

Charts and graphs

Foundation tier

Total marks: 83

Marks

- M** Method mark, for a correct method. It can be implied by a correct answer.
- A** Accuracy mark, for a correct answer. It needs the method mark before it.
- B** A mark for a correct value or statement, with or without working.
- ft** Follow through: the mark is given for using an earlier wrong answer correctly.
- oe** Or equivalent.
- [a, b]** Any value from a to b inclusive.

Questions

Q	Skill	Spec	Tier	Grade	Calculator	Marks
1	Reading and drawing a bar chart	S2	Foundation	1	No	3
2	Reading and completing a pictogram	S2	Foundation	2	No	2
3	Drawing a bar chart	S2	Foundation	2	No	3
4	Reading a vertical line chart	S2 S4	Foundation	3	No	4
5	Completing a two-way table	S2	Foundation	3	No	3
6	Drawing a pie chart	S2	Foundation	3	No	4
7	Ordered stem and leaf diagram	S2 S4	Foundation	3	No	4
8	Interpreting a dual bar chart	S2	Foundation	3	No	4
9	Interpreting pie charts	S2	Foundation	4	No	5
10	Drawing a frequency polygon	S4	Foundation	4	No	3
11	Misleading charts	S2	Foundation	4	No	2
12	Comparing data in a back-to-back stem and leaf diagram	S4 S2	Foundation	5	No	4
13	Money from a two-way table	S2	Foundation	2	Yes	5
14	Pictogram with quarter symbols, and money	S2	Foundation	2	Yes	4
15	Reading a bar chart, and a cost	S2	Foundation	2	Yes	3
16	Pie chart angle from an awkward total	S2	Foundation	3	Yes	3

Q	Skill	Spec	Tier	Grade	Calculator	Marks
17	Reading a stem and leaf diagram of decimals	S2 S4	Foundation	3	Yes	4
18	Composite bar charts	S2 R9	Foundation	3	Yes	4
19	Time series graphs	S2 R9	Foundation	4	Yes	5
20	A two-way table from percentages and fractions	S2 R9 N12	Foundation	4	Yes	4
21	Frequency polygon: reading and estimating the mean	S4	Foundation	5	Yes	5
22	Pie charts: finding the total	S2	Foundation	5	Yes	5
	Total					83

Question 1 S2 · Foundation · Grade 1 · 3 marks

Q	Answer	Mark	Comments
1(a)	11	B1	
1(b)	9	B1	
1(c)	bar of height 13	B1	accept any width, above Hazel

Question 2 S2 · Foundation · Grade 2 · 2 marks

Q	Answer	Mark	Comments
2(a)	30	B1	
2(b)	one whole circle and three quarters of a circle	B1	in the Thursday row

Question 3 S2 · Foundation · Grade 2 · 3 marks

Q	Answer	Mark	Comments
3(a)	bars for blackbird 9, sparrow 12 and blue tit 3	B2	B1 for two bars correct
3(b)	$\frac{3}{10}$	B1	oe, eg $\frac{9}{30}$

Question 4 S2 S4 · Foundation · Grade 3 · 4 marks

Q	Answer	Mark	Comments
4(a)	9	B1	
4(b)	3	B1	
4(c)	$1 \times 4 + 2 \times 9 + 3 \times 13 + 4 \times 7 + 5 \times 2$	M1	oe, at least three correct products
	99	A1	

Question 5 S2 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
5	all six missing values correct	B3	Adults, top rope: 18; Adults, total: 53; Children, bouldering: 31; Children, lead: 7; Children, total: 67; Total, top rope: 47. B2 for 4 or 5 correct, B1 for 2 or 3 correct

Question 6 S2 · Foundation · Grade 3 · 4 marks

Q	Answer	Mark	Comments
6	$360 \div 45$ or 8	M1	oe, or one correct angle
	72° , 128° , 112° and 48°	A1	may be implied by the pie chart
	all four sectors drawn correctly	B1ft	$\pm 2^\circ$, ft their angles if they add to 360
	all sectors labelled	B1	

Question 7 S2 S4 · Foundation · Grade 3 · 4 marks

Q	Answer	Mark	Comments
7(a)	fully correct ordered diagram with a key	B3	B2 for all leaves correct but not ordered, or one error, or no key. B1 for at least two rows correct
7(b)	41	B1ft	ft their diagram

Question 8 S2 · Foundation · Grade 3 · 4 marks

Q	Answer	Mark	Comments
8(a)	42	B1	
8(b)	at least three correct daily totals	M1	60, 60, 64, 54, 74
	Friday	A1	with all five totals or a correct comparison
8(c)	No with a reason	B1	eg Tuesday: 28 in the morning and 32 in the afternoon. Thursday (24 and 30) or Friday (36 and 38) also show this

Question 9 S2 · Foundation · Grade 4 · 5 marks

Q	Answer	Mark	Comments
9(a)	94	B1	
9(b)	$\frac{84}{360} \times 180$ or $84 \div 2$	M1	oe
	42	A1	
9(c)	$\frac{72}{360} \times 180 (= 36)$ or $\frac{120}{360} \times 90 (= 30)$	M1	oe
	No with 36 and 30	A1	

