

A2.A.21: Roots of Quadratics 1: 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 ?
 - 1) $x^2 + 3x - 4 = 0$
 - 2) $x^2 - 3x - 4 = 0$
 - 3) $x^2 + 4x - 3 = 0$
 - 4) $x^2 - 4x + 3 = 0$
- 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?
 - 1) $x^2 + 3x + 9 = 0$
 - 2) $x^2 - 12x + 27 = 0$
 - 3) $2x^2 + 6x - 18 = 0$
 - 4) $(x + 3)(x + 9) = 0$
- 3 For which equation does the sum of the roots equal -3 and the product of the roots equal 2 ?
 - 1) $x^2 + 2x - 3 = 0$
 - 2) $x^2 - 3x + 2 = 0$
 - 3) $2x^2 + 6x + 4 = 0$
 - 4) $2x^2 - 6x + 4 = 0$
- 4 For which equation does the sum of the roots equal 3 and the product of the roots equal 4.5 ?
 - 1) $x^2 + 3x - 9 = 0$
 - 2) $x^2 - 3x + 9 = 0$
 - 3) $2x^2 + 6x + 9 = 0$
 - 4) $2x^2 - 6x + 9 = 0$
- 5 For which equation does the sum of the roots equal $\frac{3}{4}$ and the product of the roots equal -2 ?
 - 1) $4x^2 - 8x + 3 = 0$
 - 2) $4x^2 + 8x + 3 = 0$
 - 3) $4x^2 - 3x - 8 = 0$
 - 4) $4x^2 + 3x - 2 = 0$
- 6 Which equation has roots with the sum equal to $\frac{9}{4}$ and the product equal to $\frac{3}{4}$?
 - 1) $4x^2 + 9x + 3 = 0$
 - 2) $4x^2 + 9x - 3 = 0$
 - 3) $4x^2 - 9x + 3 = 0$
 - 4) $4x^2 - 9x - 3 = 0$
- 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 1: Determine the quadratic equation, given the sum and product of its roots**Answer Section**

1 ANS: 2

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: 3

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: 3

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

REF: 011121a2

4 ANS: 4

REF: 069931siii

5 ANS: 3

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

REF: fall0912a2

6 ANS: 3

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:

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

REF: 010830b

8 ANS:

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

REF: 061130a2