# Unlock Geometry Readiness Test

**1)** Find the equation of a line that passes through the points (3,1) and (9,19)

**2)** Solve the inequality

$$-\frac{x}{5} - 4 \le 8$$

**3)** Sketch the solution to the following inequality

$$y < \frac{5}{3}x - 3$$

**4)** Simplify the following expression

$$\frac{\left(x^8 y^{12}\right)^{1/4}}{2y^2}$$

**5)** The exponential growth of a culture of bacteria can be represented by the function

$$a = 8000\left(1.5\right)^t$$

Where $a$ is the population and $t$ is the time in hours. How much did the population grow by between 2 and 5 hours?

**6)** Multiply the two binomials

$$\left(x^2 + 3x\right)\left(6x - 2\right)$$

**7)** Factor the trinomial

$$3x^2 + 19x + 6$$

**8)** Sketch the graph of the quadratic equation

$$y = \left(x - 1\right)^2 - 4$$

**9)** Find the roots of the quadratic equation, rounded to 2 decimal places

$$y = x^2 + 3x - 9$$

**10)** Multiply and simplify the rational expressions

$$\frac{(x-8)(5x+8)}{x^2-9x+8} \cdot \frac{x^2+2x-3}{x^2-9}$$

**11)** Solve the rational equation

$$\frac{3}{x-3} = \frac{4}{x-7}$$

**12)** Simplify the radical expression

$$\left(4+\sqrt{2}\right)\left(5+\sqrt{2}\right)$$

**13)** Solve the radical equation, assuming the principal root is being used

$$\sqrt{2x+24} = x$$

**14)** What is the range of the following function?

$$y = x^2 + 5$$

**15)** Sketch the quadratic function
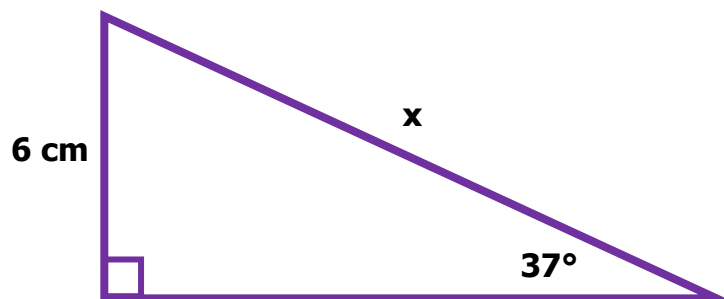
$$y = -2\left(\frac{1}{3}x-2\right)^2 + 5$$

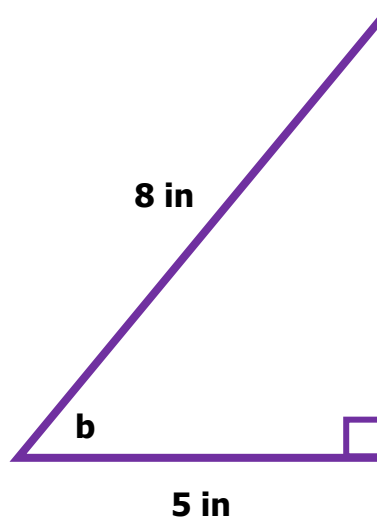**16)** Solve the system of linear equations for $x$ and $y$

$$x + 6y = 24$$
$$4x - 8y = 0$$

**17)** Katelyn finds 26 coins worth a total of $4.85 in her purse. Assuming she only has quarters and dimes, how many of each coin does she have?

**18)** Find the length of side **x** in the triangle below (rounded to the nearest tenth)



6 cm

x

37°

**19)** Find the measure of angle **b** in the triangle below (rounded to the nearest whole number)

8 in

b

5 in
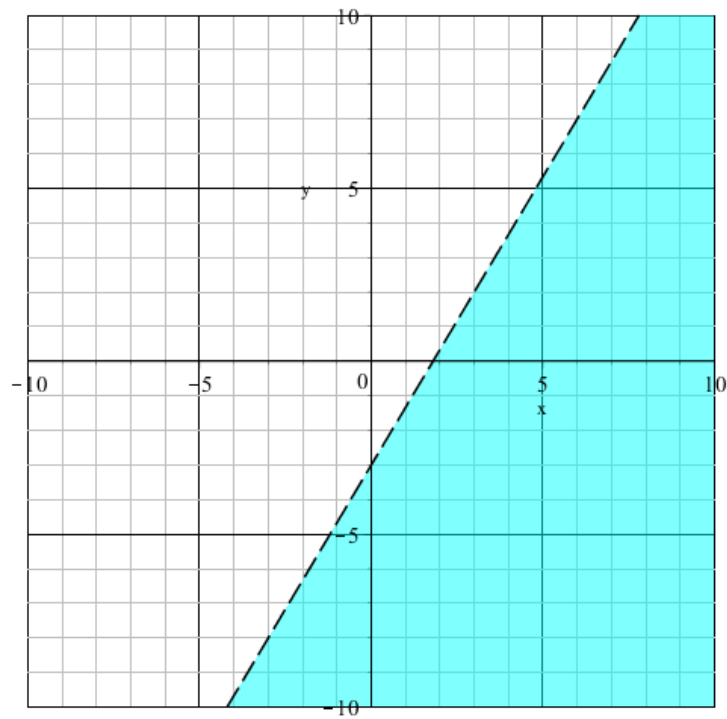
**20)** Mike rolls two six-sided dice at the same time. What is the probability that he rolls a 3 on one die and an even number on the other?

