1 Write $27 \times \left(3^2\right)^7$ as a single power of 3

[3 marks]

Answer _____

2 Work out the value of $100^{-\frac{1}{2}}$

[2 marks]

Answer _____

3 Work out

cube root of 512 : reciprocal of 0.4

Give your answer in the form n : 1

[3 marks]

Answer _____ : _____

4 b is 3 more than the square root of a.

Circle the correct equation.

[1 mark]

$b = \sqrt{a} + 3$ $b = \sqrt{a} - 3$ $b = \sqrt{a+3}$ $b = \sqrt{a-3}$

5 $a^b = 3$ where a is an integer and b is a proper fraction.

Work out **one** possible pair of values of a and b.

[1 mark]

$a =$ _____ $b =$ _____

6 (a) Work out $\frac{3^{12}}{3^{7}}$

Give your answer as a whole number.

[2 marks]

Answer _____

6 (b) Simplify $8 \times 2^{6} \times 2^{4}$

Give your answer as a power of 2

[2 marks]

Answer _____

7 Work out the value of $\left(\frac{3}{2}\right)^2$

Give your answer as a mixed number.

[1 mark]

Answer _____

8 $2^a \times 3 \times 5^2 = 600$

Work out the value of a.

You **must** show your working.

[3 marks]

$a =$ _____

9 Circle the value of $\left(\sqrt{6}\right)^4$

[1 mark]

12 36 10 $\sqrt{24}$

10 Work out $\dfrac{4^6 - 11}{\sqrt{625} - 225}$

Circle your answer.

[1 mark]

-61.6 -20.425 204.25 3870.56

11 Work out $\left(3.1 \times 10^9\right)^2$

Circle your answer.

[1 mark]

6.2×10^{18} 6.2×10^{81} 9.61×10^{18} 9.61×10^{81}

12 (a) k is a whole number between 40 and 50

The cube root of k is 3, to the nearest whole number.

Work out the **largest** possible value of k.

[2 marks]

Answer _____

12 (b) Fay tries to solve $x^2 = 100$

She says,

''The only possible value of x is 10''

Give a reason why she is **not** correct.

[1 mark]

13 $2^x = 32$

Circle the value of x.

[1 mark]

4 5 6 7

14 Work out $12^2 \div \left(\frac{1}{3} \times \sqrt{36}\right)$

[3 marks]

Answer _____

15 (a) Between which two **consecutive** integers does the square root of 210 lie?

[1 mark]

Answer _____ and _____