Conversion Graphs: Plot, Read, and Interpolate with Confidence

Original tasks 1, 2, 3 / complete keys

Task 1

A table converts kilograms to pounds: 0 kg = 0 lb, 2 kg = 4.4 lb, 4 kg = 8.8 lb, 6 kg = 13.2 lb. Using a straight-line graph through these points, estimate 5 kg in pounds.

Answer: About 11.0 lb.

Reason: 5 kg is halfway between 4 kg (8.8 lb) and 6 kg (13.2 lb). Halfway in y is (8.8 + 13.2)/2 = 11.0 lb. Proportional check: 5/2 × 4.4 = 11.0 lb.

Check: Confirm the midpoint calculation and compare with the ratio 4.4 lb per 2 kg, which gives 2.2 lb per kg; 5 × 2.2 = 11.0 lb.

Task 2

A table converts hours to minutes: 0 h = 0 min, 1 h = 60 min, 2 h = 120 min, 3 h = 180 min. Using the straight line, estimate 2.5 h in minutes.

Answer: 150 minutes.

Reason: 2.5 h is halfway between 2 h (120 min) and 3 h (180 min). Halfway is (120 + 180)/2 = 150 min. Proportional check: 2.5 × 60 = 150 min.

Check: Multiply the input by 60 minutes per hour and confirm it matches the midpoint reading.

Task 3

A table converts metres to feet: 0 m = 0 ft, 1 m = 3.3 ft, 2 m = 6.6 ft, 3 m = 9.9 ft. Using the straight line, estimate 2.4 m in feet.

Answer: About 7.92 ft.

Reason: 2.4 m is 0.4 of the way from 2 m to 3 m. The y-change is 9.9 − 6.6 = 3.3 ft. Add 0.4 × 3.3 = 1.32 ft to 6.6 ft, giving 7.92 ft. Proportional check: 2.4 × 3.3 = 7.92 ft.

Check: Compute 2.4 × 3.3 and compare with the interpolation result; both should be 7.92 ft.

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Original tasks 4 / complete keys

Task 4

A table converts US dollars to euros: 0 USD = 0 EUR, 10 USD = 9 EUR, 20 USD = 18 EUR, 30 USD = 27 EUR. Using the straight line, estimate 15 USD in euros.

Answer: 13.5 EUR.

Reason: 15 USD is halfway between 10 USD (9 EUR) and 20 USD (18 EUR). Halfway is (9 + 18)/2 = 13.5 EUR. Proportional check: 15 × 0.9 = 13.5 EUR.

Check: Use the ratio 9 EUR per 10 USD, i.e. 0.9 EUR per USD, and multiply by 15 to confirm 13.5 EUR.

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Source rubric / reflection

- [ ] Axes are labelled with the correct input and output units.
- [ ] Scale is equal-spaced and includes all table values.
- [ ] All table pairs are plotted as small crosses at correct coordinates.
- [ ] A straight line is drawn through the plotted points with a ruler.
- [ ] Interpolated readings are taken from the line and stated with units.
- [ ] A proportional check supports each interpolated value.
- [ ] Handwriting and letter style are legible and consistent; alternative legible styles are accepted.

Reflection: What did you check, what did you change, and what will you try next?