



JP Maths

Revision



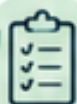
Attempt the paper
before watching the
solutions!

[https://www.youtube.com/
@JPMathsRevision](https://www.youtube.com/@JPMathsRevision)



HIGHER TIER

Functions



INSTRUCTIONS

- Use **black ink** or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working.**
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.



INFORMATION

- The marks for **each** question are shown in brackets– *use this as a guide as to how much time to spend on each question.*



ADVICE

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.



You've got this! 

1. $f(x) = 2x + 5$

(a) Find $f(3)$

.....
(1)

(b) Find $f(-2)$

.....
(1)

(c) Solve $f(x) = 10$

.....
(2)

(Total for Question 1 is 4 marks)

2. $g(x) = 4 - 3x$

(a) Find $g(6)$

.....
(1)

(b) Find $g(-1)$

.....
(1)

(c) Solve $g(x) = 7$

.....
(2)

(Total for Question 2 is 4 marks)

3. $h(x) = x^2 - 4x + 1$

(a) Find $h(0)$

.....
(1)

(b) Find $h(2)$

.....
(1)

(c) Find $h(-1)$

.....
(2)

(Total for Question 3 is 4 marks)

4. $p(x) = \frac{x + 4}{2}$

(a) Find $p(8)$

.....
(1)

(b) Find $p(-6)$

.....
(1)

(c) Solve $p(x) = 7$

.....
(2)

(Total for Question 4 is 4 marks)

5. $f(x) = 3x - 4$

$$g(x) = 2x + 5$$

(a) Solve $f(x) = g(x)$

(b) Find $fg(1)$

(c) Find $gf(3)$

.....
(2)

.....
(2)

.....
(2)

(Total for Question 5 is 6 marks)

6. $f(x) = 2x + 3$

$$g(x) = x + 8$$

(a) Solve $f(x) = g(x)$

.....
(2)

(b) Find $fg(0)$

.....
(2)

(c) Find $gf(-1)$

.....
(2)

(Total for Question 6 is 6 marks)

7. $f(x) = x^2$

$$g(x) = x - 5$$

(a) Find $gg(2)$

(b) Find $fg(x)$

.....
(2)

(c) Find $gf(x)$

.....
(2)

.....
(2)

(Total for Question 7 is 6 marks)

8. $f(x) = x^2 + 1$

$$g(x) = 2x - 3$$

(a) Find $fg(x)$

(b) Solve $fg(x) = gf(x)$

.....
(2)

.....
(3)

(Total for Question 8 is 5 marks)

9. $f(x) = 2x - 1$

$$g(x) = 3x + 14$$

(a) Find $f^{-1}(x)$

.....

(2)

(b) Find $g^{-1}(x)$

.....

(2)

(Total for Question 9 is 4 marks)

10. $f(x) = 2(x - 8)$

$g(x) = 2x^2$ for $x > 0$,

(a) Find $f^{-1}(x)$

.....
(2)

(b) Find $g^{-1}(x)$

.....
(2)

(Total for Question 10 is 4 marks)

11. $f(x) = 3x + 7$

$$g(x) = 5x - 4$$

(a) Find $f^{-1}(x)$

.....

(2)

(b) Find $fg^{-1}(x)$

.....

(3)

(Total for Question 11 is 5 marks)

12. $h(x) = \frac{x+6}{2}$

Find $h^{-1}(5)$

.....
(Total for Question 12 is 3 marks)

13. $f(x) = 3x + k$

Given that $f(4) = 17$

Find the value of k .

.....
(Total for Question 13 is 2 marks)

14. $f(x) = 2x + 1$

$$g(x) = 4x - 3$$

Given that $fg(k) = 19$, find the value of k .

.....
(Total for Question 14 is 4 marks)
