

Indices and Standard Form

ANSWERS

No calculator | 30 minutes | Total marks: 30

Name Class

1 Simplify

(a) $(2x^3)^4$

Answer $16x^{12}$ (1)(1) [2 marks]

(b) $\frac{12a^7b^3}{4a^2b}$

Answer $3a^5b^2$ (1)(1) [2 marks]

2 Write down the reciprocal of

(a) 4

Answer $\frac{1}{4}$ (1) [1 mark]

(b) $\frac{2}{3}$

Answer $\frac{3}{2}$ (1) [1 mark]

(c) 0.2

Answer 5 (1) [1 mark]

3

Work out the value of

(a) 2^{-3}

Answer $\frac{1}{8}$ (1)

[1 mark]

(b) $25^{\frac{1}{2}}$

Answer 5 (1)

[1 mark]

(c) $27^{\frac{1}{3}}$

Answer 3 (1)

[1 mark]

(d) $16^{\frac{-1}{2}}$

$\frac{1}{\sqrt{16}}$ (1)

Answer $\frac{1}{4}$ (1)

[2 marks]

(e) $8^{\frac{2}{3}}$

cube root of 8 is 2 (1)

Answer 4 (1)

[2 marks]

4

(a) Write 45 000 in standard form.

Answer 4.5×10^4 (1)

[1 mark]

(b) Write 0.0032 in standard form.

Answer 3.2×10^{-3} (1)

[1 mark]

(c) Write 6.07×10^5 as an ordinary number.

Answer 607 000 (1)

[1 mark]

(d) Write 9.1×10^{-4} as an ordinary number.

Answer 0.00091 (1)

[1 mark]

5

Write these numbers in order of size. Start with the smallest.

3.2×10^4

4.1×10^3

2.9×10^4

Answer $4.1 \times 10^3, 2.9 \times 10^4, 3.2 \times 10^4$ (1)(1)

[2 marks]

6

Work out

Give each answer in standard form.

(a) $(3 \times 10^4) \times (2 \times 10^5)$

Answer 6×10^9 (1)(1) [2 marks]

(b) $\frac{8 \times 10^7}{4 \times 10^2}$

Answer 2×10^5 (1)(1) [2 marks]

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

20×10^7 (1)

Answer 2×10^8 (1) [2 marks]**7**Work out $3.5 \times 10^4 + 2 \times 10^3$

Give your answer in standard form.

$35\,000 + 2\,000 = 37\,000$ (1)

Answer 3.7×10^4 (1) [2 marks]

8

Light travels at 3×10^8 metres per second.

Work out how far light travels in 5×10^2 seconds.

Give your answer in standard form.

$$15 \times 10^{10} \text{ (1)}$$

Answer 1.5×10^{11} (1) m [2 marks]

Question	Topic	RAG
1	I can simplify expressions using the index laws	
2	I can find reciprocals	
3	I can work with negative and fractional indices	
4	I can convert to and from standard form	
5	I can order numbers in standard form	
6	I can multiply and divide in standard form	
7	I can add numbers in standard form	
8	I can solve a problem using standard form	