



Name: _____



Given that $f(x) = 4x$ and $g(x) = 5x - 2$ and $h(x) = 2x^2$:

a) Find an expression for $gh(x)$

$$10x^2 - 2$$

b) Find the value of $gh(2)$

$$38$$

c) Find an expression for $fg(x)$

$$20x - 8$$

d) Find the value of $fg(3)$

$$52$$

e) Find an expression for $fh(x)$

$$8x^2$$

f) Find the value of $fh(4)$

$$132$$

g) Find an expression for $hf(x)$

$$32x^2$$

h) Find the value of $hf(3)$

$$288$$

i) Find an expression for $hh(x)$

$$8x^4$$

j) Find the value of $hh(3)$

$$648$$

Practice questions:

Given that $f(x) = x + 2$ and $g(x) = 4 - 2x$ and $h(x) = x^2 + 5$:

k) Find the value of x when $ff(x) = 24$

$$x = 20$$

l) Find the value of x when $fg(x) = 2$

$$x = 2$$

m) Find the value of x when $gg(x) = 20$

$$x = 6$$

n) Find the values of x when $hf(x) = 30$

$$x = -7 \text{ or } x = 3$$

Exam question:

Given that $f(x) = x^2 + 2x$ and $g(x) = x + 2$

Write an expression for $fg(x)$

$$\begin{aligned} &(x + 2)^2 + 2(x + 2) \\ &= x^2 + 4x + 4 + 2x + 4 \\ &= x^2 + 6x + 8 \end{aligned}$$

