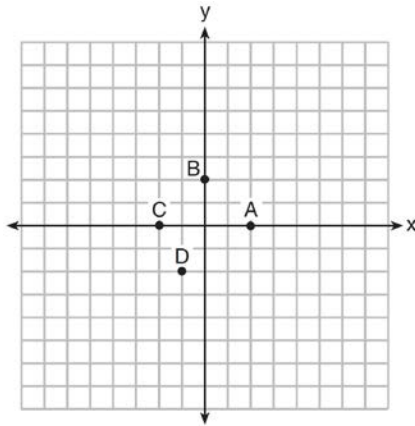


F.IF.A.2: Functional Notation 1a

1 The graph of $y = f(x)$ is shown below.



Which point could be used to find $f(2)$?

- 1) *A*
 - 2) *B*
 - 3) *C*
 - 4) *D*
- 2 If $f(x) = \frac{1}{2}x^2 - \left(\frac{1}{4}x + 3\right)$, what is the value of $f(8)$?
- 1) 11
 - 2) 17
 - 3) 27
 - 4) 33
- 3 If $f(x) = |x^3 - 3|$, then $f(-1)$ is equivalent to
- 1) 0
 - 2) 2
 - 3) -2
 - 4) 4

4 If $f(x) = \frac{x}{x^2 - 16}$, what is the value of $f(-10)$?

- 1) $-\frac{5}{2}$
 - 2) $-\frac{5}{42}$
 - 3) $\frac{5}{58}$
 - 4) $\frac{5}{18}$
- 5 If $f(x) = \frac{\sqrt{2x+3}}{6x-5}$, then $f\left(\frac{1}{2}\right) =$
- 1) 1
 - 2) -2
 - 3) -1
 - 4) $-\frac{13}{3}$
- 6 If $f(x) = kx^2$, and $f(2) = 12$, then k equals
- 1) 1
 - 2) 2
 - 3) 3
 - 4) 4
- 7 A model rocket is launched into the air from ground level. The height, in feet, is modeled by $p(x) = -16x^2 + 32x$, where x is the number of elapsed seconds. What is the total number of seconds the model rocket will be in the air?
- 1) 1
 - 2) 2
 - 3) 0
 - 4) 16
- 8 The height, $f(x)$, of a bouncing ball after x bounces is represented by $f(x) = 80(0.5)^x$. How many times higher is the first bounce than the fourth bounce?
- 1) 8
 - 2) 2
 - 3) 16
 - 4) 4

- 9 The value in dollars, $v(x)$, of a certain car after x years is represented by the equation $v(x) = 25,000(0.86)^x$. To the *nearest dollar*, how much more is the car worth after 2 years than after 3 years?
- 1) 2589
 - 2) 6510
 - 3) 15,901
 - 4) 18,490
- 10 A population, $p(x)$, of wild turkeys in a certain area is represented by the function $p(x) = 17(1.15)^{2x}$, where x is the number of years since 2010. How many more turkeys will be in the population for the year 2015 than 2010?
- 1) 46
 - 2) 49
 - 3) 51
 - 4) 68
- 11 If $f(x) = \frac{x-4}{x+4}$, then $f(4a)$ equals
- 1) $\frac{a-1}{a+1}$
 - 2) $\frac{a+1}{a-1}$
 - 3) $\frac{4a-1}{4a+1}$
 - 4) $\frac{4a+1}{4a-1}$
- 12 If $f(x) = \frac{x-2}{x+1}$, then $f(n+1)$ is equal to
- 1) $-\frac{1}{2}$
 - 2) $\frac{n+1}{n-2}$
 - 3) $\frac{n-1}{n+2}$
 - 4) $\frac{n-2}{n+1}$
- 13 If $f(x) = 2x^2 - 3x + 4$, then $f(x+3)$ is equal to
- 1) $2x^2 - 3x + 7$
 - 2) $2x^2 - 3x + 13$
 - 3) $2x^2 + 9x + 13$
 - 4) $2x^2 + 9x + 25$
- 14 If $f(x) = 4x^2 - x + 1$, then $f(a+1)$ equals
- 1) $4a^2 - a + 6$
 - 2) $4a^2 - a + 4$
 - 3) $4a^2 + 7a + 6$
 - 4) $4a^2 + 7a + 4$
- 15 If $f(x) = x^2 - 3$, then $f(a-b)$ is equivalent to
- 1) $a^2 - b^2 - 3$
 - 2) $a^2 - 2ab - b^2 - 3$
 - 3) $a^2 - 2ab + b^2 - 3$
 - 4) $a^2 + b^2 - 3$
- 16 Lynn, Jude, and Anne were given the function $f(x) = -2x^2 + 32$, and they were asked to find $f(3)$. Lynn's answer was 14, Jude's answer was 4, and Anne's answer was ± 4 . Who is correct?
- 1) Lynn, only
 - 2) Jude, only
 - 3) Anne, only
 - 4) Both Lynn and Jude
- 17 For which equation will $f(-2) = -6$?
- 1) $f(x) = x^3 + x$
 - 2) $f(x) = x^4 - 5x$
 - 3) $f(x) = 4x^3 + 6x^2 - x$
 - 4) $f(x) = -3x^3 - 4x^2 + 4x$
- 18 Given: the function f defined by $f(x) = 3x^2 - 4$. Which statement is true?
- 1) $f(0) = 0$
 - 2) $f(-2) = f(2)$
 - 3) $f(5) + f(2) = f(7)$
 - 4) $f(5) - f(2) = f(10)$
- 19 If $f(n) = (n-1)^2 + 3n$, which statement is true?
- 1) $f(3) = -2$
 - 2) $f(-2) = 3$
 - 3) $f(-2) = -15$
 - 4) $f(-15) = -2$

