

Foundation GCSE: Drawing Real-Life Graphs

Name: _____

Class: _____

Instructions: Answer all questions. Questions are ordered from easiest (1) to hardest (20). Working out should be shown where appropriate.

1. Plot the points $(0, 0)$, $(1, 10)$, $(2, 20)$ for a taxi fare formula $C = 10t$ and draw the straight line.
2. Determine a suitable scale on the y-axis for values ranging from 0 to 140 using a 14 cm grid axis.
3. Draw the line $C = 5 + 4h$ for values of h from 0 to 5.
4. Find the y-intercept of the line drawn in Q3 from your graph.
5. Plot a distance-time graph for a person walking 4 km/h for 3 hours.
6. Sketch a velocity-time graph showing acceleration to 15 m/s in 5 s, constant speed for 10 s, then stopping in 5 s.
7. Complete a table of values for $C = 20 + 3m$ where $m = 0, 5, 10, 15$.
8. Plot the points from Q7 and draw the straight line graph.
9. Draw a conversion graph for pounds (£) to Euros (€) using exchange rate $\text{£}1 = \text{€}1.20$ for up to £50.
10. Use the graph in Q9 to find how many Euros you get for £35.
11. Sketch a quadratic graph representing height of a ball $h(t) = 20t - 5t^2$ for t from 0 to 4.
12. Identify the peak (maximum height) and time of peak from your sketch in Q11.
13. Draw a line of best fit on a scatter graph with positive correlation passing through data points.
14. Use the line of best fit in Q13 to estimate y when $x = 12$.
15. Sketch an exponential growth graph for bacteria $N = 100 \times 2^t$ for $t = 0, 1, 2, 3$.
16. Label axes correctly with physical quantities and units for a graph plotting fuel consumption against speed.
17. Draw a step graph for parking charges: up to 2 hours is £3, each subsequent hour is £2.
18. Sketch a conversion graph for miles to kilometres using $5 \text{ miles} \approx 8 \text{ km}$.
19. Draw a cumulative frequency graph skeleton with correct labelling of lower and upper class boundaries.
20. Sketch a piecewise linear graph representing a journey with a stationary stop and varied speeds across 4 distinct time intervals.

Answers & Worked Solutions

1. Points $(0, 0)$, $(1, 10)$, $(2, 20)$ plotted and joined with a straight line.
2. 0 to 140 with intervals of 10 per cm.
3. Straight line passing through $(0, 5)$ and $(5, 25)$.
4. £5 – Y-intercept of $C = 5 + 4h$.
5. Line starting at $(0, 0)$ to $(3, 12)$.
6. Ramp up from $(0, 0)$ to $(5, 15)$, horizontal to $(15, 15)$, drop to $(20, 0)$.
7. 20, 35, 50, 65 – Substitute $m = 0, 5, 10, 15$.
8. Points plotted and connected with a straight line.
9. Straight line from $(0, 0)$ to $(50, 60)$.
10. €42 – Read from graph at £35.
11. Parabola peaking at vertex $(2, 20)$.
12. Maximum height is 20 m at $t = 2$ s.
13. A line passing centrally through scatter points with balanced residuals.
14. Estimated value corresponding to $x = 12$ on trend line.
15. Points $(0, 100)$, $(1, 200)$, $(2, 400)$, $(3, 800)$ connected with smooth curve.
16. Speed (mph) on x-axis, Fuel Consumption (mpg) on y-axis.
17. Horizontal steps at £3 for $0 < t \leq 2$, rising by £2 for each extra hour.
18. Straight line passing through origin and $(5, 8)$.
19. Cumulative frequency on y-axis, upper boundaries on x-axis.
20. Connected line segments showing speed changes over time.