# F.BF.A.1: Compositions of Functions 1

1 If $f(x) = \frac{1}{2}x - 3$ and $g(x) = 2x + 5$, what is the value of $(g \circ f)(4)$?
1) $-13$ 2) 3.5 3) 3 4) 6

2 If $g(x) = \frac{1}{2}x + 8$ and $h(x) = \frac{1}{2}x - 2$, what is the value of $g(h(-8))$?
1) 0 2) 9 3) 5 4) 4

3 If $f(x) = -2x + 7$ and $g(x) = x^2 - 2$, then $f(g(3))$ is equal to
1) $-7$ 2) $-3$ 3) $-1$ 4) 7

4 If $f(x) = 2x^2 + 1$ and $g(x) = 3x - 2$, what is the value of $f(g(-2))$?
1) $-127$ 2) $-23$ 3) 25 4) 129

5 If $f(x) = 3x^2$ and $g(x) = \sqrt{2x}$, what is the value of $(f \circ g)(8)$?
1) $8\sqrt{6}$ 2) 16 3) 48 4) 144

6 If $f(x) = 5x^2$ and $g(x) = \sqrt{2x}$, what is the value of $(f \circ g)(8)$?
1) $8\sqrt{10}$ 2) 16 3) 80 4) 1,280

7 If $f(x) = x^2 + 4$ and $g(x) = \sqrt{1 - x}$, what is the value of $f(g(-3))$?
1) $2i\sqrt{3}$ 2) 2 3) 8 4) 13

8 If $g(x) = \sqrt{x}$ and $h(x) = x^3 - 1$, what is $g(h(4))$?
1) 5 2) 7 3) $\sqrt{11}$ 4) $\sqrt{63}$

9 If $f(x) = x - 3$ and $g(x) = x^3$, find $f(g(3))$.
1) 0 2) 6 3) 24 4) 30

10 If $f(x) = 4x - x^2$ and $g(x) = \frac{1}{x}$, then $(f \circ g)\left(\frac{1}{2}\right)$ is equal to
1) $\frac{4}{7}$ 2) $-2$ 3) $\frac{7}{2}$ 4) 4

11 The temperature generated by an electrical circuit is represented by $t = f(m) = 0.3m^2$, where $m$ is the number of moving parts. The resistance of the same circuit is represented by $r = g(t) = 150 + 5t$, where $t$ is the temperature. What is the resistance in a circuit that has four moving parts?
1) 51 2) 156 3) 174 4) 8,670

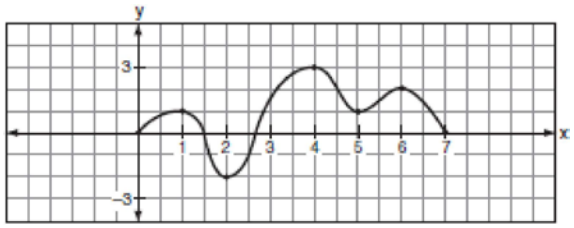
12 The accompanying tables define functions f and g.

| $x$ | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| $f(x)$ | 3 | 4 | 5 | 6 | 7 |

| $x$ | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|
| $g(x)$ | 4 | 6 | 8 | 10 | 12 |

What is $(g \circ f)(3)$?
1) 6 2) 2 3) 8 4) 4

13 The accompanying graph is a sketch of the function $y = f(x)$ over the interval $0 \le x \le 7$.




What is the value of $(f \circ f)(6)$?
1) 1 2) 2 3) 0 4) $-2$

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## Answer Section

1 ANS: 3

$f(4) = \frac{1}{2}(4) - 3 = -1.\ \ g(-1) = 2(-1) + 5 = 3$

REF: fall0902a2

2 ANS: 3

$h(-8) = \frac{1}{2}(-8) - 2 = -4 - 2 = -6.\ \ g(-6) = \frac{1}{2}(-6) + 8 = -3 + 8 = 5$

REF: 011403a2

3 ANS: 1

$g(3) = 3^2 - 2$

$= 7$

$f(7) = -2(7) + 7$

$-7$

REF: 010501b

4 ANS: 4

$g(-2) = 3(-2) - 2 = -8\ \ f(-8) = 2(-8)^2 + 1 = 128 + 1 = 129$

REF: 061503a2

5 ANS: 3 REF: 069915siii

6 ANS: 3

$g(8) = \sqrt{2 \cdot 8} = 4$

$f(4) = 5(4)^2 = 80$

REF: 010207b

7 ANS: 3

$g(-3) = \sqrt{1 - x} = \sqrt{1 - (-3)} = 2$

$f(2) = 2^2 + 4 = 8$

REF: 060806b

8 ANS: 4 REF: 069423siii

9 ANS: 3 REF: 019820siii

10 ANS: 4

$g\left(\frac{1}{2}\right) = \frac{1}{\frac{1}{2}} = 2.\ \ f(2) = 4(2) - 2^2 = 4$

REF: 011204a2

11 ANS: 3
$f(4) = 0.3(4)^2 = 4.8$. $g(4.8) = 150 + 5(4.8) = 174$

REF: 060605b

12 ANS: 3
f(3) = 5, g(5) = 8

REF: 010812b

13 ANS: 4
$f(6) = 2$, $f(2) = -2$

REF: 080520b