Question 10 S4 · Foundation · Grade 4 · 3 marks

Q	Answer	Mark	Comments
10(a)	all five points plotted at the midpoints and joined with straight lines	B2	± half a small square. B1 for at least four points correct, or all five plotted at the ends or consistently within the classes and joined
10(b)	$40 < t \leq 60$	B1	oe

Question 11 S2 · Foundation · Grade 4 · 2 marks

Q	Answer	Mark	Comments
11	the vertical scale does not start at 0	B1	oe, eg Sunco's bar is three and a half times as tall as Volta's, but its bill is less than 10% more
	the vertical axis has no label or units	B1	oe, eg it does not say the amounts are in pounds; or the chart has no title

Question 12 S4 S2 · Foundation · Grade 5 · 4 marks

Q	Answer	Mark	Comments
12	medians 58 and 33	B1	
	ranges 31 and 39	B1	or interquartile ranges 17 and 16.5
	compares the medians in context	B1ft	eg people in the morning class are older on average
	compares the ranges in context	B1ft	eg the ranges show the ages in the evening class are more spread out. If interquartile ranges are used, the comparison must match them (morning 17, evening 16.5)

Question 13 S2 · Foundation · Grade 2 · 5 marks

Q	Answer	Mark	Comments
13(a)	150	B1	
13(b)	$46 \times 6.95 + 63 \times 4.80$	M1	oe, $319.70 + 302.40$
	£622.10	A1	
13(c)	$112 \times 9.40 + 38 \times 6.25 (= 1290.30)$	M1	oe
	£668.20	A1ft	ft their answer to (b)

Question 14 S2 · Foundation · Grade 2 · 4 marks

Q	Answer	Mark	Comments
14(a)	63 or 42	M1	a correct reading for Saturday or Friday
	21	A1	
14(b)	57×2.85	M1	oe, their reading for Sunday $\times 2.85$
	£162.45	A1	

Question 15 S2 · Foundation · Grade 2 · 3 marks

Q	Answer	Mark	Comments
15(a)	Week 4	B1	
15(b)	$92 \times 24.5 (= 2254)$	M1	oe, eg 92×0.245
	£22.54	A1	

Question 16 S2 · Foundation · Grade 3 · 3 marks

Q	Answer	Mark	Comments
16	$52 + 31 + 18 + 34$ or 135	M1	the total
	$\frac{52}{135} \times 360$ or $360 \div 135 \times 52$	M1	oe, ft their total
	139	A1	accept 139 or [138.6, 138.7]

Question 17 S2 S4 · Foundation · Grade 3 · 4 marks

Q	Answer	Mark	Comments
17(a)	14.0	B1	
17(b)	3.5	B1	
17(c)	$\frac{5}{17} \times 100$	M1	oe
	29.4	A1	accept 29.4 or [29.41, 29.42]

Question 18 S2 R9 · Foundation · Grade 3 · 4 marks

Q	Answer	Mark	Comments
18(a)	40	B1	
18(b)	$\frac{56}{116} \times 100$	M1	oe, their reading for drive $\div$ their total for North
	48.3	A1	accept 48.3 or [48.27, 48.28]
18(c)	No with 60 and 72	B1	

Question 19 S2 R9 · Foundation · Grade 4 · 5 marks

Q	Answer	Mark	Comments
19(a)	both points plotted correctly	B1	± half a small square
	joined to the graph with straight lines	B1	
19(b)	increasing	B1	oe, eg more are installed each year
19(c)	$\frac{165-40}{40} \times 100$ or $\frac{165}{40}$ (= 4.125)	M1	oe
	312.5	A1	accept 312 or 313

Question 20 S2 R9 N12 · Foundation · Grade 4 · 4 marks

Q	Answer	Mark	Comments
20	0.36×1450 (= 522) or 0.64×1450 (= 928)	M1	oe
	$\frac{3}{8} \times$ their 928 (= 348)	M1	oe
	their $522 - 247$ (= 275) or their $928 -$ their 348 (= 580)	M1	
	all eight values correct	A1	Under 30 camped: 275; Under 30 did not camp: 247; Under 30 total: 522; 30 and over camped: 348; 30 and over did not camp: 580; 30 and over total: 928; Total camped: 623; Total did not camp: 827

Question 21 S4 · Foundation · Grade 5 · 5 marks

Q	Answer	Mark	Comments
21(a)	13	B1	
21(b)	frequencies 6, 14, 17, 9, 4 with midpoints 2, 6, 10, 14, 18	M1	at least four pairs, may be in a table
	$2 \times 6 + 6 \times 14 + 10 \times 17 + 14 \times 9 + 18 \times 4$ (= 464)	M1	oe, at least four correct products
	their $464 \div 50$	M1	dep on the previous M1
	9.28	A1	accept 9.3

Question 22 S2 · Foundation · Grade 5 · 5 marks

Q	Answer	Mark	Comments
22(a)	$24\,000 \div 96$ or 250	M1	the amount for 1°, oe
	their 250×360	M1	oe, or $24\,000 \times \frac{360}{96}$
	£90 000	A1	
22(b)	$360 - 150 - 96 - 54$ or 60°	M1	
	£15 000	A1ft	ft their total $\times \frac{60}{360}$