F.IF.A.2: Functional Notation 1a**Answer Section**

1 ANS: 1 REF: 061420ai

2 ANS: 3

$$f(8) = \frac{1}{2}(8)^2 - \left(\frac{1}{4}(8) + 3 \right) = 32 - 5 = 27$$

REF: 081704ai

3 ANS: 4 REF: 019020siii

4 ANS: 2

$$f(10) = \frac{-10}{(-10)^2 - 16} = \frac{-10}{84} = -\frac{5}{42}$$

REF: 061102a2

5 ANS: 3

$$\frac{\sqrt{2\left(\frac{1}{2}\right) + 3}}{6\left(\frac{1}{2}\right) - 5} = \frac{\sqrt{4}}{-2} = \frac{2}{-2} = -1$$

REF: 081512ai

6 ANS: 3 REF: 018915siii

7 ANS: 2

$$-16x^2 + 32x = 0$$

$$-16x(x - 2) = 0$$

$$x = 0, 2$$

REF: 011524ia

8 ANS: 1

$$80(0.5)^1 = 40$$

$$80(0.5)^4 = 5$$

REF: 060607b

9 ANS: 1

$$25,000(0.86)^2 - 25,000(0.86)^3 = 18490 - 15901.40 = 2588.60$$

REF: 011508ai

10 ANS: 3

$$p(5) - p(0) = 17(1.15)^{2(5)} - 17(1.15)^{2(0)} \approx 68.8 - 17 \approx 51$$

REF: 061527a2

11 ANS: 1 REF: 019517siii

12 ANS: 3 REF: 018616siii

13 ANS: 3

$$f(x+3) = 2(x+3)^2 - 3(x+3) + 4 = 2x^2 + 12x + 18 - 3x - 9 + 4 = 2x^2 + 9x + 13$$

REF: 011619a2

14 ANS: 4

$$f(a+1) = 4(a+1)^2 - (a+1) + 1$$

$$= 4(a^2 + 2a + 1) - a$$

$$= 4a^2 + 8a + 4 - a$$

$$= 4a^2 + 7a + 4$$

REF: 011527a2

15 ANS: 3 REF: 089525siii

16 ANS: 1

$$f(3) = -2(3)^2 + 32 = -18 + 32 = 14$$

REF: 061705ai

17 ANS: 3

$$f(-2) = 4(-2)^3 + 6(-2)^2 - (-2) = -32 + 24 + 2 = -6$$

REF: 061608a2

18 ANS: 2 REF: 089422siii

19 ANS: 2

$$f(-2) = (-2-1)^2 + 3(-2) = 9 - 6 = 3$$

REF: 081605ai