Math 2 – Function Operations and Composition
Form: M2U6D2

Name: _____
Date: _____, Period: _____

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The function $h(x) = g(f(x))$ is called the _____ of the function $g$ with the function $f$.

$g(f(x))$ can also be written as _____.

**Let $f(x) = -3x^3 + 4x^2$ and $g(x) = 5x^3 + 4x^2$. Perform the indicated operation and state the domain.**

**1.** $f(x) + g(x)$ **2.** $g(x) + f(x)$ **3.** $f(x) + f(x)$ **4.** $g(x) + g(x)$

**5.** $f(x) - g(x)$ **6.** $g(x) - f(x)$ **7.** $f(x) - f(x)$ **8.** $g(x) - g(x)$

**Let $f(x) = 4x^3$ and $g(x) = 5x^2$. Perform the indicated operation and state the domain.**

**9.** $f(x) \cdot g(x)$ **10.** $g(x) \cdot f(x)$ **11.** $f(x) \cdot f(x)$ **12.** $g(x) \cdot g(x)$

**13.** $\frac{f(x)}{g(x)}$ **14.** $\frac{g(x)}{f(x)}$ **15.** $\frac{f(x)}{f(x)}$ **16.** $\frac{g(x)}{g(x)}$

**Let $f(x) = 3x + 2$, $g(x) = -x^2$, and $h(x) = \frac{x-2}{5}$. Find the indicated value.**

**17.** $f(g(-3))$ **18.** $g(f(2))$ **19.** $(h \circ f)(-9))$ **20.** $g(h(8))$

**21.** $(h \circ g)(5)$ **22.** $(f \circ f)(7)$ **23.** $h(h(-4))$ **24.** $g(g(-5)$

**Let $f(x) = 3x^{-1}$, $g(x) = 2x - 7$, and $h(x) = \frac{x+4}{3}$. Perform the indicated operation and state the domain.**

**25.** $(f \circ g)(x)$ **26.** $g(f(x))$ **27.** $h(f(x))$ **28.** $(g \circ h)(x)$

**29.** $(h \circ g)(x)$ **30.** $f(f(x))$ **31.** $h(h(x))$ **32.** $g(g(x))$