

Slide by slide delivery map

Pearson Edexcel GCSE Mathematics 1MA1 • L031

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

REACH FOR THE STAR | GCSE MATHEMATICS

01 Bearings and scale drawings 1 min Recall

Interpret three-figure bearings and construct scale drawings with accurate distance and direction.

02 The goal and the evidence 1 min Recall

L025 parallel-angle facts; L014 scales; ruler and protractor skills.

03 Starting-point diagnostic 5 min Recall

If a protractor starts at east, mark north before measuring. If reverse bearing is $360 - b$, use a north-east route and draw its south-west return. If 1:50 000 is read as metres, label both scale lengths in centimetres.

04 See the geometry 2 min Discover

Parallel north lines mean reversing a route changes the bearing by 180° , wrapping within 000° to 359° . A bearing of 060° is clockwise from north, not from east. At scale 1 cm:2 km, a 6 km route is drawn 3 cm long. Use the same units when writing a ratio scale.

05 Worked example and your turn 3 min Discover

180° ; 270° . Clockwise from north.

Delivery continued

06 Worked example and your turn 3 min Discover

305° . $125+180$.

07 Worked example and your turn 3 min Discover

130° . $310-180$.

08 Worked example and your turn 3 min Discover

4 cm line at 060° from a north arrow. Distance conversion and bearing are separate.

09 A method you can explain 2 min Discover

Mark the start, north arrow and clockwise bearing. Convert distance to drawing length. Draw and label the endpoint. To reverse, add or subtract 180° . Check quadrant and real-distance conversion.

10 Diagnostic pause 3 min Apply

Bearing from A to B is 070° . Bearing B to A? A 110° , B 250° , C 290° . Answer B: add 180° .

Delivery continued

11 Careful variation 4 min Apply

2, 3 and 5 cm. Real distance divided by two.

12 Independent application 4 min Apply

3.6 km. $7.2 \times 50000 = 360000$ cm = 3.6 km.

13 Use the method in context 4 min Apply

About 7.2 km and 056° . Teacher accepts reasonable drawing estimates: 7.0–7.4 km, 054° – 058° for this classroom task.

14 Intentional practice feedback 2 min Apply

Teacher accepts reasonable drawing estimates: 7.0–7.4 km, 054° – 058° for this classroom task.

Optional numerical check for A3 only: $\sqrt{6^2 + 4^2}$ is about 7.21 km; this Pythagoras method is taught later. Use drawing as the core method. Numeric retrieval accepts 90 for 090; the teacher checks three-figure bearing notation.

15 A claim to test 4 min Challenge

070° points north-east; its return is south-west at 250° . 290° is north-west, not opposite. A reverse route differs by 180° .

Delivery continued

16 Deepen the reasoning 4 min Challenge

No; uniform scaling preserves angles. Length on first drawing is twice the second. Allow small measuring error.

17 Retrieval without notes 2 min Prove

Answers: 90, 250, 130. Completion is not mastery.

18 Retrieval without notes 2 min Prove

Answers: 8, 5, 2500. Completion is not mastery.

19 Independent exit evidence 2 min Prove

065° B1; subtract 180° for opposite direction B1. Require three digits in written work.

20 Independent exit evidence 3 min Prove

$8 \times 25000 = 200000$ cm M1; 2 km A1. 100000 cm per km.

Delivery continued

21 Feedback and next steps 2 min Prove

If a protractor starts at east, mark north before measuring. If reverse bearing is $360 - b$, use a north-east route and draw its south-west return. If 1:50 000 is read as metres, label both scale lengths in centimetres.

22 Before the next lesson 1 min Recall

The geometry checkpoint mixes angle reasoning, construction, transformations and scale. Use errors to choose a repair, then answer a fresh question without copying a model.

Recall & Review: feedback and extension integration

Lesson L031: Bearings and scale drawings

Objective: Interpret three-figure bearings and construct scale drawings with accurate distance and direction.

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 the correct geometric fact, theorem, formula or transformation and used a clear diagram with appropriate labels and units.

Even Better If (EBI)

I will name the fact or theorem, show the substitution or construction step and check whether the size, direction and units of the result are reasonable.

Integrated stretch and deep challenge

Stretch: A map scale is 1 cm:4 km. Two points are 7.5 cm apart. Find actual distance.

Deep challenge: The bearing of B from A is 065° . Find the bearing of A from B.

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. Optional numerical check for A3 only: $\sqrt{6^2+4^2}$ is about 7.21 km; this Pythagoras method is taught later. Use drawing as the core method. Numeric retrieval accepts 90 for 090; the teacher checks three-figure bearing notation..