



4.2F Indices: Foundation Tier Practice

EDEXCEL Edexcel 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

1 Work out 2^3 .

(Total for Question 1 is 1 mark)

2 Write down the value of 5^0 .

(Total for Question 2 is 1 mark)

3 Work out 10^2 .

(Total for Question 3 is 1 mark)

4 Simplify 3×3^2 .

(Total for Question 4 is 2 marks)

5 Write $2 \times 2 \times 2 \times 2$ as a power of 2.

(Total for Question 5 is 2 marks)

6 Work out 4^3 and give the answer in standard form if needed.

(Total for Question 6 is 3 marks)

7 Simplify $6^2 \div 6^1$.

(Total for Question 7 is 3 marks)

8 Write as a single power: $3^2 \times 3^3$.

(Total for Question 8 is 4 marks)

9 Simplify and write the answer as a whole number: $2^4 \div 2^2$.

(Total for Question 9 is 4 marks)

10 Evaluate $10^3 \div 10^2$ and write the answer as a power of 10.

(Total for Question 10 is 4 marks)

11 Work out and simplify fully: $(2^3 \times 2^2) \div 2^4$.

(a) Simplify inside the brackets first. (3)

(b) Now divide by 2^4 and give the final answer as a power of 2 and as a whole number. (6)

(Total for Question 11 is 9 marks)

12 Write 81 as a power of 3. Then evaluate $81 \div 3^2$.

(a) Write 81 as a power of 3. (3)

(b) Evaluate $81 \div 3^2$ and give your answer as a whole number and as a power of 3. (3)

(Total for Question 12 is 6 marks)

Mark scheme · 4.2F Indices: Foundation Tier Practice

Question 1

- **B1** 8 cao
- **Answer: 8**

Question 2

- **B1** 1 cao
- **Answer: 1**

Question 3

- **B1** 100 cao
- **Answer: 100**

Question 4

- **M1** work shown: $3 \times 3^2 = 3 \times 9$ or use laws $3^1 \times 3^2 = 3^3$
- **A1** 27 cao
- **Answer: 27**

Question 5

- **M1** show grouping or state product as repeated multiplication, e.g. $2 \times 2 \times 2 \times 2 = 2^4$
- **A1** 2^4 cao
- **Answer: 2^4**

Question 6

- **M1** calculate $4^3 = 4 \times 4 \times 4$ or show method
- **A1** 64 cao
- **B1** if standard form required: 6.4×10^1 cao (award if student gives this form)
- **Answer: 64**

Question 7

- **M1** use law $6^2 \div 6^1 = 6^{2-1}$ or show $36 \div 6$
- **A1** 6 cao
- **B1** accept explanation using index rule
- **Answer: 6**

Question 8

- **M1** use law: add the powers $2 + 3$
- **A1** 3^5 cao
- **B1** or give 243 cao
- **E1** isw - ignore subsequent working once 3^5 or 243 given
- **Answer: 3^5 or 243**

Question 9

- **M1** use law 2^{4-2} or show $16 \div 4$
- **A1** 2^2 cao
- **A1** 4 cao
- **E1** isw - ignore subsequent working once 4 given
- **Answer: 4**

Question 10

- **M1** use law 10^{3-2} or show $1000 \div 100$
- **A1** 10^1 cao
- **B1** or 10 cao
- **E1** isw - ignore subsequent working once 10^1 or 10 given
- **Answer: 10^1 or 10**

Question 11

- (a) **M1** use $2^3 \times 2^2 = 2^{3+2}$
- (a) **A1** 2^5 cao
- (a) **B1** or 32 cao
- **(a) Answer: 2^5 or 32**
- (b) **M1** use law $2^5 \div 2^4 = 2^{5-4}$
- (b) **A1** 2^1 cao
- (b) **M1** show numerical division $32 \div 16$ or $2^1 = 2$
- (b) **A1** 2 cao
- (b) **B1** both forms given or clear final answer
- (b) **E1** isw - ignore subsequent working once final answer shown
- **(b) Answer: $2^1 = 2$**

Question 12

- (a) **M1** recognise repeated multiplication or use known powers of 3
- (a) **A1** 3^4 cao
- (a) **B1** or 81 cao
- **(a) Answer: 3^4 or 81**
- (b) **M1** use law $3^4 \div 3^2 = 3^{4-2}$ or compute $81 \div 9$
- (b) **A1** 3^2 cao
- (b) **A1** 9 cao
- **(b) Answer: $3^2 = 9$**