

Name
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$$\text{Sum} = -\frac{b}{a}$$

$$\text{Product} = \frac{c}{a}$$

Date _____
Pre Calculus

Finding a Missing Root of a Quadratic Equation

1. One root of $x^2 + 7x + k = 0$ is -4. Find the other root.

$$\text{Sum} = -\frac{7}{1} = -7$$

-3

$$\text{Product} = -4(-3) = 12 = \frac{c}{a}$$

$$r_1 + r_2 = -7$$

$$\begin{array}{r} -4 + r_2 = -7 \\ +4 \quad +4 \end{array}$$

$$r_2 = -3$$

$$\boxed{12 = c}$$
$$\boxed{k = 12}$$

2. One root of $x^2 + kx - 20 = 0$ is 2. Find the other root.

$$\text{Product} = -\frac{20}{1} = -20$$

-10

$$\text{Sum} = -10 + 2 = -8 = -\frac{b}{a}$$

$$r_1 \cdot r_2 = -20$$

$$\frac{2 \cdot r_2}{2} = \frac{-20}{2}$$

$$r_2 = -10$$

$$\boxed{8 = b}$$
$$\boxed{k = 8}$$

3. One root of $x^2 + kx + 30 = 0$ is -6. Find the other root.

$$\text{Product} = \frac{30}{1} = 30$$

-5

$$\text{Sum} = -6 + 5 = -1 = -\frac{b}{a}$$

$$r_1 \cdot r_2 = 30$$

$$\frac{-6 \cdot r_2}{-6} = \frac{30}{-6}$$

$$r_2 = -5$$

$$b = 11$$
$$k = 11$$

4. One root of $x^2 - 7x + k = 0$ is 9 . Find the other root.

Sum = $\frac{7}{1} = 7$ Product = $-2(9) = \frac{-18}{1} = \frac{c}{a}$

$r_1 + r_2 = 7$

$9 + r_2 = 7$
 $-9 \quad -9$

$r_2 = -2$

$c = -18$
 $k = -18$

5. One root of $x^2 - 12x + k = 0$ is 4 . Find the other root.

Sum = $\frac{12}{1} = 12$ Product = $4 \cdot 8 = \frac{32}{1} = \frac{c}{a}$

$r_1 + r_2 = 12$

$4 + r_2 = 12$
 $-4 \quad -4$

$r_2 = 8$

$c = 32$
 $k = 32$

6. One root of $2x^2 - 5x + k = 0$ is $-\frac{3}{2}$. Find the other root.

Sum = $\frac{5}{2}$

$r_1 + r_2 = \frac{5}{2}$

$-\frac{3}{2} + r_2 = \frac{5}{2}$
 $+\frac{3}{2} \quad +\frac{3}{2}$

$r_2 = 4$

Product = $4(-\frac{3}{2}) = \frac{-6}{1} = \frac{-12}{2} = \frac{c}{a}$

$c = -12$
 $k = -12$

7. One root of $8x^2 + kx + 3 = 0$ is $\frac{1}{4}$. Find the other root.

Product = $\frac{3}{8}$

Sum = $\frac{3}{2} + \frac{1}{4} = \frac{7}{4} = \frac{14}{8} = \frac{-b}{a}$

$r_1 \cdot r_2 = \frac{3}{8}$
 $(\frac{1}{4}) \cdot r_2 = (\frac{3}{8})$

$b = -14$

$k = -14$

$r_2 = \frac{3}{2}$