Topic Test 1 (20 minutes)
Indices - Higher

Section A
10 minutes. Calculator.

1 Use your calculator to work out

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

[1 mark]

Answer _____

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

[1 mark]

Answer _____

2 What whole number power of 2 is   16 384?

[1 mark]

Answer _____

3 $2^x \times 3^x = 1296$

Work out the value of x

Answer _____

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

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?

Zia = _____ years old

Raj = _____ years old

AQA Education (AQA) is a registered charity (number 1073334) and a company limited by guarantee register
England and Wales (number 3644723). Our registered address is AQA, Devas Street, Manchester M15 6EX.

2 of 5

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

[1 mark]

Answer _____

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

[1 mark]

Answer _____

7 Write 224 as the sum of two cube numbers.

[1 mark]

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]

Answer _____

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

[1 mark]

Answer _____

AQA Education (AQA) is a registered charity (number 1073334) and a company limited by guarantee register England and Wales (number 3644723). Our registered address is AQA, Devas Street, Manchester M15 6EX.

3 of 5

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

[1 mark]

Answer _____

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

[2 marks]

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]

_____

_____

_____

_____

_____

_____

AQA Education (AQA) is a registered charity (number 1073334) and a company limited by guarantee registered in England and Wales (number 3644723). Our registered address is AQA, Devas Street, Manchester M15 6EX.

4 of 5

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]

_____

_____

_____

First pair $\qquad a =$ _____ $\qquad b =$ _____

Second pair $\qquad a =$ _____ $\qquad b =$ _____

AQA Education (AQA) is a registered charity (number 1073334) and a company limited by guarantee register
England and Wales (number 3644723). Our registered address is AQA, Devas Street, Manchester M15 6EX.

5 of 5