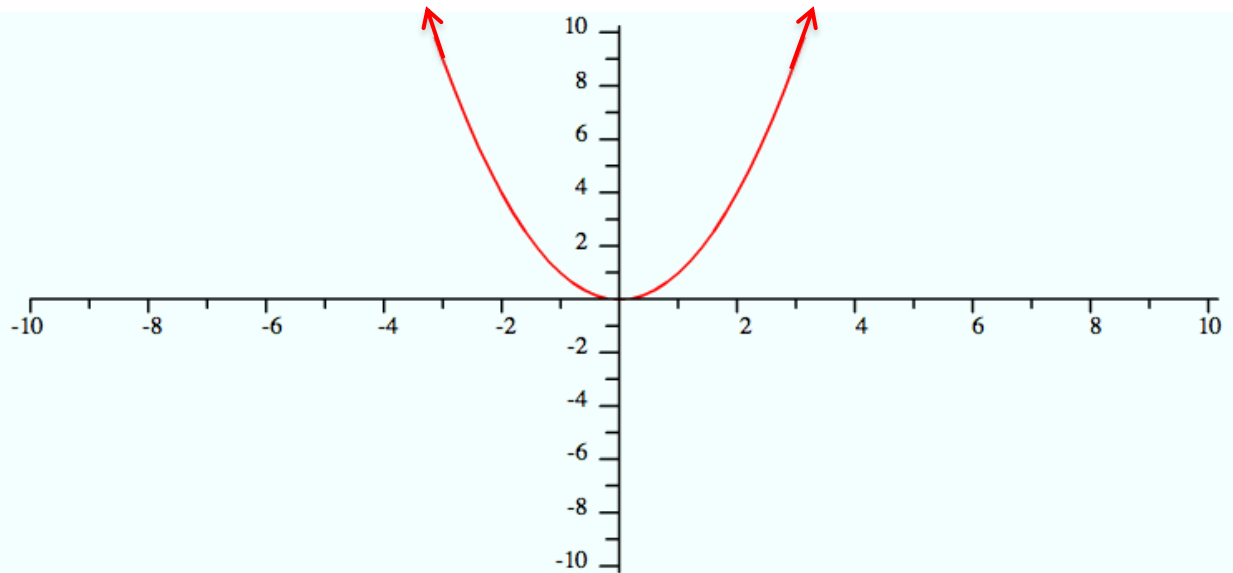1. A quadratic function is graphed below. Determine the domain and range of this function.
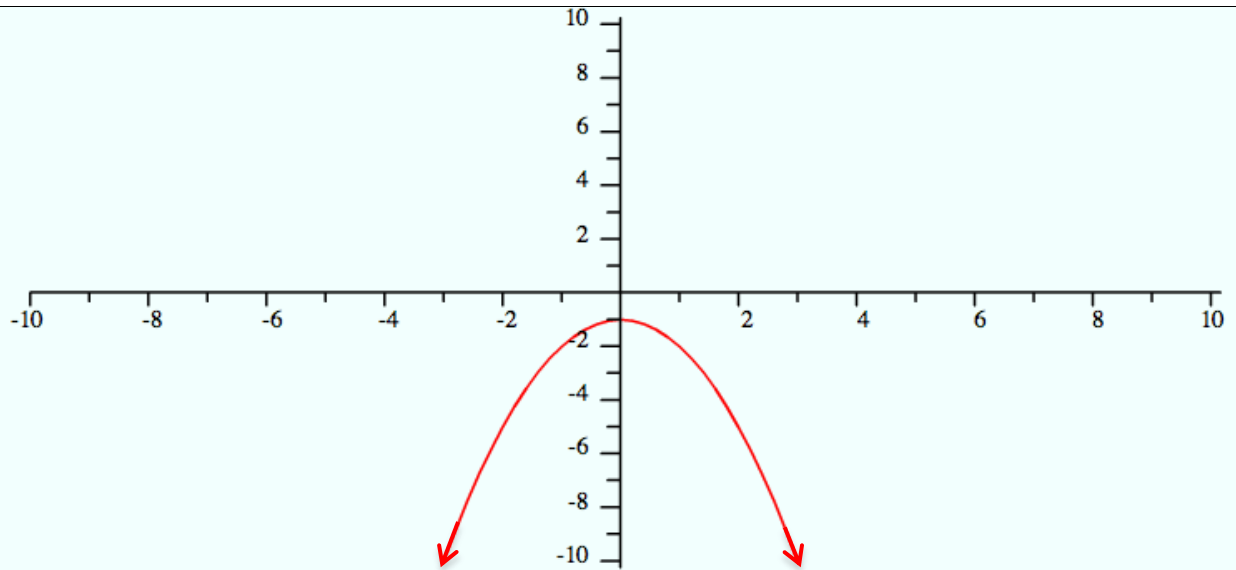

