AQA

GCSE MATHEMATICS

Higher tier

Number

Topic test – Indices

v1.0

Name _____

Materials

For this paper you must have:
- Mathematical instruments
- You must not use a calculator

Information
- The marks for questions are shown in brackets.
- The maximum mark for this paper is 29

Advice
- In all calculations, show clearly how you work out your answer.

1 (a) Work out $9^{\frac{1}{2}}$

[1 mark]

Answer _____

1 (b) Work out 3^{-3}

[1 mark]

Answer _____

1 (c) Work out 2^5

[1 mark]

Answer _____

1 (d) Work out $8^{\frac{1}{3}}$

[1 mark]

Answer _____

1 (e) Work out $8^{-\frac{1}{3}}$

[1 mark]

Answer _____

1 (f) Write 1 million as a power of 10.

[1 mark]

Answer _____

2 (a) Write $6^2 \times 6^7$ as a single power of 6

[1 mark]

Answer _____

2 (b) Write $8^{10} \div 8^2$ as a single power of 8

[1 mark]

Answer _____

2 (c) Write $\left(3^{12}\right)^3$ as a single power of 3

[1 mark]

Answer _____

2 (d) Work out $2^8 \div 2^3$ as a whole number

[2 marks]

Answer _____

11

3 Write as a single power of 2 $16 \times 2^5 \times 2^3$

[2 marks]

Answer _____

4 Work out the value of $\left(4^{10} \div 4^4\right) \div \left(4^2 \times 4\right)$

[3 marks]

Answer _____

5 Between which two integers does the square root of 130 lie?

[1 mark]

Answer _____

6 Work out the exact value of $\left(\dfrac{2}{3}\right)^{-4}$

[2 marks]

Answer _____

7   Write $\sqrt{\left(x^9 \times x^{-3}\right)}$ as a single power of x

[2 marks]

Answer _____

8 (a)   Write down the value of 8^0

[1 mark]

Answer _____

8 (b)   Work out the value of $32^{\frac{2}{5}}$

[2 marks]

Answer _____

9   Write $\sqrt[3]{\left(15\frac{5}{8}\right)}$ as an improper fraction.

[2 marks]

Answer _____

15

10   Simplify $16^3 \times 32^{-\frac{3}{5}}$ give your answer as a power of 2

[3 marks]

Answer _____

END OF QUESTIONS

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