Your notes

GCSE Maths: revision notes

Powers and roots

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Squares and square roots

- A **square number** is a number multiplied by itself: $7^2 = 49$.
- Learn the squares up to 15^2: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225.
- The **square root** undoes squaring: $\sqrt{49} = 7$. Every positive number has two **square roots**: 7 and –7.

Cubes and cube roots

- A **cube number** is a number multiplied by itself three times: $4^3 = 64$.
- Learn 1, 8, 27, 64, 125 and 1000. The **cube root** undoes cubing: $\sqrt[3]{125} = 5$.
- Negative numbers have a negative **cube root**: $\sqrt[3]{(-8)} = -2$.

Other powers

- $2^5 = 2 \times 2 \times 2 \times 2 \times 2 = 32$; $3^4 = 81$.
- **Powers** of 10: $10^2 = 100$, $10^3 = 1000$, $10^6 = 1\,000\,000$.

Estimating roots

- $\sqrt{50}$ lies between $\sqrt{49} = 7$ and $\sqrt{64} = 8$, and is closer to 7.
- Use the **square numbers** either side to estimate a **square root**.

Key terms

Square number	The result of multiplying a whole number by itself.
Square root	The number that multiplies by itself to give the original number.
Cube number	The result of multiplying a whole number by itself three times.

Cube root	The number that multiplied by itself three times gives the original number.
Power	The small raised number showing how many times to multiply a number by itself.
Index	Another word for power (plural: indices).

Your notes

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. What is 7^2?
2. What is $\sqrt{81}$?
3. What is 4^3?
4. What is $\sqrt[3]{125}$?
5. Between which two whole numbers does $\sqrt{50}$ lie?
6. What is 10^3?
7. What is 2^5?
8. What is $(-5)^2$?

Answers

1. 49
2. 9
3. 64
4. 5
5. 7 and 8
6. 1000
7. 32
8. 25

What to do next

Practise 12 questions on this topic

Try 6 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.