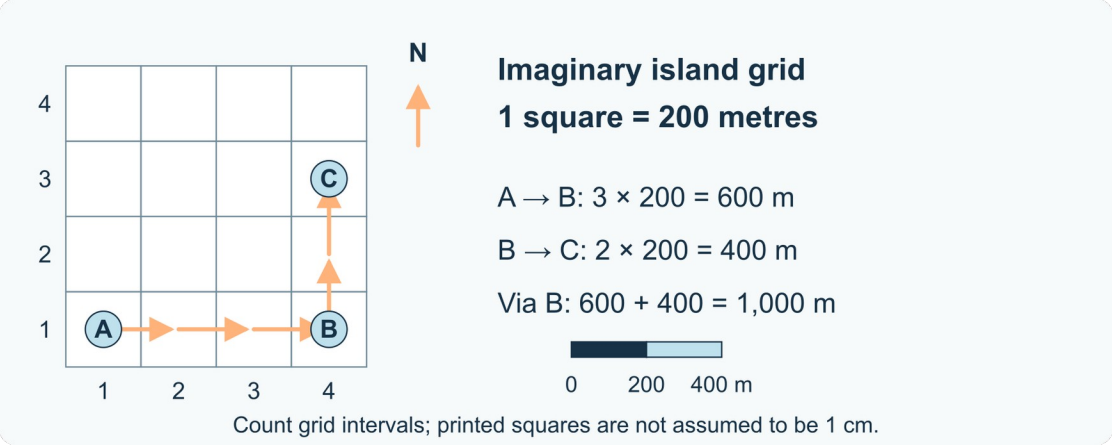
Scale an imaginary island map

Which distances can I calculate from a clearly stated scale?

Use a stated scale to calculate distances on a completely imaginary island.

Investigate | 10-20 minutes, or one small comparison | Scrap paper and a pencil or pen, The supplied original model; no account, purchase or online search needed

Start here Draw three invented places on a square grid: A (1,1), B (4,1) and C (4,3).



Five squares become one kilometre

1 State the scale

Each grid square represents 200 metres. On a hand-drawn map with 1 cm squares, that would be 1 cm to 200 m, or 1:20,000.

2 Count the legs

A to B spans three squares east. B to C spans two squares north. Count the intervals between points, not the number of labelled points.

3 Convert the route

Three squares represent 600 m; two represent 400 m. The route A-B-C is 1,000 m in this model.

4 Label what you know

Add a scale bar and north arrow. Count squares on the supplied drawing; resizing a printed illustration does not make each square exactly 1 cm.

Original model an invented island grid

A, B and C are fictional sites. The graphic is schematic and is not an outdoor navigation map.

• A(1,1) to B(4,1): 3 squares × 200 m = 600 m.

• B(4,1) to C(4,3): 2 squares × 200 m = 400 m.

• Via B, the total is 1,000 m. The straight line A-C is a different distance.

What this example can show Map distance alone does not establish a real route, journey time, access or terrain. The supplied grid must be read by its labels or scale bar, not assumed physical print size.

A different way

Count intervals aloud, point to the scale bar, or direct someone else to note the calculations. A ruler is optional.

If you want to go further

Change the scale to 100 m per square without moving any points. Recalculate the two legs and route total.

Something to notice

Did I count spaces between points or count the points themselves?

Read or explore more

Horizon topic Maps Scale

https://launchhorizonhq.com/learn/maps-scale/

Horizon topic Directions Coordinates

https://launchhorizonhq.com/learn/directions-coordinates/

Horizon topic Geography

https://launchhorizonhq.com/learn/geography/

Geoscience Australia What is Map Scale?

https://www.ga.gov.au/scientific-topics/national-location-information/topographic-maps-data/basics/what-is-map-scale

Geoscience Australia Map Reading Guide: How to use Topographic Maps

https://www.ga.gov.au/bigobj/GA7194.pdf

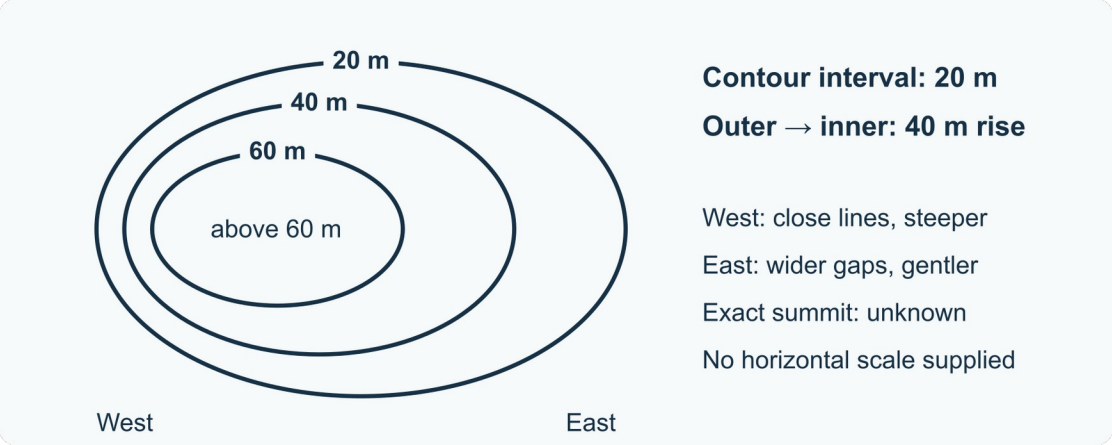
Read the shape of a drawn hill

What do contour spacing and height labels tell us about a landscape model?

Read equal-height lines on an invented hill and leave the exact summit unknown.

Investigate | 10-20 minutes, or one small comparison | Scrap paper and a pencil or pen, The supplied original model; no account, purchase or online search needed

Start here Draw three nested loops and label the outer 20 m, middle 40 m and inner 60 m.



