Your notes

GCSE Maths: revision notes

Rounding and estimation

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Decimal places

- To round to 2 decimal places, look at the third decimal place: 5 or more rounds up, 4 or less rounds down. 3.476 → 3.48.
- Keep the zero if it's needed: 7.95 to 1 decimal place is 8.0.

Significant figures

- The first significant figure is the first non-zero digit. 45 672 to 2 s.f. is 46 000; 0.003 482 to 2 s.f. is 0.0035.
- Zeros between non-zero digits are significant: 0.0506 has 3 significant figures (5, 0 and 6).
- Keep the size of the number the same: 6482 to 1 s.f. is 6000, not 6.

Estimating

- Round every number to 1 significant figure, then calculate: $48 \times 21 \approx 50 \times 20 = 1000$.
- $(6.1 \times 49.8) \div 9.7 \approx (6 \times 50) \div 10 = 30$.
- **Estimate** square roots using square numbers: $\sqrt{63.9} \approx \sqrt{64} = 8$.

Over and underestimates

- If you round every number up in a multiplication, the **estimate** is an **overestimate**.
- If you round every number down, it is an **underestimate**.
- Dividing by a number that you rounded up gives a smaller answer, so be careful with division.

Key terms

Rounding	Writing a number approximately, to a given accuracy.
Decimal places (d.p.)	The number of digits after the decimal point.
Significant figures (s.f.)	The digits of a number starting from the first non-zero digit.
Estimate	An approximate answer, found by rounding.
Overestimate	An estimate that is bigger than the exact answer.
Underestimate	An estimate that is smaller than the exact answer.

Quick questions

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

1. Round 3.476 to 2 decimal places.
2. Round 45 672 to 2 significant figures.
3. Round 0.003 482 to 2 significant figures.
4. Round 7.95 to 1 decimal place.
5. Estimate 48 × 21.
6. Estimate (6.1 × 49.8) ÷ 9.7.
7. Round 1.996 to 2 decimal places.
8. How many significant figures does 0.0506 have?

Answers

1. 3.48
2. 46 000
3. 0.0035
4. 8.0
5. 1000
6. 30
7. 2.00
8. 3

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.

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