

Product rule for counting

Pearson Edexcel GCSE Mathematics 1MA1 • L008

Higher-only content • 10-minute alternative route • Lesson resources

REACH FOR THE STAR | GCSE MATHEMATICS

Higher route: replace the 2-minute A3 feedback and the two 4-minute Challenge discussions with this 10-minute taught extension. Retain core P1–P2. Set HX1–HX2 as the final four minutes of that alternative, and use the shared challenges later if needed. The core route remains 60 minutes; the extension is not an additional compulsory ten minutes. Route choice reflects tier curriculum, not temporary support needs.

Discover through a worked example

If every one of 3 shirts can pair with every one of 4 trousers, there are 4 choices for each shirt: $4+4+4=3 \times 4=12$ outfits. With 2 shoe choices for every outfit, there are $3 \times 4 \times 2=24$ combinations. The product rule applies when the stated number of next choices is available for each earlier choice.

H1

There are 2 starters and 5 main courses. Every pairing is allowed. How many meals? Explain why multiplication counts them all.

Optional scaffold: Imagine two rows with five entries each.

H2

A code uses two different digits from 1, 2, 3, 4. Order matters. Model first position: 4 choices. How many choices remain for the second, and how many codes?

Optional scaffold: Do not count a repeated digit.

Apply and prove independently

Four marks. Show working. Your teacher reviews the reasoning; these answers are not automatically marked.

HX1

Choose one of 4 shirts, one of 3 trousers and one of 2 hats. Every combination is allowed. Find the number of outfits and show the product. [2]

HX2

A two-digit code uses digits 1 to 5 without repetition. Order matters. Find the number of codes and justify the second factor. [2]

Next step

Record which step needs practice. Retry a fresh example after a delay. A completed task does not establish mastery.