Composite and Inverse Functions

GCSE Mathematics • **Higher Tier** • Grades 7–9 • Non-calculator

Name: _____ Class: _____ Total: _____ / 58

Show all your working. Marks are given for correct method as well as the final answer.

1. $f(x) = 3x - 5$. Work out $f(4)$. **[1 mark]**

Answer: _____

2. $f(x) = 3x - 5$. Work out $f(-2)$. **[2 marks]**

Answer: _____

3. $g(x) = x^2 + 1$. Work out $g(-3)$. **[2 marks]**

Answer: _____

4. $f(x) = 2x + 7$. Solve $f(x) = 19$. **[2 marks]**

Answer: _____

5. $g(x) = x^2 - 4$. Solve $g(x) = 21$. **[3 marks]**

Answer: _____

6. $f(x) = 2x$ and $g(x) = x + 3$. Work out $fg(4)$. **[2 marks]**

Answer: _____

7. $f(x) = 2x$ and $g(x) = x + 3$. Work out $gf(4)$. **[2 marks]**

Answer: _____

8. $f(x) = 2x$ and $g(x) = x + 3$. Work out $fg(x)$. **[2 marks]**

Answer: _____

9. $f(x) = 2x$ and $g(x) = x + 3$. Work out $gf(x)$. **[2 marks]**

Answer: _____

10. $f(x) = x^2$ and $g(x) = x - 1$. Work out $fg(x)$, expanded. **[3 marks]**

Answer: _____

11. $f(x) = x^2$ and $g(x) = x - 1$. Work out $gf(x)$. **[2 marks]**

Answer: _____

12. $f(x) = 3x + 1$. Work out $ff(x)$. **[3 marks]**

Answer: _____

13. $f(x) = x + 8$. Work out $f^{-1}(x)$. **[2 marks]**

Answer: _____

14. $f(x) = 4x$. Work out $f^{-1}(x)$. **[2 marks]**

Answer: _____

15. $f(x) = 5x - 3$. Work out $f^{-1}(x)$. **[3 marks]**

Answer: _____

16. $f(x) = \frac{x}{2} + 6$. Work out $f^{-1}(x)$. **[3 marks]**

Answer: _____

17. $f(x) = 3x + 2$. Work out $f^{-1}(11)$. **[3 marks]**

Answer: _____

18. $f(x) = 4x - 1$ and $g(x) = x^2$.

(a) Work out $fg(3)$. **[2 marks]**

(b) Work out $gf(3)$. **[2 marks]**

Answer: _____

19. $f(x) = 2x - 7$.

(a) Work out $f^{-1}(x)$. **[3 marks]**

(b) Solve $f(x) = f^{-1}(x)$. **[4 marks]**

20. $f(x) = x + 4$ and $g(x) = 3x$.

(a) Show that $fg(x) \neq gf(x)$. **[4 marks]**

(b) Solve $fg(x) = gf(x) + 8$. **[4 marks]**

Answer: _____

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