

Equations With x on Both Sides

Ex1

$$5x - 7 = 2x + 14$$

$$5x - 2x = +14 + 7$$

$$3x = 21$$

$$x = \frac{21}{3}$$

$$\underline{x = 7}$$

Ex2

$$4x + 8 = 28 - 6x$$

$$4x + 6x = 28 - 8$$

$$10x = 20$$

$$x = \frac{20}{10}$$

$$\underline{x = 2}$$

EXERCISE 5G



Solve each of the following equations.

1 $2x + 3 = x + 5$

3 $4a - 3 = 3a + 4$

5 $7p - 5 = 3p + 3$

7 $4m + 1 = m + 10$

9 $2(d + 3) = d + 12$

11 $3(2y + 3) = 5(2y + 1)$

13 $4(3b - 1) + 6 = 5(2b + 4)$

2 $5y + 4 = 3y + 6$

4 $5t + 3 = 2t + 15$

6 $6k + 5 = 2k + 1$

8 $8s - 1 = 6s - 5$

10 $5(x - 2) = 3(x + 4)$

12 $3(h - 6) = 2(5 - 2h)$

14 $2(5c + 2) - 2c = 3(2c + 3) + 7$

HINTS AND TIPS

Remember the rule "change sides, change signs". Show all your working on this type of question.

Rearrange before you simplify. If you try to rearrange and simplify at the same time you will probably get it wrong.

$$\textcircled{1} \quad 2x + 3 = x + 5$$

$$2x - x = 5 - 3$$

$$\underline{x = 2}$$

$$\textcircled{2} \quad 5y + 4 = 3y + 6$$

$$5y - 3y = 6 - 4$$

$$2y = 2$$

$$y = \frac{2}{2}$$

$$\underline{y = 1}$$

$$\textcircled{3} \quad 4a - 3 = 3a + 4$$

$$4a - 3a = 4 + 3$$

$$\underline{a = 7}$$

$$\textcircled{4} \quad 5t + 3 = 2t + 15$$

$$5t - 2t = 15 - 3$$

$$3t = 12$$

$$t = \frac{12}{3}$$

$$\underline{t = 4}$$

$$\textcircled{5} \quad 7p - 5 = 3p + 3$$

$$7p - 3p = 3 + 5$$

$$4p = 8$$

$$p = \frac{8}{4}$$

$$\underline{p = 2}$$

$$\textcircled{6} \quad 6k + 5 = 2k + 1$$

$$6k - 2k = 1 - 5$$

$$4k = -4$$

$$k = \frac{-4}{4}$$

$$\underline{k = -1}$$

$$7 \quad 4m + 1 = m + 10$$

$$4m - m = 10 - 1$$

$$3m = 9$$

$$m = \frac{9}{3}$$

$$\underline{m = 3}$$

$$8 \quad 8s - 1 = 6s - 5$$

$$8s - 6s = -5 + 1$$

$$2s = -4$$

$$s = \frac{-4}{2}$$

$$\underline{s = -2}$$

$$9 \quad 2(d + 3) = d + 12$$

$$2d + 6 = d + 12$$

$$2d - d = 12 - 6$$

$$\underline{d = 6}$$

$$10 \quad 5(x - 2) = 3(x + 4)$$

$$5x - 10 = 3x + 12$$

$$5x - 3x = 12 + 10$$

$$2x = 22$$

$$x = \frac{22}{2}$$

$$\underline{x = 11}$$

$$11 \quad 3(2y + 3) = 5(2y + 1)$$

$$6y + 9 = 10y + 5$$

$$6y - 10y = 5 - 9$$

$$-4y = -4$$

$$y = \frac{-4}{-4}$$

$$\underline{y = 1}$$

$$12 \quad 3(h - 6) = 2(5 - 2h)$$

$$3h - 18 = 10 - 4h$$

$$3h + 4h = 10 + 18$$

$$7h = 28$$

$$h = \frac{28}{7}$$

$$\underline{h = 4}$$

$$13 \quad 4(3b - 1) + 6 = 5(2b + 4)$$

$$12b - 4 + 6 = 10b + 20$$

$$12b - 10b = +20 + 4 - 6$$

$$2b = 18$$

$$b = \frac{18}{2}$$

$$\underline{b = 9}$$

$$14 \quad 2(5c + 2) - 2c = 3(2c + 3) + 7$$

$$10c + 4 - 2c = 6c + 9 + 7$$

$$10c - 2c - 6c = +9 + 7 - 4$$

$$2c = 12$$

$$c = \frac{12}{2}$$

$$\underline{c = 6}$$