

A2.A.21: Roots of Quadratics 2: Determine the quadratic equation, given the sum and product of its roots

- 1 Which equation has roots whose sum is 3 and whose product is -4 ?
- 2 Juan has been told to write a quadratic equation where the sum of the roots is equal to -3 and the product of the roots is equal to -9 . Which equation meets these requirements?
- 3 For which equation does the sum of the roots equal -3 and the product of the roots equal 2?
- 4 For which equation does the sum of the roots equal 3 and the product of the roots equal 4.5?
- 5 For which equation does the sum of the roots equal $\frac{3}{4}$ and the product of the roots equal -2 ?
- 6 Which equation has roots with the sum equal to $\frac{9}{4}$ and the product equal to $\frac{3}{4}$?
- 7 Write a quadratic equation such that the sum of its roots is -5 and the product of its roots is 6. What are the roots of this equation?
- 8 Write a quadratic equation such that the sum of its roots is 6 and the product of its roots is -27 .

A2.A.21: Roots of Quadratics 2: Determine the quadratic equation, given the sum and product of its roots**Answer Section**

1 ANS:

$$x^2 - 3x - 4 = 0$$

sum of the roots, $-\frac{b}{a} = -\frac{-3}{1} = 3$. product of the roots, $\frac{c}{a} = \frac{-4}{1} = -4$

REF: 060820b

2 ANS:

$$2x^2 + 6x - 18 = 0$$

sum of the roots, $-\frac{b}{a} = -\frac{6}{2} = -3$. product of the roots, $\frac{c}{a} = \frac{-18}{2} = -9$

REF: 010919b

3 ANS:

$$2x^2 + 6x + 4 = 0$$

$$\frac{-b}{a} = \frac{-6}{2} = -3. \quad \frac{c}{a} = \frac{4}{2} = 2$$

REF: 011121a2

4 ANS:

$$2x^2 - 6x + 9 = 0$$

REF: 069931siii

5 ANS:

$$4x^2 - 3x - 8 = 0$$

$$S = \frac{-b}{a} = \frac{-(-3)}{4} = \frac{3}{4}. \quad P = \frac{c}{a} = \frac{-8}{4} = -2$$

REF: fall0912a2

6 ANS:

$$4x^2 - 9x + 3 = 0$$

sum of the roots, $\frac{-b}{a} = \frac{-(-9)}{4} = \frac{9}{4}$. product of the roots, $\frac{c}{a} = \frac{3}{4}$

REF: 061208a2

7 ANS:

$$x^2 + 5x + 6 = 0, -3, -2. \quad -\frac{b}{a} = -5. \quad \frac{c}{a} = 6. \quad \text{If } a = 1, \text{ then } b = 5 \text{ and } c = 6. \quad \begin{array}{l} x^2 + 5x + 6 = 0 \\ (x+3)(x+2) = 0 \end{array}$$

REF: 010830b

8 ANS:

$$x^2 - 6x - 27 = 0, \frac{-b}{a} = 6. \frac{c}{a} = -27. \text{ If } a = 1 \text{ then } b = -6 \text{ and } c = -27$$

REF: 061130a2