**1)** $y = 3x - 8$

**2)** $x \geq -60$
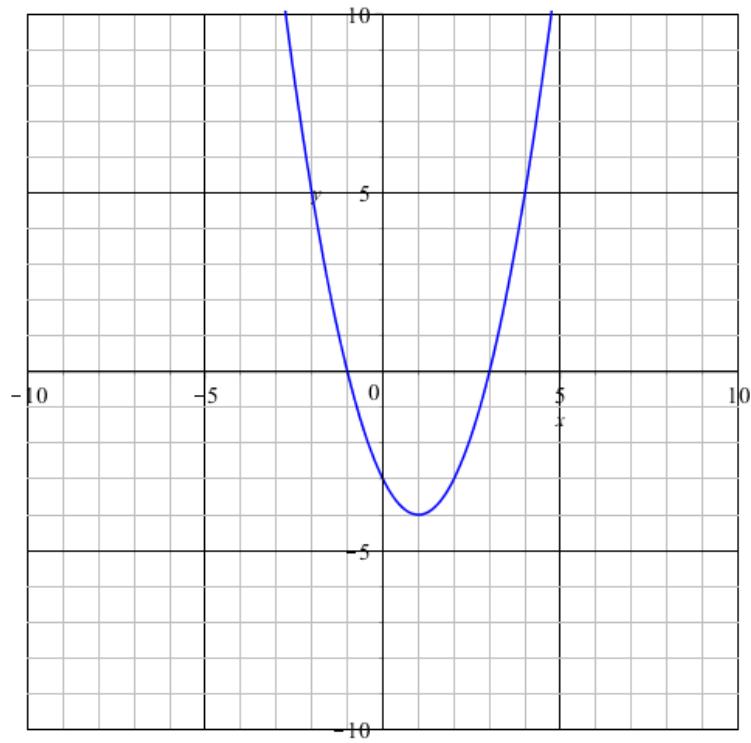
**3)**



**4)** $\dfrac{x^2 y}{2}$

**5)** 42,750

**6)** $6x^3 + 16x^2 - 6x$

**7)** $(3x + 1)(x + 6)$

**8)**



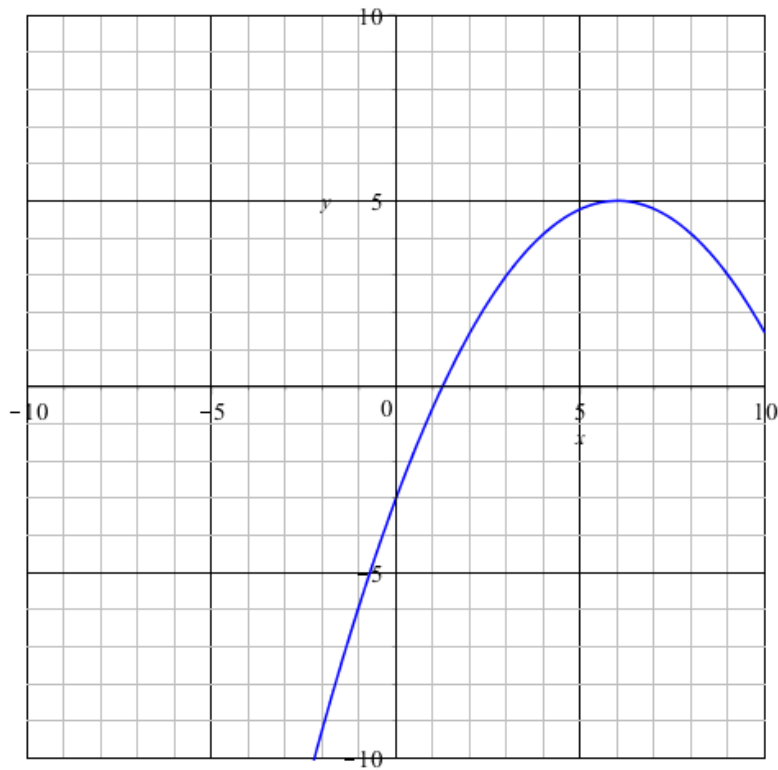**9)** $x = -4.85, 1.85$

**10)** $\dfrac{5x + 8}{x - 3}$

**11)** $x = -9$

**12)** $22 + 9\sqrt{2}$

**13)** $x = 6$

**14)** $\{y \in \square \mid y \geq 5\}$

**15)**



**16)** $x = 6, y = 3$

**17)** 15 quarters, 11 dimes

**18)** 10 cm

**19)** 51°

**20)** 1/12

Students with 16 or more questions correct are ready for Unlock Geometry.