Functions

Higher worksheet

1) $f(x) = \frac{5x+9}{3}$
   Find f(6).

2) $f(x) = \frac{5x}{3} + 9$
   Find f(6).

3) $f(x) = x^2 - 2x - 3$
   Find f(8).

4) $f(x) = x^2 - 2x - 3$
   Find f(−5).

5) $f(x) = \frac{x+7}{2}$
   Find f(−10).

6) $f(x) = 8 - x$
   Find f(2.3).

Functions
Higher worksheet

7) $f(x) = x + 3$ and $g(x) = \frac{x}{5}$
Find fg(20).

8) $f(x) = x + 3$ and $g(x) = \frac{x}{5}$
Find fg(4).

9) $f(x) = x + 3$ and $g(x) = \frac{x}{5}$
Find gf(4).

10) $f(x) = 7x$ and $g(x) = x - 8$
Find gf(5).

11) $f(x) = 7x$ and $g(x) = x - 8$
Find fg(5).

12) $f(x) = 7x$ and $g(x) = x - 8$
Write an expression for fg(x)

13) $f(x) = \frac{8}{x}$ and $g(x) = x - 9$
Write an expression for fg(x)

14) $f(x) = \frac{8}{x}$ and $g(x) = x - 9$

Write an expression for $gf(x)$

15) $f(x) = \frac{8}{x}$ and $g(x) = x - 9$

Write an expression for $gg(x)$

16) $f(x) = \frac{8}{x}$ and $g(x) = x - 9$

Write an expression for $ff(x)$

17) $f(x) = 8x - 2$ and $g(x) = x^2$

Write an expression for $ff(x)$

18) $f(x) = 8x - 2$ and $g(x) = x^2$

Write an expression for $gf(x)$

19) $f(x) = 8x - 2$ and $g(x) = x^2$

Write an expression for $fg(x)$

20) $f(x) = x + 7$

Write an expression for $f^{-1}(x)$

21) $f(x) = \frac{x}{3}$

Write an expression for $f^{-1}(x)$

22) $f(x) = \dfrac{12}{x}$

Write an expression for $f^{-1}(x)$

23) $f(x) = 9x$
Write an expression for $f^{-1}(x)$

24) $f(x) = 17 - x$
Write an expression for $f^{-1}(x)$

25) $f(x) = x - 17$
Write an expression for $f^{-1}(x)$

26) $f(x) = 8x + 12$
Write an expression for $f^{-1}(x)$

27) $f(x) = \dfrac{9x + 16}{5}$

Write an expression for $f^{-1}(x)$

28) $f(x) = \dfrac{7x}{12} + 5$

Write an expression for $f^{-1}(x)$

Functions
Higher worksheet

1) $f(x) = \frac{5x+9}{3}$
   Find f(6).

   $f(6) = \frac{5(6)+9}{3} = \frac{39}{3} = 13$

2) $f(x) = \frac{5x}{3} + 9$
   Find f(6).

   $f(6) = \frac{5(6)}{3} + 9 = \frac{30}{3} + 9 = 10 + 9 = 19$

3) $f(x) = x^2 - 2x - 3$
   Find f(8).

   $f(8) = (8)^2 - 2(8) - 3 = 64 - 16 - 3 = 45$

4) $f(x) = x^2 - 2x - 3$
   Find f(−5).

   $f(-5) = (-5)^2 - 2(-5) - 3 = 25 - -10 - 3 = 32$

5) $f(x) = \frac{x+7}{2}$
   Find f(−10).

   $f(2) = \frac{-10+7}{2} = \frac{-3}{2}$ or -1.5

6) $f(x) = 8 - x$
   Find f(2.3).

   $f(2.3) = 8 - 2.3 = 5.7$

Functions
Higher worksheet

7) $f(x) = x + 3$ and $g(x) = \frac{x}{5}$
Find fg(20).

$fg(20) = f\big(g(20)\big) = f\left(\frac{20}{5}\right) = f(4) = 4 + 3 = 7$

8) $f(x) = x + 3$ and $g(x) = \frac{x}{5}$
Find fg(4).