Answer Choice	Correct Answer Feedback	Incorrect Answer Feedback
A Domain: $-\infty < x < \infty$ Range: $y > 0$		Incorrect. The range also includes the value $y = 0$.
B Domain: $-\infty < x < \infty$ Range: $y \geq 0$	Correct. The domain of the function $y = x^2$ is $-\infty < x < \infty$ and the range is $y \geq 0$.	
C Domain: $x \geq 0$ Range: $y > 0$		Incorrect. To determine the domain, identify all of the values of x included in the graph. Notice how the graph continues to extend to the left and right. The range also includes the value $y = 0$.
D Domain: $-\infty < x < \infty$ Range: $y < 0$		Incorrect. To determine the range, identify all of the values of y included in the graph. The minimum y-value on the graph is 0.

2. The graph of $y = x^2 + 4$ is shown below. Determine the domain and range of this function.
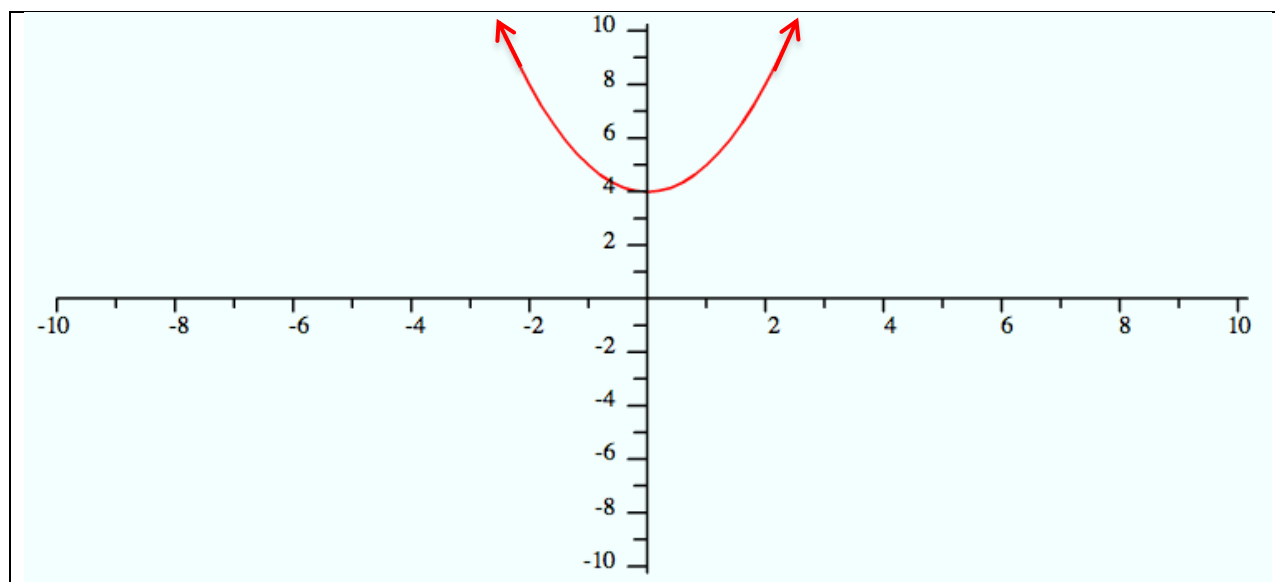
Answer Choice	Correct Answer Feedback	Incorrect Answer Feedback
A Domain: $x \geq 4$ Range: $-\infty < y < \infty$		Incorrect. The domain is the set of all possible x-values in the graph and the range is the set of all possible y-values in the graph.
B Domain: $-\infty < x < \infty$ Range: $y \geq 0$		Incorrect. To determine the range, identify the set of all possible y-values in the graph. The minimum y-value on this graph is 4.
C Domain: $x \geq 0$ Range: $y \geq 4$		Incorrect. To determine the domain, identify the set of all possible x-values in the graph. Notice how the graph continues to extend to the left and right.
D Domain: $-\infty < x < \infty$ Range: $y \geq 4$	Correct. The domain of the function $y = x^2 + 4$ is $-\infty < x < \infty$ and the range is $y \geq 4$.	

