

Level 3 Revision: Equations and Expressions

A: Solving Equations

Reminders

$$4x + 3 = 23$$

$$4x = 20$$

$$x = 5$$

$$5b - 4 = 46$$

$$5b = 50$$

$$b = 10$$

$$6d - 4 = 2$$

$$6d = 6$$

$$d = 1$$

$$7d + 3 = 3$$

$$7d = 0$$

$$d = 0$$

Notice that, if the equation has + 3 on the left-hand side, first we take 3 away from the number on the right-hand. If the equation has - 4 on the left-hand side we add 4 to the number on the right-hand side. We finish off by dividing by the number on the left-hand side.

Now try these examples:-

1) $5x + 7 = 27$

2) $6f + 10 = 16$

3) $7x - 8 = 20$

4) $9x + 10 = 10$

5) $10c - 9 = 81$

6) $20g + 20 = 100$

7) $3m - 8 = 31$

8) $7k + 36 = 540$

B: Solving Equations with letters on both sides

Reminders

$7x + 3 = 5x + 9$ Notice the 5x on the right-hand side of this equation

$2x + 3 = 9$ Take 5x away from **both** sides – now this is just like the equations we can solve (above)

$2x = 6$ Subtract 3 from both sides

$x = 3$ Divide both sides by 2

Now try these examples: -

1) $4x + 3 = 2x + 13$

2) $7x - 3 = 4x + 6$

3) $10x - 10 = 8x + 10$

4) $6x + 7 = 4x + 9$

5) $8x + 5 = 6x + 25$

6) $7x - 8 = 5x + 2$

7) $4x + 5 = x + 14$

8) $7x + 7 = 6x + 2$

C: Simplifying expressions

Reminders

1) $7x + 9y + 4x + 3y = 11x + 12y$

2) $7x + 9y - 4x - 3y = 3x + 6y$

3) $a + 3b + 4 + 2a + 4b + 6 = 3a + 7b + 10$

4) $7p + 4q - 3p + 4q - 4p = 8q$

1) and 2) look quite similar. Can you see why the answers are different?

In 3) notice that "a" means 1a and that the numbers 4 and 6 are added to give 10.

In 4) there is no need to write "0p". Only write "0" if all terms are zero.

Now try these examples:-

1) $2x + 3y + 4x + 6y$

2) $5a + 3b - a - b$

3) $6t + 3 + 7t - 1$

4) $2a + 3b + 4c + a + 2b + 3c$

5) $10 + a + 10 + b + 10$

6) $8u + 9v - 5u - 5v - 3u$

7) $2c + 3d + 4e - 3d - 2c$

8) $4f + 3g - 2f + 4g + 2f$

9) $5r + 6s + 7t - 5r - 6s - 7t$