$fg(4) = f\big(g(4)\big) = f\left(\frac{4}{5}\right) = \frac{4}{5} + 3 = \frac{19}{5}$

9) $f(x) = x + 3$ and $g(x) = \frac{x}{5}$
Find gf(4).

$gf(4) = g\big(f(4)\big) = g(4 + 3) = g(7) = \frac{7}{5}$

10) $f(x) = 7x$ and $g(x) = x - 8$
Find gf(5).

$gf(5) = g\big(f(5)\big) = g(7 \times 5) = g(35) = 35 - 8 = 27$

11) $f(x) = 7x$ and $g(x) = x - 8$
Find fg(5).

$fg(5) = f\big(g(5)\big) = f(5 - 8) = f(-3) = 7 \times -3 = -21$

12) $f(x) = 7x$ and $g(x) = x - 8$
Write an expression for fg(x)

$fg(x) = f\big(g(x)\big) = f(x - 8) = 7(x - 8)$ or $7x - 56$

13) $f(x) = \frac{8}{x}$ and $g(x) = x - 9$
Write an expression for fg(x)

$fg(x) = f\big(g(x)\big) = f(x - 9) = \frac{8}{x-9}$

14) $f(x) = \frac{8}{x}$ and $g(x) = x - 9$
Write an expression for $gf(x)$

$gf(x) = g(f(x)) = g\left(\frac{8}{x}\right) = \frac{8}{x} - 9$

15) $f(x) = \frac{8}{x}$ and $g(x) = x - 9$
Write an expression for $gg(x)$

$gg(x) = g(g(x)) = g(x - 9) = x - 9 - 9 = x - 18$

16) $f(x) = \frac{8}{x}$ and $g(x) = x - 9$
Write an expression for $ff(x)$

$ff(x) = f(f(x)) = f\left(\frac{8}{x}\right) = \frac{8}{\left(\frac{8}{x}\right)} = x$

17) $f(x) = 8x - 2$ and $g(x) = x^2$
Write an expression for $ff(x)$

$ff(x) = f(f(x)) = f(8x - 2) = 8(8x - 2) - 2 = 64x - 16 - 2 = 64x - 18$

18) $f(x) = 8x - 2$ and $g(x) = x^2$
Write an expression for $gf(x)$

$gf(x) = g(f(x)) = g(8x - 2) = (8x - 2)^2 = 64x^2 - 32x + 4$

19) $f(x) = 8x - 2$ and $g(x) = x^2$
Write an expression for $fg(x)$

$fg(x) = f(g(x)) = f(x^2) = 8x^2 - 2$

20) $f(x) = x + 7$
Write an expression for $f^{-1}(x)$

$f^{-1}(x) = x - 8$

21) $f(x) = \frac{x}{3}$
Write an expression for $f^{-1}(x)$

$f^{-1}(x) = 3x$

Functions
Higher worksheet

22) $f(x) = \dfrac{12}{x}$

Write an expression for $f^{-1}(x)$

$f^{-1}(x) = \dfrac{12}{x}$

23) $f(x) = 9x$

Write an expression for $f^{-1}(x)$

$f^{-1}(x) = \dfrac{x}{9}$

24) $f(x) = 17 - x$

Write an expression for $f^{-1}(x)$

$f^{-1}(x) = 17 - x$

25) $f(x) = x - 17$

Write an expression for $f^{-1}(x)$

$f^{-1}(x) = x + 17$

26) $f(x) = 8x + 12$

Write an expression for $f^{-1}(x)$

$f^{-1}(x) = \dfrac{x - 12}{8}$

27) $f(x) = \dfrac{9x + 16}{5}$

Write an expression for $f^{-1}(x)$

$f^{-1}(x) = \dfrac{5x - 16}{9}$

28) $f(x) = \dfrac{7x}{12} + 5$

Write an expression for $f^{-1}(x)$

$f^{-1}(x) = \dfrac{12(x - 5)}{7}$ or $\dfrac{12x - 60}{7}$