3. The graph of $y = -x^2 - 1$ is shown below. What are the domain and range of this function?

Answer Choice	Correct Answer Feedback	Incorrect Answer Feedback
A Domain: $-\infty < x < \infty$. Range: $y \leq -1$	Correct. The domain of the function $y = -x^2 - 1$ is $-\infty < x < \infty$ and the range is $y \leq -1$.	
B Domain: $-\infty < x < \infty$ Range: $y \geq -1$		Incorrect. To determine the range of the function, identify all of the possible y-values on the graph. The maximum y-value is -1.
C Domain: $x \geq 0$ Range: $y \leq -1$		Incorrect. To determine the domain of the function, identify all of the possible x-values on the graph. Notice how the graph continues to extend to the left and right.
D Domain: $-\infty < x < \infty$ Range: $-\infty < y < \infty$		Incorrect. To determine the range of the function, identify all of the possible y-values on the graph. The maximum y-value is -1.

4. A child is standing on a bridge, 64 meters above the ground. The child drops a toy from the bridge. The function $f(x) = -16x^2 + 64$ describes the height of the toy in meters after x seconds. The graph of this function is shown below. Identify the domain and range of this function.

Answer Choice	Correct Answer Feedback	Incorrect Answer Feedback
A Domain: $0 \le x \le 2$ Range: $-\infty < y < \infty$		Incorrect. To determine the range of the function, identify all of the possible y-values on the graph. The minimum y-value is 0 the maximum y-value is 64.
B Domain: $-\infty < x < \infty$ Range: $0 \le y \le 64$		Incorrect. To determine the domain of the function, identify all of the possible x-values on the graph. The minimum x-value is 0 and the maximum x-value is 2.
C Domain: $0 \le x \le 2$ Range: $0 \le y \le 64$	Correct. The domain of the function $f(x) = -4x^2 + 16$ is $0 \le x \le 2$ and the range is $0 \le y \le 64$.	
D Domain: $0 \le x \le 64$ Range: $0 \le y \le 2$		Incorrect. To determine the domain of the function, identify all of the possible x-values on the graph. The minimum x-value is 0 and the

		maximum *x*-value is 2. To determine the range of the function, identify all of the possible *y*-values on the graph. The minimum *y*-value is 0 the maximum *y*-value is 64.

5. Mr. Gavin plans to build a patio with a length of 16 feet and a width of 10 feet. In the middle of his patio, Mr. Gavin plans to build a square Koi pond. If each side of the pond measures *x* feet, the function $y = 160 - x^2$ describes the area of the patio without the pond in square feet. Identify the domain and range of this function.

Answer Choice	Correct Answer Feedback	Incorrect Answer Feedback
A Domain: $0 < x < 10$ Range: $60 < y < 160$	Correct. The side length of the square pond must be less than the width of the patio. As the side length of the pond increases from 0 to 10, the area of the patio decreases from 160 to 60.	
B Domain: $x < 10$ Range: $60 < y < 160$		Incorrect. The side length of the square pond must be greater than 0.
C Domain: $0 < x < 10$ Range: $y < 10$		Incorrect. The area of the patio must be less than 160 square feet.
D Domain: $60 < x < 160$ Range: $0 < y < 10$		Incorrect. The domain represents the length of the side of the square pond. The range represents the area of the patio, not including the pond.