

GCSE Maths: Squares, cubes, roots and powers (Higher): worksheet

GCSE Maths - Factors, Multiples and Primes - Higher - Lesson 2.6

Name: _____

Date: _____

Score: _____

17 questions. Write your answers in the spaces. Answers and step-by-step help are free at websink.site/gcse/maths/ch02-factors-multiples-primes-powers/higher/squares-cubes-roots-and-powers/

Exercise 2F Squares, cubes and roots Non-calculator

1 Work out each square. Do not use a calculator.

(a) 4^2

Answer: _____

(b) 7^2

Answer: _____

(c) 9^2

Answer: _____

(d) 11^2

Answer: _____

(e) 12^2

Answer: _____

(f) 15^2

Answer: _____

2 Work out each cube.

(a) 2^3

Answer: _____

(b) 3^3

Answer: _____

(c) 4^3

Answer: _____

(d) 5^3

Answer: _____

(e) 10^3

Answer: _____

(f) 7^3

Answer: _____

3 Work out each square root.

(a) $\sqrt{25}$

Answer:

(b) $\sqrt{64}$

Answer:

(c) $\sqrt{81}$

Answer:

(d) $\sqrt{121}$

Answer:

(e) $\sqrt{144}$

Answer:

(f) $\sqrt{196}$

Answer:

4 Work out each cube root.

(a) cube root of 8

Answer:

(b) cube root of 27

Answer:

(c) cube root of 64

Answer:

(d) cube root of 125

Answer:

(e) cube root of 1000

Answer:

(f) cube root of 343

Answer:

5 Work out the value of each power.

(a) 2^5

Answer:

(b) 3^4

Answer:

(c) 5^3

Answer:

(d) 4^4

Answer:

(e) 2^8

Answer:

(f) 10^5

Answer:

6 Write each number as a power of the base given.

(a) 32 as a power of 2

Answer:

(b) 81 as a power of 3

Answer:

(c) 125 as a power of 5

Answer:

(d) 256 as a power of 4

Answer:

(e) 729 as a power of 3

Answer:

(f) 1024 as a power of 2

Answer:

7 Work out each of these. Remember BIDMAS.

(a) $7 + 3^2$

Answer:

(b) $(4 + 3)^2$

Answer:

(c) 5×4^2

Answer:

(d) $4^3 - 6^2$

Answer:

(e) $\sqrt{49} + 2^3$

Answer:

(f) $\sqrt{8^2 + 15^2}$

Answer:

8 Work out each of these.

(a) $(-4)^2$

Answer:

(b) -4^2

Answer:

(c) $(-5)^2$

Answer:

(d) -5^2

Answer:

9 Work out each of these. Do not use a calculator.

(a) 0.3^2

Answer:

(b) 0.5^2

Answer:

(c) 1.2^2

Answer:

(d) 0.2^3

Answer:

(e) 1.5^2

Answer:

(f) 1.1^2

Answer:

10 A square patio has an area of 169 m^2 . Work out the length of one side of the patio.

Answer:

11 A solid cube has a volume of 125 cm^3 .

(a) Work out the length of one edge.

Answer:

(b) Work out the total surface area of the cube.

Answer:

12 Which is bigger? Work out both values to find out.

(a) 2^8 or 8^2

Answer:

(b) 3^4 or 4^3

Answer:

(c) 5^3 or 3^5

Answer:

13 Is each number a square number? Give a reason.

(a) 50

Answer:

(b) 121

Answer:

(c) 200

Answer:

(d) 1000

Answer: _____

- 14** (a) Work out $\sqrt{49}$. (b) Solve $x^2 = 49$. (c) Explain why your answers to (a) and (b) are different.

(a) (a)

Answer: _____

(b) (b)

Answer: _____

(c) (c)

Answer: _____

- 15** Work out each of these. Give your answer as a fraction.

(a) $(\frac{2}{3})^2$

Answer: _____

(b) $(\frac{3}{4})^3$

Answer: _____

(c) $(\frac{5}{6})^2$

Answer: _____

(d) $(\frac{1}{2})^4$

Answer: _____

- 16** Prove that the square of an odd number is always odd.

Answer: _____

- 17** Two different square numbers, both more than 0, add up to 100. Find the two square numbers.

Answer: _____