Test - Real-life graphs

Year: Year 9 · Duration: 45 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – A journey graph

A van leaves a depot. For the first 2 hours it travels 80 km. It then stops for 30 minutes. For the next 1.5 hours it travels a further 90 km.

a. Find the speed in the first 2 hours. (1 mark)
b. For how many minutes is the van stationary? (1 mark)
c. Find the speed in the last 1.5 hours. (1 mark)
d. Find the total distance. (1 mark)

Question 2 (4 marks)

Question 2 – A conversion formula

The formula $F = 1.8C + 32$ converts degrees Celsius to degrees Fahrenheit.

a. Convert 35°C to $^\circ$F. (1 mark)
b. Convert 68°F to $^\circ$C. (1 mark)
c. What does the number 1.8 tell you about the graph? (1 mark)
d. Show that -40°C is the same as -40°F. (1 mark)

Question 3 (4 marks)

Question 3 – A mobile plan

A plan costs £12 per month for up to 4 GB of data, then £3 for each extra GB.

a. Find the cost for 3 GB. (1 mark)
b. Find the cost for 7 GB. (1 mark)
c. Find the cost for 10 GB. (1 mark)
d. A customer pays £27. How much data did she use? (1 mark)

Question 4 (4 marks)

Question 4 – Problem: savings that grow

Ben invests £500. It grows by 4% each year. Its value after t years is $V = 500 \times 1.04^t$.

a. Find the value after 1 year. (1 mark)
b. Find the value after 3 years to the nearest penny. (1 mark)
c. After how many years does the value first exceed £600? Show the values for 4 and 5 years. (2 marks)

Question 5 (4 marks)

Question 5 – Problem: sharing work

The time t hours for n volunteers to clear a field is $t = \dfrac{36}{n}$.

a. Find t for 4 volunteers. (1 mark)
b. Find t for 9 volunteers. (1 mark)
c. How many volunteers are needed to finish in 3 hours? (1 mark)
d. Describe the shape of the graph of t against n. (1 mark)