



- 1 Write down an odd square number between 30 and 60.

(1 mark)

36 is even, 49 is odd

$$7 \times 7 = 49$$

49

- 2 Here is a list of numbers.

9, 16, 27, 36, 50

Write down the cube number.

(1 mark)

$$3 \times 3 \times 3 = 27$$

27

- 3 Write down the value of 6^2

(1 mark)

6^2 means 6×6

$$6 \times 6 = 36$$

36

- 4 Use your calculator to work out $\sqrt{1296}$

(1 mark)

$$\sqrt{1296} = 36, \text{ since } 36 \times 36 = 1296$$

36

- 5 Write down the value of $\sqrt{81}$

(1 mark)

The $\sqrt{\quad}$ symbol means the non-negative square root: the non-negative number that multiplies by itself to give 81

$$9 \times 9 = 81, \text{ so } \sqrt{81} = 9$$

9

6

Work out

a. 4^3

b. 5^3

(2 marks)

a.)

$$4 \times 4 = 16$$

$$16 \times 4 = 64$$

64

b.)

$$5 \times 5 = 25$$

$$25 \times 5 = 125$$

125

7

Work out $\sqrt{196}$

(1 mark)

$$14 \times 14 = 196$$

14

8

Work out the value of $\sqrt[3]{64}$

(1 mark)

The cube root of 64 is the number that gives 64 when cubed

$$4 \times 4 \times 4 = 64, \text{ so the cube root of } 64 \text{ is } 4$$

4

9

Work out the value of 0.3^2

(1 mark)

$$0.3^2 = 0.3 \times 0.3$$

$$3 \times 3 = 9, \text{ and there are two decimal places, so } 0.3 \times 0.3 = 0.09$$

0.09

10

Tom says, "The cube root of 27 is 9 because $27 \div 3 = 9$."

Explain Tom's mistake and write down the correct cube root of 27.

(2 marks)

$$\text{cube root: } ? \times ? \times ? = 27$$

$$3 \times 3 \times 3 = 27$$

cube root is 3

11

A cube has a volume of 125 cm^3 .

- Work out the length of one edge of the cube.
- Work out the area of one face of the cube.

(2 marks)

a)

$$5 \times 5 \times 5 = 125$$

$$5 \text{ cm}$$

b)

$$5 \times 5 = 25$$

$$25 \text{ cm}^2$$

12

Work out

- $4^2 + 3^3$
- $7^2 - 2^3$

(2 marks)

a)

$$4^2 = 16$$

$$3^3 = 27$$

$$16 + 27 = 43$$

$$43$$

b)

$$7^2 = 49$$

$$2^3 = 8$$

$$49 - 8 = 41$$

$$41$$

13

Find the value of $\sqrt{0.64}$

(1 mark)

$$0.8 \times 0.8 = 0.64$$

$$\text{So } \sqrt{0.64} = 0.8$$

$$0.8$$

14 Write down the square number that is between 30 and 45

(1 mark)

The square numbers are 1, 4, 9, 16, 25, 36, 49, ..

The only one between 30 and 45 is 36

36

15 a. Work out $(-5)^3$

b. Use your calculator to work out $\sqrt{2.56}$

(2 marks)

$$a) (-5)^3 = -5 \times -5 \times -5 = 25 \times -5 = -125$$

$$b) 1.6 \times 1.6 = 2.56, \text{ so } \sqrt{2.56} = 1.6$$

16 Liam says,

"When you square a number, the answer is always bigger than the number you started with."

Give an example to show that Liam is wrong.

(2 marks)

Try a number between 0 and 1, for example 0.5

$0.5^2 = 0.25$, and 0.25 is smaller than 0.5, so Liam is wrong

$1^2 = 1$ or $0^2 = 0$ also work as counter-examples

17 Aisha says,

"32 can be written as the sum of two square numbers."

Is Aisha correct?

You must show your working.

(3 marks)

List the square numbers up to 32: 1, 4, 9, 16, 25

Check pairs that total 32

$$16 + 16 = 32$$

$$16 = 4^2, \text{ so } 32 = 4^2 + 4^2 \text{ and Aisha is correct}$$