10.4 Graphical Skills: Line Graphs, Bar Charts and Pie Charts: 30-minute Pack

Total Marks

AQA 8035 · Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer all questions. Questions 3, 4 and 7 require answers in full sentences. Allow approximately 30 minutes for this pack.

1 A divided bar chart is to be drawn from a survey of 200 households that records heating fuel: gas 90 households, electricity 50, oil 30, other 30. Calculate the percentage of households using gas and state it as a percentage with one decimal place, to be used on the divided bar.

(Total for Question 1 is 2 marks)

2 A research group collected monthly counts of a migrating bird arriving at a wetland: Feb 10, Mar 25, Apr 60, May 90, Jun 50. Which type of graph is best to show the peak month and the pattern of arrival, and give one short reason referring to the data?

(Total for Question 2 is 3 marks)

3 Figure A shows the monthly average temperature (°C) for a seaside town: Jan 6, Feb 7, Mar 9, Apr 12, May 15, Jun 18, Jul 20, Aug 20, Sep 17, Oct 13, Nov 9, Dec 6. Suggest a suitable graph to display this data and explain in one full sentence why it is suitable for these monthly temperature values.

(Total for Question 3 is 3 marks)

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4 A survey recorded the percentage of teenagers who use three social spaces after school: park 40%, youth club 25%, shopping area 35%. Suggest which chart would most clearly show the proportions and write one full-sentence justification referring to the data given.

(Total for Question 4 is 3 marks)

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5 A company records average daily customers in two stores on a typical week: Mon 50, Tue 60, Wed 55, Thu 65, Fri 80. Calculate the mean number of customers per day for the week. Give your answer to one decimal place.

(Total for Question 5 is 2 marks)

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6 Table shows bicycle traffic counts at two junctions at peak hour for five weekdays.

Day	Mon	Tue	Wed	Thu	Fri
Junction A	120	130	125	135	140
Junction B	80	85	90	95	100

Suggest the best way to plot both junctions on one graph so differences and trends are clear, and give three brief points you would check on the axes and key before plotting.

(Total for Question 6 is 4 marks)

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7 A small town recorded the following land-use percentages for a development plan: residential 40, commercial 15, industrial 10, open space 20, public services 10, other 5. Write one full sentence explaining why a pie chart might mislead viewers if the 'residential' slice is coloured very dark while others are pale.

(Total for Question 7 is 3 marks)

8 A pie chart is to be drawn using this land-use data for a park: lawns 35%, trees 25%, flower beds 15%, playground 10%, pond 5%, paths 10%. Calculate the angle in degrees for the 'lawns' sector and state it to one decimal place.

(Total for Question 8 is 6 marks)

9 Table shows weekly sales (units) of two flavours of ice cream over four weeks.

Week	1	2	3	4
Vanilla	120	140	160	150
Chocolate	100	130	150	170

Describe the pattern shown by the two lines if these data were plotted on a comparative line graph.

(Total for Question 9 is 4 marks)

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Mark scheme · 10.4 Graphical Skills: Line Graphs, Bar Charts and Pie Charts: 30-minute Pack

Question 1

method: 90 / 200 x 100 seen	**M1**
45.0% cao	**A1**

Answer: 45.0%

Question 2

line graph identified	**B1**
reason: it shows rise to a clear peak in May and subsequent fall, oe	**B1**
reference to the peak month value (90) or pattern required, oe	**B1**

Answer: A line graph, because it clearly shows the rapid increase to the peak in May (90 birds) and the fall afterwards.

Question 3

line graph identified	**B1**
because it shows change over time (months) clearly, oe	**B1**
reference to trend or seasonality in the explanation, e.g. to show gradual rise and fall through the year, oe	**B1**

Answer: A line graph, because it clearly shows how temperature changes through the months and reveals the seasonal rise to July/August and fall towards winter.

Question 4

pie chart identified	**B1**
reason: it shows proportions of a whole directly, oe	**B1**
reference to the given percentages in justification, e.g. park is the largest slice at 40%, oe	**B1**

Answer: A pie chart, because it shows the proportions of the whole directly, for example the park would be shown as the largest slice at 40%.

Question 5

method: (50+60+55+65+80)/5 seen	**M1**
62.0 cao	**A1**

Answer: 62.0

Question 6

suggestion: comparative line graph or two lines on one graph	**B1**
check 1: x-axis labelled with weekdays and evenly spaced, oe	**B1**
check 2: y-axis scale appropriate for the data (covering at least 80 to 140, starting at 0 or with a marked axis break) with consistent intervals, oe	**B1**
check 3: include a legend or key to distinguish Junction A and B, oe	**B1**

Answer: Plot both as lines on a comparative line graph. Check that the x-axis is labelled with weekdays and evenly spaced, and the y-axis scale includes 0 and goes up to at least 150 with regular intervals; include a legend to distinguish the two junctions.

Question 7

colour emphasis can give visual weight beyond the actual proportion, oe	**B1**
this could make residential appear more important than the numeric percentage warrants, oe	**B1**
statement in a full sentence required, oe	**B1**

Answer: Colouring the residential slice very dark could give it undue visual weight and make it seem more important than its actual 40% share, misleading viewers about the relative proportions.

Question 8

method: percentage x 360/100 or 35/100 x 360 seen	**M1**
126.0 degrees cao	**A1**
correct indication that total equals 360 degrees or noting other sectors sum to 360, oe	**B1**
correct rounding to one decimal place stated (126.0 degrees), oe	**B1**
final answer includes unit degrees, oe	**B1**
working shown that 35/100 x 360 = 126 or equivalent calculation seen, oe	**B1**

Answer: 126.0 degrees

Question 9

both flavours increase overall from week 1 to week 3, oe	**B1**
vanilla peaks in week 3 (160) then falls slightly in week 4 (150), oe	**B1**
chocolate rises steadily and continues to increase into week 4, reaching 170, oe	**B1**
by week 4 chocolate overtakes vanilla, oe	**B1**

Answer: Both flavours increase from week 1 to week 3; vanilla peaks at 160 in week 3 then falls to 150 in week 4, while chocolate continues to rise to 170 in week 4, so chocolate overtakes vanilla by week 4.

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