

Conversion Graphs

Maths

Level 2

Exam-style practice · 8 questions · 20 marks · Calculator allowed

Remember

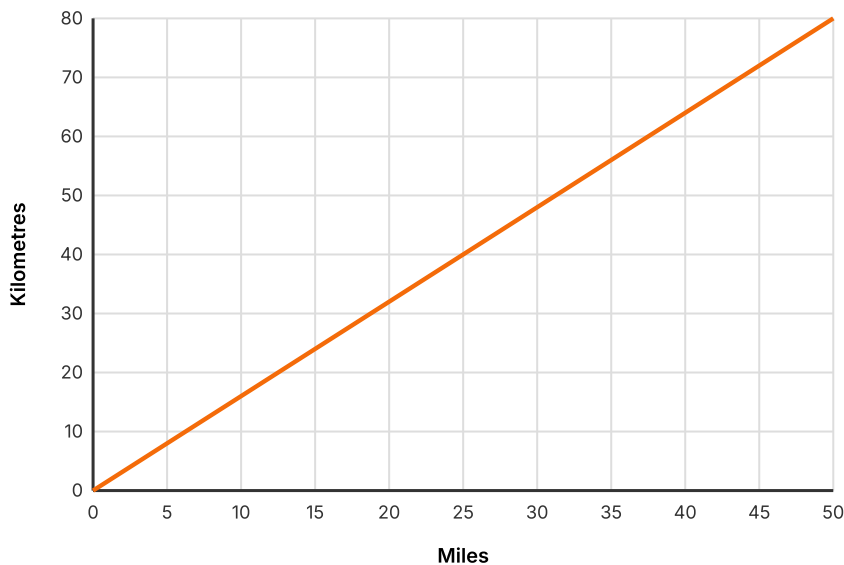
Reading a conversion graph: find the value on one axis, go across (or up) to the line, then down (or across) to the other axis. Use a ruler and read to the nearest small square.

Values beyond the graph: read a value you can, then scale. If 50 miles = 80 km, then 300 miles = $6 \times 80 = 480$ km.

Comparing two lines: where the lines cross, both options cost the same. To the left, the lower line is cheaper; to the right, the other one is.

Section A – Miles and kilometres

1. The graph converts miles to kilometres.



Use the graph to convert: (a) 30 miles to km (b) 45 miles to km (c) 40 km to miles (d) 64 km to miles (4 marks)

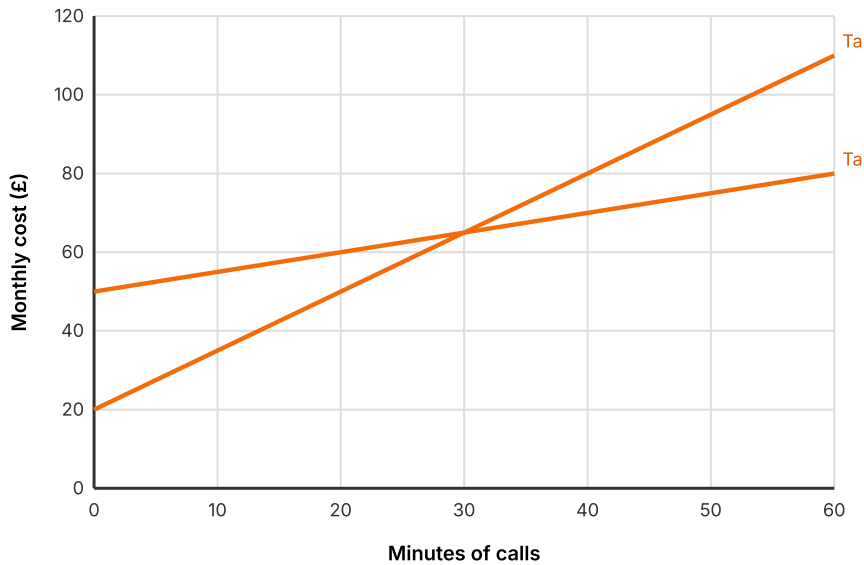
2. A journey is 175 miles. Use the graph (and scaling) to find the distance in kilometres. (2 marks)

3. A speed limit in France is 130 km/h. Use the graph to give this in miles per hour, to the nearest whole number. (2 marks)

4. Explain why the line on this graph goes through (0, 0). (1 mark)

Section B – Comparing tariffs

5. The graph shows the monthly cost of two phone tariffs for different amounts of call time.



(a) What is the fixed monthly charge for each tariff? (b) How much does Tariff A cost for 40 minutes of calls? (c) For how many minutes do the two tariffs cost the same? (4 marks)

6. Marcus makes about 25 minutes of calls a month. Which tariff should he choose, and how much would he save a year compared with the other? (3 marks)

7. Leila's bill on Tariff B was £68. Roughly how many minutes did she use? (2 marks)

8. Work out the cost per minute (the gradient) for Tariff A. (2 marks)

Conversion Graphs – Answers

Level 2 · Working shown so you can check your method, not just the final number.

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Section A

1. (a) **48 km** (b) **72 km** (c) **25 miles** (d) **40 miles**. Accept ± 1 for readings.
2. $175 = 3 \times 50 + 25$. 50 miles = 80 km, 25 miles = 40 km. $3 \times 80 + 40 = \mathbf{280 \text{ km}}$.
3. $130 = 80 + 50$. 80 km = 50 miles; 50 km = 31.25 miles. Total $\approx \mathbf{81 \text{ mph}}$.
4. 0 miles is 0 kilometres – no distance in one unit is no distance in the other.

Section B

5. (a) A: **£20**, B: **£50** (where each line meets the vertical axis). (b) A at 40 min = **£80**. (c) The lines cross at **30 minutes** (both £65).
6. At 25 min: $A = 20 + 1.5 \times 25 = \text{£}57.50$; $B = 50 + 0.5 \times 25 = \text{£}62.50$. **Tariff A**, saving £5 a month = **£60 a year**.
7. B: $68 - 50 = 18$; $18 \div 0.5 = \mathbf{36 \text{ minutes}}$.
8. A rises from £20 to £110 over 60 minutes: $90 \div 60 = \mathbf{\text{£}1.50 \text{ per minute}}$.

Where Level 2 students lose marks on this topic

- Reading the wrong axis – going up from 30 on the horizontal axis but reading the answer off the horizontal axis again.
- Not using a ruler, then reading 47 or 49 instead of 48. The exam allows a small tolerance, but sloppy readings drift outside it.
- For values beyond the graph, guessing instead of scaling a value you can read (50 miles = 80 km $\rightarrow$ multiply).