

# Topic Test 1 (20 minutes)

Indices - Higher

## Section A

10 minutes. Calculator.

1 Use your calculator to work out

1 (a) 
$$\frac{\sqrt{33.64}}{19.8 + 9.2}$$

[1 mark]

Answer \_\_\_\_\_

1 (b) 
$$\sqrt{\frac{6^4}{2^6}}$$

[1 mark]

Answer \_\_\_\_\_

2 What whole number power of 2 is 16 384?

[1 mark]

Answer \_\_\_\_\_

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**3**      $2^x \times 3^x = 1296$

Work out the value of  $x$

[1 mark]

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Answer \_\_\_\_\_

**4**     Work out      $\left(\frac{2^7 \times 3^5}{6^3}\right)^{\frac{1}{2}}$

[1 mark]

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Answer \_\_\_\_\_

- 5**     Raj and his sister Zia are both at secondary school.  
Raj is three years older than Zia.  
The sum of the squares of their ages is 369

How old are they?

[2 marks]

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Zia = \_\_\_\_\_ years old

Raj = \_\_\_\_\_ years old

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**6 (a)** Write  $\frac{11^{13} \times 11^3}{11^7}$  as a single power of 11

[1 mark]

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Answer \_\_\_\_\_

**6 (b)** Write  $(4^3)^5$  as a single power of 2

[1 mark]

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Answer \_\_\_\_\_

**7** Write 224 as the sum of two cube numbers.

[1 mark]

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Answer \_\_\_\_\_

## Section B

10 minutes. Non-calculator. Put your calculator away. You may still work on section A but you must **not** use a calculator.

**8** Estimate the square root of 90

[1 mark]

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Answer \_\_\_\_\_

**9** Between which two integers does the cube root of 80 lie?

[1 mark]

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Answer \_\_\_\_\_

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10 Write  $\sqrt{100 \text{ million}}$  as a power of 10

[1 mark]

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Answer \_\_\_\_\_

11 Solve the equation  $x^2 - 1 = 48$

[2 marks]

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Answer \_\_\_\_\_

12 Tina says,

“The difference between any 2 consecutive square numbers is **always** odd.”

Is she correct?

Yes

☐

No

☐

Give reasons for your answer.

[2 marks]

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**13** Estimate the value of  $x$  when  $3^x = 25$

**[1 mark]**

Answer \_\_\_\_\_

**14**  $a$  and  $b$  are whole numbers greater than 1.

Work out two **different** pairs of values for  $a$  and  $b$  for which  $a^b = 64$

**[2 marks]**

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First pair  $a =$  \_\_\_\_\_  $b =$  \_\_\_\_\_

Second pair  $a =$  \_\_\_\_\_  $b =$  \_\_\_\_\_