

Composite Functions

For AQA GCSE Mathematics (8300) • Higher tier

Name _____

Total marks: **25**

Answer **all** questions in the spaces provided. Show your working: marks are given for correct method.

- 1** $f(x) = x^2$ and $g(x) = 2x + 1$
Circle the expression for $fg(x)$

[1 mark]

$(2x + 1)^2$

$2x^2 + 1$

$4x^2 + 1$

$x^2(2x + 1)$

2 $f(x) = 2x + 5$ $g(x) = x^2 - 3$

(a) Work out $fg(2)$

[2 marks]

Answer _____

(b) Work out $gf(-1)$

[2 marks]

Answer _____

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

[1 mark]

Answer _____

(d) Find an expression for $gf(x)$
Give your answer in expanded form.

[2 marks]

Answer _____

3 $g(x) = 20 - x$ and $h(x) = x^3$
Solve $gh(x) = 47$

[2 marks]

Answer _____

- 4 $f(x) = 2x + 5$ and $g(x) = \frac{x}{3}$
Solve $fg(x) = 11$

[3 marks]

Answer _____

- 5 $f(x) = ax + b$ and $g(x) = 2x - 3$
 a and b are constants.
 $gf(x) = 6x + 7$
Work out the values of a and b .

[3 marks]

Answer $a =$ _____ $b =$ _____

6 $f(x) = 2x - 3$
 $g(x) = x^2 + x$

- (a) Find $gf(x)$
Give your answer in the form $ax^2 + bx + c$

[2 marks]

Answer _____

- (b) Find the values of x for which $gf(x) = g(x)$

[3 marks]

Answer _____

7 $f(x) = x + 4$ and $g(x) = x^2 - 6$
Solve $gf(x) = fg(x)$

[4 marks]

Answer _____