

Extra Credit: Function Operations & Composition
(You can earn up to 8 quiz points through completing this activity.)

★ $f(x)$ is defined as $3x^2 - 2$. Determine any possible function for each case below.

Case 1: $(f + g)(x) = 2x^2 - 1$

Possible $g(x) =$ _____

Case 2: $(f - h)(3) = 8$

Possible $h(x) =$ _____

Case 3: $(f(x) * j)(x) = -2$

Possible $j(x) =$ _____

Case 4: $(k/f)(x) = -\frac{1}{2}$

Possible $k(x) =$ _____

Case 5: $(f \circ m)(x) = 3x^6 - 2$

Possible $m(x) =$ _____

Case 6: $(n \circ f)(x) = 4$

Possible $n(x) =$ _____

★ A health food store is offering a sale on all protein products and all snack bars. All protein products are 25% off this week, and all snack bars are 75 cents off this week. They know some customers are going to buy protein snack bars, and are trying to figure out which should be applied first, the 25% off or the 75 cents off. Define two functions to represent each separate promotion, and two different functions to represent the cost applying each promotion first.

★ For which original prices of protein bars would it benefit the health food store to apply the 25% promotion first? Explain.