

Name: _____

Date: _____

1-2 FUNCTION COMPOSITION**FLUENCY**1. Given $f(x) = 3x - 4$ and $g(x) = -2x + 7$ evaluate:

(a) $f(g(0))$

(b) $g(f(-2))$

(c) $f(f(3))$

(d) $(g \circ f)(6)$

(e) $(f \circ g)(5)$

(f) $(g \circ g)(2)$

2. Given $h(x) = x^2 + 11$ and $g(x) = \sqrt{x-2}$ evaluate:

(a) $h(g(18))$

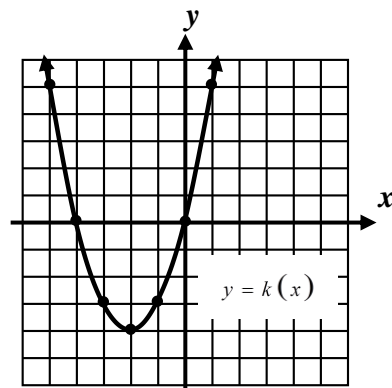
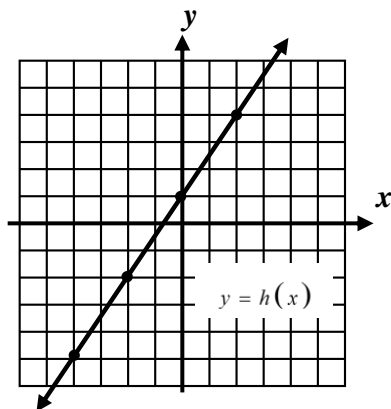
(b) $g(h(4))$

(c) $(g \circ g)(11)$

(d) $h(h(0))$

(e) $(h \circ g)(38)$

(f) $(g \circ h)(0)$

3. The graphs of $y = h(x)$ and $y = k(x)$ are shown below. Evaluate the following based on these two graphs.

(a) $h(k(-2))$

(b) $(k \circ h)(0)$

(c) $h(h(-2))$

(d) $(k \circ k)(-2)$

4. If $g(x) = 3x - 5$ and $h(x) = 2x - 4$ then $(g \circ h)(x) = ?$

(1) $6x - 17$

(3) $5x - 9$

(2) $6x - 14$

(4) $x - 1$

5. If $f(x) = x^2 + 5$ and $g(x) = x + 4$ then $f(g(x)) =$

(1) $x^2 + 9$

(3) $4x^2 + 20$

(2) $x^2 + 8x + 21$

(4) $x^2 + 21$

APPLICATIONS

6. Scientists modeled the intensity of the sun, I , as a function of the number of hours *since* 6:00 a.m., h , using the function $I(h) = \frac{12h - h^2}{36}$. They then model the temperature of the soil, T , as a function of the intensity using the function $T(I) = \sqrt{5000I}$. Which of the following is closest to the temperature of the soil at 2:00 p.m. ?

(1) 54

(3) 67

(2) 84

(4) 38

7. Physics students are studying the effect of the temperature, T , on the speed of sound, S . They find that the speed of sound in meters per second is a function of the temperature in degrees Kelvin, K , by $S(K) = \sqrt{410K}$. The degrees Kelvin is a function of the temperature in Celsius given by $K(C) = C + 273.15$. Find the speed of sound when the temperature is 30 degrees Celsius. Round to the nearest *tenth*.

REASONING

8. Consider the functions $f(x) = 2x + 9$ and $g(x) = \frac{x - 9}{2}$. Calculate the following.

(a) $g(f(15))$

(b) $g(f(-3))$

(c) $g(f(x))$

(d) What appears to always be true when you compose these two functions?