



JP Maths

Revision



Attempt the paper
before watching the
solutions!

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



FOUNDATION / HIGHER TIER

Standard Form



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. Write 45000 in standard form

45000

$$4.5 \times 10^4$$

(Total for Question 1 is 1 mark)

2. Write 0.00067 in standard form

0.00067

$$6.7 \times 10^{-4}$$

(Total for Question 2 is 1 mark)

3. Write 8.3×10^5 as an ordinary number

830000

830000

(Total for Question 3 is 1 mark)

4. Write 4.91×10^{-3} as an ordinary number

4.91

0.00491

(Total for Question 4 is 1 marks)

5. Write 7,200,000 in standard form

7,200,000

7.2×10^6

(Total for Question 5 is 1 mark)

6. Write 0.000000841 in standard form

8.41×10^{-7}

(Total for Question 6 is 1 mark)

7. Write 2.6×10^{-1} as an ordinary number

0.26

(Total for Question 7 is 1 mark)

8. Write 9.04×10^7 as an ordinary number

90400000

(Total for Question 8 is 1 mark)

9. Write these numbers in order of size from smallest to largest:

$$57 \times 10^5$$
$$5.7 \times 10^6$$
$$\textcircled{4}$$

$$5.7 \times 10^2$$
$$5.7 \times 10^2$$
$$\textcircled{2}$$

$$0.00057$$
$$5.7 \times 10^{-4}$$
$$\textcircled{1}$$

$$5.7 \times 10^5$$
$$5.7 \times 10^5$$
$$\textcircled{3}$$

$$0.00057, 5.7 \times 10^2, 5.7 \times 10^5, 57 \times 10^5$$

(Total for Question 9 is 2 marks)

10. Write these numbers in order of size from smallest to largest:

$$8.2 \times 10^{-1}$$
$$8.2 \times 10^{-1}$$
$$\textcircled{4}$$

$$82 \times 10^{-5}$$
$$8.2 \times 10^{-4}$$
$$\textcircled{2}$$

$$0.0082$$
$$8.2 \times 10^{-3}$$
$$\textcircled{3}$$

$$8.2 \times 10^{-6}$$
$$8.2 \times 10^{-6}$$
$$\textcircled{1}$$

$$8.2 \times 10^{-6}, 8.2 \times 10^{-5}, 0.0082, 8.2 \times 10^{-1}$$

(Total for Question 10 is 2 marks)

11. Calculate:

$$(5 \times 10^4) \times (3 \times 10^{-2})$$

$$5 \times 3 = 15$$

$$10^4 \times 10^{-2} = 10^2$$

$$15 \times 10^2$$

$$1.5 \times 10^3$$

$$1.5 \times 10^3$$

(Total for Question 11 is 2 marks)

12. Calculate:

$$(5 \times 10^6) \times (2 \times 10^3)$$

Give your answer in standard form.

$$5 \times 2 = 10$$

$$10^6 \times 10^3 = 10^9$$

$$= 10 \times 10^9$$

$$= 1 \times 10^{10}$$

$$1 \times 10^{10}$$

(Total for Question 12 is 2 marks)

13. Calculate:

$$(3.2 \times 10^5) \div (8 \times 10^{-2})$$

Give your answer in standard form.

$$32 \div 8 = 0.4$$

$$10^5 \div 10^{-2} = 10^7$$

$$= 0.4 \times 10^7$$

$$= 4 \times 10^6$$

$$4 \times 10^6$$

(Total for Question 13 is 2 marks)

14. Calculate:

$$(9 \times 10^{-3}) \div (3 \times 10^2)$$

Give your answer in standard form.

$$9 \div 3 = 3$$

$$10^{-3} \div 10^2 = 10^{-5}$$

$$= 3 \times 10^{-5}$$

$$3 \times 10^{-5}$$

(Total for Question 14 is 2 marks)

15. The mass of a grain of sand is 4.6×10^{-5} g.

A container holds 8.2×10^6 grains.

Calculate the total mass.

Give your answer in standard form.

$$(4.6 \times 10^{-5}) \times (8.2 \times 10^6)$$

$$4.6 \times 8.2 = 37.72$$

$$10^{-5} \times 10^6 = 10^1$$

$$= 37.72 \times 10^1$$

$$= 3.772 \times 10^2$$

$$3.772 \times 10^2$$

.....
(Total for Question 15 is 3 marks)

16. Calculate:

$$\frac{6.8 \times 10^9}{4 \times 10^3}$$

Give your answer in standard form.

$$6.8 \div 4 = 1.7$$

$$10^9 \div 10^3 = 10^6$$

$$= 1.7 \times 10^6$$

$$1.7 \times 10^6$$

.....
(Total for Question 16 is 2 marks)

17. Calculate:

$$(3 \times 10^5) + (4 \times 10^5)$$

Give your answer in standard form.

$$7 \times 10^5$$

.....
(Total for Question 17 is 2 marks)

18. Calculate:

$$(7.2 \times 10^6) - (1.8 \times 10^4)$$

Give your answer in standard form.

$$\begin{aligned} & (72 \times 10^5) - (0.18 \times 10^5) \\ & = 71.82 \times 10^5 \\ & = 7.182 \times 10^6 \end{aligned}$$

$$\underline{7.182 \times 10^6}$$

(Total for Question 18 is 3 marks)

19. Calculate:

$$(4.5 \times 10^4) + (3 \times 10^3)$$

Give your answer in standard form.

$$\begin{aligned} & (45 \times 10^3) + (3 \times 10^3) = 48 \times 10^3 \\ & = 4.8 \times 10^4 \end{aligned}$$

$$\underline{4.8 \times 10^4}$$

(Total for Question 19 is 3 marks)

20. Calculate:

$$(8.2 \times 10^{-3}) - (5 \times 10^{-4})$$

Give your answer in standard form.

$$\begin{aligned} & (82 \times 10^{-4}) - (5 \times 10^{-4}) \\ & = 77 \times 10^{-4} \\ & = 7.7 \times 10^{-3} \end{aligned}$$

$$\underline{7.7 \times 10^{-3}}$$

(Total for Question 20 is 3 marks)

21. The diameter of Mars is 6.78×10^3 km.

The diameter of Jupiter is 1.40×10^5 km.

How many times bigger is Jupiter than Mars?

$$\frac{1.40 \times 10^5}{6.78 \times 10^3} = 20.6$$

21

(Total for Question 3 is 3 marks)

22. The mass of one electron is 9.11×10^{-31} kg.

What is the total mass of 5×10^{12} electrons

Give your answer in standard form.

$$(5 \times 10^{12}) \times (9.11 \times 10^{-31})$$

$$5 \times 9.11 = 45.55$$

$$10^{12} \times 10^{-31} = 10^{-19}$$

$$= 45.55 \times 10^{-19}$$

$$= 4.555 \times 10^{-18}$$

$$4.555 \times 10^{-18}$$

(Total for Question 3 is 3 marks)