

Indices and Standard Form

ANSWERS

No calculator | 30 minutes | Total marks: 28

Name

Class

1 Write each of these in index form.

(a) $9 \times 9 \times 9 \times 9$

Answer 9^4 (1) [1 mark]

(b) $2 \times 2 \times 2 \times 5 \times 5$

Answer $2^3 \times 5^2$ (1) [1 mark]

2 Work out

(a) 3^3

Answer 27 (1) [1 mark]

(b) 10^5

Answer $100\ 000$ (1) [1 mark]

3 Find the missing number. $2^{\square} = 32$

Answer 5 (1) [1 mark]

4 Mo says, “ 9^2 is bigger than 3^4 ”

Is Mo right? Show how you decide.

$9^2 = 81$ and $3^4 = 81$ (1)

No, they are equal (1)

[2 marks]

5

Write each of these as a single power.

(a) $4^3 \times 4^6$

Answer 4^9 (1) [1 mark]

(b) $7^{10} \div 7^4$

Answer 7^6 (1) [1 mark]

(c) $(6^5 \times 6^4) \div 6^2$

$6^9 \div 6^2$ (1)

Answer 6^7 (1) [2 marks]

6

Ella says, " $5^8 \div 5^2 = 5^4$ "

Explain the mistake Ella has made and write the correct answer.

She divided the powers. You subtract them. (1)

5^6 (1)

[2 marks]

7

(a) Write 52 000 in standard form.

Answer 5.2×10^4 (1) [1 mark]

(b) Write 3 080 000 in standard form.

Answer 3.08×10^6 (1) [1 mark](c) Write 7.4×10^5 as an ordinary number.Answer 740 000 (1) [1 mark]

- 8 (a) Write 0.0063 in standard form.

Answer 6.3×10^{-3} (1) [1 mark]

- (b) Write 0.000405 in standard form.

Answer 4.05×10^{-4} (1) [1 mark]

- (c) Write 2.9×10^{-2} as an ordinary number.

Answer 0.029 (1) [1 mark]

- 9 Work out each of these. Give your answers in standard form.

- (a) $(4 \times 10^6) \times (2 \times 10^3)$

$$4 \times 2 = 8, \quad 10^6 \times 10^3 = 10^9 \quad (1)$$

Answer 8×10^9 (1) [2 marks]

- (b) $(9 \times 10^8) \div (3 \times 10^5)$

$$9 \div 3 = 3, \quad 10^8 \div 10^5 = 10^3 \quad (1)$$

Answer 3×10^3 (1) [2 marks]

- 10 Work out $(5 \times 10^3) \times (6 \times 10^4)$

Give your answer in standard form.

$$30 \times 10^7 \quad (1)$$

Answer 3×10^8 (1) [2 marks]

11

A memory card holds 4×10^{12} bytes.

One photo uses 5×10^6 bytes.

How many photos can the memory card hold?

Give your answer in standard form.

$$(4 \times 10^{12}) \div (5 \times 10^6) \text{ (1)}$$

$$0.8 \times 10^6 \text{ (1)}$$

Answer 8×10^5 (1)

[3 marks]

Question	Topic	RAG
1	I can write a repeated multiplication in index form	
2	I can work out the value of a power	
3	I can find a missing power	
4	I can compare powers by working them out	
5	I can use the index laws to multiply and divide powers	
6	I can explain a mistake with the index laws	
7	I can write large numbers in standard form and back	
8	I can write small numbers in standard form and back	
9	I can multiply and divide numbers in standard form	
10	I can adjust an answer so it is in standard form	
11	I can solve a problem using standard form	