

Slide by slide delivery map

Pearson Edexcel GCSE Mathematics 1MA1 • L003

19 slides • 60 minutes • Teacher use only • Lesson resources

REACH FOR THE STAR | GCSE MATHEMATICS

01 PLACE VALUE AND ESTIMATION 1 min Recall

Use place value to scale and compare decimals, round to stated accuracy, and judge whether a calculation is reasonable.

02 The goal and the evidence 1 min Recall

L001 ordering; L002 four operations and order; whole-number place value.

03 Starting-point diagnostic 4 min Recall

Scaling error: label a place-value chart and track each digit, rather than counting arbitrary zeros.

Comparison error: pad trailing zeros. Rounding error: mark the retained place and decision digit.

Estimate error: write the rounded expression before calculating. Recheck $0.47 \times 100 = 47$; $0.6 >$

0.58 ; 8.476 to 2 d.p. = 8.48 ; $39.6 \div 0.81 \approx 40 \div 0.8 = 50$.

04 Digits have place value 6 min Discover

$2 + 0.5 + 0.007$; 0.5 . The 5 is in the tenths place.

05 Scaling changes digit values 3 min Discover

30.6 ; 0.0306 . Each digit moves into a place worth ten times as much, or one hundredth as much.

Delivery continued

06 Rounding to decimal places 4 min Discover

6.29. The next digit is 6, so increase the hundredths digit.

07 Counting significant figures 3 min Discover

0.0073. The first two significant digits are 7 and 3; the next digit is 4.

08 ROUND ONCE, AT THE END 3 min Discover

For rounding, identify the retained place and inspect the next digit. At 5 or above, increase the retained digit; otherwise keep it. Carry where needed. For significant figures, begin at the first non-zero digit. Estimate by replacing awkward numbers with convenient approximations, then compare the scale and units of the result.

09 Diagnostic pause 3 min Apply

Which is 5.078 to 2 decimal places? A 5.07, B 5.08, C 5.1. B: retain hundredths, inspect 8. A truncates; C rounds to one decimal place. Recheck 3.146 to 2 d.p. = 3.15.

10 Careful variation 4 min Apply

5.2; 52; 0.052; 0.0052. Compare how the same digits change value.

Delivery continued

11 Independent application 4 min Apply

9.98; 0.0068; 4.70. The final zero in 4.70 communicates requested accuracy, although 4.7 is the same value.

12 Use the method in context 3 min Apply

$20 \times 5 = 100$; exact 97.02. No: 970.2 is about ten times the estimate. An estimate checks scale; it does not prove every digit correct.

13 Intentional practice feedback 3 min Apply

After estimating A3, enter 19.8×4.9 . Expect 97.02. Compare with $20 \times 5 = 100$. Read the whole display; do not round intermediate values in a multi-step calculation unless instructed.

14 A claim to test 3 min Challenge

Direct: 2.4. In stages: 2.45 then 2.5. The intermediate rounding changes the final result. Keep original values until the requested rounding step.

15 Deepen the reasoning 3 min Challenge

2.0 m = 200 cm; 196 cm to the nearest 10 cm is also 200 cm. The rounding units match because 0.1 m = 10 cm.

Delivery continued

16 Retrieval without notes 4 min Prove

Answers: 38, 0.52, 0.07, 8.48, 0.0068, 90. Score is retrieval evidence, not mastery.

17 Independent exit evidence 5 min Prove

7.39 B1; decision digit 6 in the thousandths place B1. $40 \times 2 = 80$ B1; 831.6 is about ten times too large, so unreasonable B1.

18 Feedback and next steps 2 min Prove

Scaling error: label a place-value chart and track each digit, rather than counting arbitrary zeros. Comparison error: pad trailing zeros. Rounding error: mark the retained place and decision digit. Estimate error: write the rounded expression before calculating. Recheck $0.47 \times 100 = 47$; $0.6 > 0.58$; 8.476 to 2 d.p. = 8.48; $39.6 \div 0.81 \approx 40 \div 0.8 = 50$.

19 Before the next lesson 1 min Recall

A useful check must test the original calculation. An inverse check undoes an operation; an estimate checks size. For 18.9×3.1 , $20 \times 3 = 60$ suggests an answer near 60, not 6 or 600.

Recall & Review: feedback and extension integration

Lesson L003: Place value, decimals and estimation

Objective: Use place value to scale and compare decimals, round to stated accuracy, and judge whether a calculation is reasonable.

Timing for a 60-minute lesson

0-7 Connect & Check; 7-14 Share; 14-25 Present/model; 25-44 Apply route choice/practice; 44-52 independent exam-style check; 52-60 Recall & Review, WWW/EBI and next step.

Recall & Review evidence

At the end of the lesson, solve a fresh question without prompts, explain one check, correct one error and record the next practice step.

What Went Well (WWW)

I selected an efficient numerical method, showed the key steps clearly and checked the sign, size or accuracy of my answer.

Even Better If (EBI)

I will make the place-value, sign or operation decision explicit and use estimation or an inverse calculation to check a fresh question.

Integrated stretch and deep challenge

Stretch: Round 0.004976 to two significant figures and estimate 397×0.049 .

Deep challenge: A number rounds to 3.50 to two decimal places. Give its interval and explain the excluded endpoint.

Teacher use

Use the What Went Well (WWW) and Even Better If (EBI) prompts to write mathematics-specific feedback linked to the objective. Do not accept generic praise: identify the method, representation, reasoning or checking step that improved, then set a fresh next-step question.

Assessment evidence to inspect: Check the formative mini-test and independent workbook response against the objective. Use the teacher answers or mark guidance; group errors for reteaching. Non-calculator core; optional calculator check.