

Real Life Graphs

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

A distance-time graph shows a flat horizontal section. What does this mean?

Step 1 · On a distance-time graph, the y-axis is distance and the x-axis is time

Distance is not changing while time increases

Step 2 · If distance stays constant, the object is not moving

The object is stationary (stopped)

Answer: The object is stationary — it has stopped moving.

Check: Flat line → no change in distance → speed = 0 ✓

2. Now try one with the steps

A car travels 60 km in 1 hour. Calculate the speed.

Step 1 · Speed formula

Step 2 · Substitute values

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. A distance-time graph slopes steeply upward. What does this mean? [1]

2. A car covers 150 km in 2.5 hours. What is its average speed? [2]

3. On a travel graph: 0–20 min travels 8 km, 20–40 min stationary, 40–60 min returns home. What is the total distance travelled? [2]

4. A water tank fills at 30 litres per minute. Sketch what a volume-time graph would look like. [2]

5. A conversion graph shows 5 miles = 8 km. Use it to convert 12 miles to km. [3]
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6. Two cyclists start from the same point and ride in the same direction. A travels at 15 km/h and B at 10 km/h. After 2 hours, how far apart are they? [3]
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7. A straight line on a distance-time graph goes from (0 hours, 0 km) to (2 hours, 90 km). What speed does it show? [1]
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8. On a distance-time graph, what does a section sloping back down to the time axis show? [1]
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9. A straight-line conversion graph passes through (0, 0) and (10 kg, 22 lb). Convert 5 kg to pounds. [2]
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10. A plumber's charges are shown by a straight line from (0 hours, £40) to (2 hours, £100). How much does she charge per hour? [2]
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11. Using the same plumber's graph, how much would a 3.5 hour job cost? [2]
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12. A bath fills at a steady rate. Its volume-time graph is a straight line from (0 min, 0 litres) to (8 min, 120 litres). How many litres flow in each minute? [2]
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13. Kofi walks 3 km from home in 45 minutes, rests for 15 minutes, then walks home in 30 minutes. [3]
What is his speed on the way home, in km/h?

14. A conversion graph shows £1 = €1.15. Convert €46 into pounds. [2]

15. Electricity costs a standing charge of 50p a day plus 25p per unit used. Write a formula for the daily [3]
cost C (in pence) of using u units.

4. Before you hand it in

Confusing steepness with height on a distance-time graph

Speed = gradient (steepness). A low but steep line means fast; a high but flat line means stationary.

Forgetting to include the return journey in total distance

Total distance = distance out + distance back. Always re-read the question: does it ask for total distance or displacement?

Misreading a conversion graph by reading from the wrong axis

Identify what you're converting FROM. Find that value on its axis first, then read across/up to the line, then across/down to the answer axis.