Same rise, different spacing

1 Keep equal intervals

Each loop joins points at the same height. In this hill model, height increases inward by 20 m between neighbouring loops.

2 Compare spacing

Bring the loops close together on the west side and farther apart on the east. Keep the loops nested without crossing.

3 Read the slope

Both sides rise through the same 20 m intervals. The shorter horizontal gaps on the west indicate a steeper slope than the wider east gaps.

4 Show uncertainty

Label the inside area above 60 m, with exact summit unknown. The lines alone do not show how or when the hill formed.

Original model one imaginary hill

This schematic is a drawing to interpret, not a survey or a measured landscape.

• The outer, middle and inner loops are 20 m, 40 m and 60 m.

• From the outer to inner loop, the height rises 40 m on either side.

• Contours are closer on the west, so that side is steeper in this model. The exact summit is not labelled.

What this example can show No horizontal scale is supplied, so an exact gradient cannot be calculated. The drawing does not establish a safe real walking route.

A different way

Trace the three loops with a finger, describe a side aloud, or use the supplied labels instead of drawing.

If you want to go further

Keep the loops in place and change their labels to 10 m, 20 m and 30 m. Compare the rise without claiming a new horizontal scale.

Something to notice

Which part of my description is supported by contour values and spacing?

Read or explore more

Horizon topic Contours Height

https://launchhorizonhq.com/learn/contours-height/

Horizon topic Landform Processes

https://launchhorizonhq.com/learn/landform-processes/

Horizon topic Geography

https://launchhorizonhq.com/learn/geography/

Geoscience Australia Map Reading Guide: How to use Topographic Maps

https://www.ga.gov.au/bigobj/GA7194.pdf

Ordnance Survey Relief and contours

https://www.ordnancesurvey.co.uk/mapzone/assets/doc/map-skills/Relief-and-Contours-en.pdf

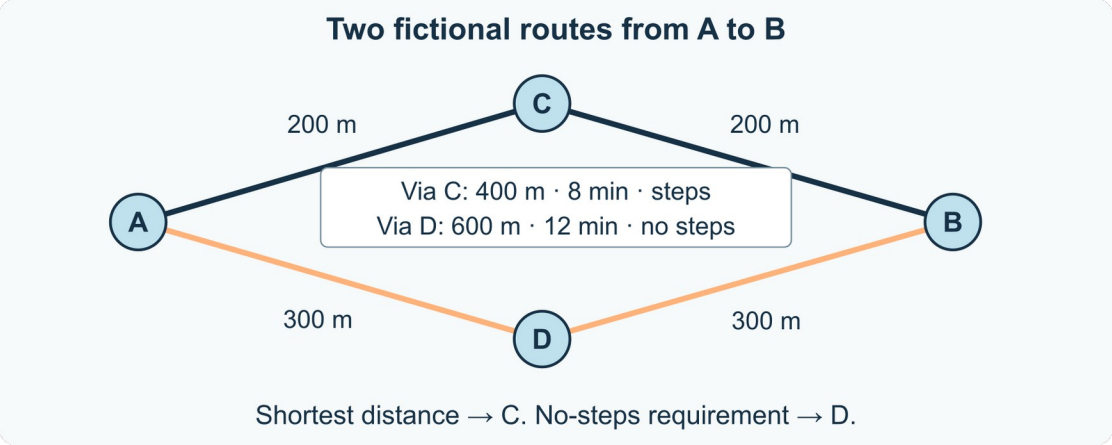
Compare two invented transport routes

What makes a route useful when distance is only one consideration?

Compare two fictional routes using a stated goal as well as their distance.

Investigate | 10–20 minutes, or one small comparison | Scrap paper and a pencil or pen, The supplied original model; no account, purchase or online search needed

Start here Draw two routes from A to B: a short route through C and a longer route through D.



A route choice needs a criterion

1 Supply the facts

Route A–C–B has two 200 m legs, takes 8 invented minutes and includes steps. Route A–D–B has two 300 m legs, takes 12 invented minutes and has no steps.

2 Name one criterion

Choose a fictional requirement such as shortest distance or no steps. You do not need to disclose a personal reason for choosing it.

3 Compare against it

Shortest distance favours A–C–B: 400 m. The no-steps requirement favours A–D–B: 600 m. Each answer names its criterion.

4 List missing facts

Surface, slope, weather and other access details are not supplied. Do not turn no steps into a claim that every person can use the route.

Original model two routes to a display hall

Distances, times and route features are supplied fictional data, not real transport information.

• Via C: 200 + 200 = 400 m; 8 minutes; steps.

• Via D: 300 + 300 = 600 m; 12 minutes; no steps.

• For a no-steps requirement choose D; for minimum distance choose C, given only these facts.

What this example can show The invented minutes are given data, not a general walking-speed rule. No-steps alone does not establish full accessibility.

A different way

Point to route labels or say which fact matters. Someone else can add the distances or mark the selected route.

If you want to go further

Add a second criterion: no steps and no more than 10 minutes. Explain why neither supplied route meets both, without inventing a third route as fact.

Something to notice

What changed when I changed the criterion?

Read or explore more

Horizon topic Transport Networks

https://launchhorizonhq.com/learn/transport-networks/

Horizon topic Cities Settlements

https://launchhorizonhq.com/learn/cities-settlements/

Horizon topic Maps Scale

https://launchhorizonhq.com/learn/maps-scale/

NRICH, University of Cambridge Only Connect

https://nrich.maths.org/problems/only-connect

Geoscience Australia What is Map Scale?

https://www.ga.gov.au/scientific-topics/national-location-information/topographic-maps-data/basics/what-is-map-scale