 ↓ -12

$x = 8$

b)

$6x = 48$

$\div 6$ ↓ $\div 6$

$x = 8$

c)

$x - 15 = 20$

$+15$ ↓ $+15$

$x = 35$

d)

$10 + x = 42$

-10 ↓ -10

$x = 32$

e)

$2x + 5 = 19$

-5 ↓ -5

$2x = 14$

$\div 2$ ↓ $\div 2$

$x = 7$

f)

$5x - 1 = 24$

$+1$ ↓ $+1$

$5x = 25$

$\div 5$ ↓ $\div 5$

$x = 5$

2. Solve the following equations, using the balancing method.
Make sure you write down what you have done to each side at every step as well as the equation you get after every change (just as in the question above)

a)

$x + 15 = 18$

-15 ↓ -15

$x = 3$

b)

$9x = 36$

$\div 9$ ↓ $\div 9$

$x = 4$

c)

$3x - 2 = 13$

$+2$ ↓ $+2$

$3x = 15$

$\div 3$ ↓ $\div 3$

$x = 5$

d)

$2x + 5 = 19$

-5 ↓ -5

$2x = 14$

$\div 2$ ↓ $\div 2$

$x = 7$

3. Solve the following equations, using the balancing method.

Don't forget to include arrows showing what you are doing to each side.

a)

$4x + 10 = 410$

-10 $\quad$ -10

$4x = 400$

$\div 4$ $\quad$ $\div 4$

$x = 100$

b)

$10x - 6 = 34$

$+6$ $\quad$ $+6$

$10x = 40$

$\div 10$ $\quad$ $\div 10$

$x = 4$

a)

$6x - 3 = 21$

$+3$ $\quad$ $+3$

$6x = 24$

$\div 6$ $\quad$ $\div 6$

$x = 4$

a)

$11x - 10 = 67$

$+10$ $\quad$ $+10$

$11x = 77$

$\div 11$ $\quad$ $\div 11$

$x = 7$

4. The equations below have been solved using the balancing method.

Write next to each arrow what has been done to both sides of each equation.

a)

$2x + 5 = x + 9$

$-x$ $\quad$ $-x$

$x + 5 = 9$

-5 $\quad$ -5

$x = 4$

b)

$4x + 1 = 6x - 5$

$-4x$ $\quad$ $-4x$

$1 = 2x - 5$

$+5$ $\quad$ $+5$

$6 = 2x$

$\div 2$ $\quad$ $\div 2$

$3 = x$

c)

$10x + 14 = 6x + 34$

$-6x$ $\quad$ $-6x$

$4x + 14 = 34$

-14 $\quad$ -14

$4x = 20$

$\div 4$ $\quad$ $\div 4$

$x = 5$

d)

$7x + 9 = 12x + 4$

$-7x$ $\quad$ $-7x$

$9 = 5x + 4$

-4 $\quad$ -4

$5 = 5x$

$\div 5$ $\quad$ $\div 5$

$1 = x$