

WA5MPSS1

Statistics

Core + Challenge

NAPLAN-style

Line Graphs — Marking Key

I can read, draw and describe line graphs that show how something changes over time.

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

Marks summary

A Warm up: 16 B Practise: 22 C Think it through: 10 D Challenge: 9 **Total: 57**

Gold shading in this key shows what the child should have shaded or drawn. Accept any correct arrangement unless the question fixes it.

A

Warm up *answers*

/ 16 marks

Q	Answer	Model answer / notes	Marks
1	Decreasing	The line goes down.	1
2	Increasing	The line goes up.	1
3	Increasing, then no change	Up, then flat.	1
4	No change	The line is flat.	1
5	Yes	Height is measured and changes over time.	1
6	No	Fruits are categories, not a change over time: use a column graph.	1
7	Yes	Temperature is measured and changes over time.	1
8	No	Counted categories for different students, not a change over time.	1
9	15 °C	Read up from 11 am: 15 °C.	1
10	19 °C at 3 pm	The highest point is at 3 pm.	1
11	10 °C	$18 - 8 = 10$.	1
12	9 am to 11 am	Rises: 3, 4, 3, 1. The biggest (4 °C) is 9 am to 11 am.	1
13	9 cm	Read up from week 3: 9 cm.	1
14	3 cm	$12 - 9 = 3$.	1
15	7 cm	Halfway between 5 cm and 9 cm. Accept 6 to 8 cm.	1
16	Week 5 to week 6	Growth each week: 2, 3, 4, 3, 2, 1. Least: 1 cm from week 5 to week 6.	1

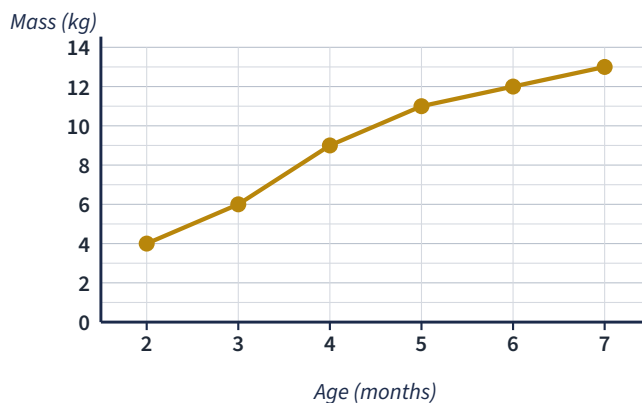
B

Practise *answers and working*

/ 22 marks

Q	Answer	Working / sample response	Marks
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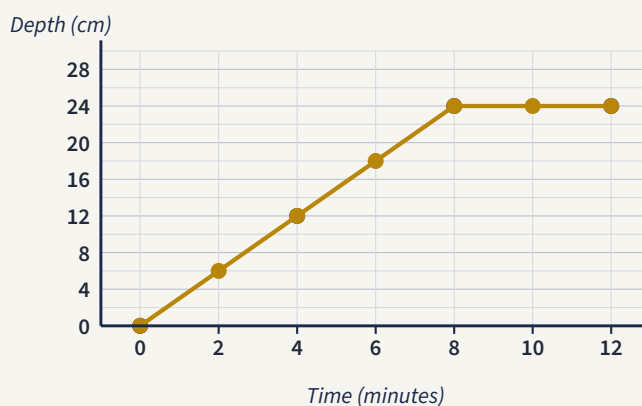
1 b) 3 to 4 months c) about 11½ kg



3

a) Points (2, 4), (3, 6), (4, 9), (5, 11), (6, 12), (7, 13) joined.
 b) Gains: 2, 3, 2, 1, 1 kg. The most (3 kg) is from 3 to 4 months.
 c) Halfway between 11 kg and 12 kg: about 11½ kg. Accept 11 to 12 kg.
1 mark: all six points plotted and joined.
1 mark: 3 to 4 months.
1 mark: 11 to 12 kg.

2 b) 8 minutes c) 15 cm



3

a) Missing points: 2 min 6 cm, 6 min 18 cm, 10 min 24 cm.
 b) The line becomes flat after 8 minutes, so the hose was turned off at 8 minutes.
 c) Halfway between 12 cm (4 min) and 18 cm (6 min): 15 cm.
1 mark: three points plotted and all joined.
1 mark: 8 minutes.
1 mark: 15 cm (accept 14 to 16).

3 a) Aug and Sep b) falls, rises in winter, falls

2

a) August and September (5000 L).
 b) The water fell from January to April (hot, dry summer; water was used), rose from May to August (winter rain), then fell again.
1 mark: August and September.
1 mark: describes the fall-rise-fall with a sensible reason (seasons / rain).

4 1 C, 2 B, 3 A

2

1: a candle gets shorter: the line goes down (C).
 2: warms up, then cools down in the evening (B).
 3: water rises, then stays the same (A).
2 marks: all three. 1 mark: one correct.

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Q	Answer	Working / sample response	Marks										
5	a) 8 °C b) 2 pm c) Perth 16 °C, Albany 8 °C; Perth	a) $24 - 16 = 8$ °C. b) Both were warmest at 2 pm (Perth 28 °C, Albany 18 °C). c) Perth: $28 - 12 = 16$ °C. Albany: $18 - 10 = 8$ °C. Perth warmed up more (8 °C more than Albany). <i>1 mark each part (c: both amounts and Perth).</i>	3										
6	a) B b) 8 km	a) The line is flat: his distance from home did not change, so he stopped. b) 8 km. <i>1 mark: B.</i> <i>1 mark: 8 km.</i>	2										
7	a) 90 cm b) 9 am c) 9 hours	a) Read up from 6 am: 90 cm. b) The highest point (100 cm) is at 9 am. c) The line goes up from 12 am to 9 am: 9 hours. <i>1 mark each part.</i>	3										
8	150, 300, 350, 200; 5 minutes	<table><tr><th>Time (min)</th><th>Height (m)</th></tr><tr><td>5</td><td>150</td></tr><tr><td>10</td><td>300</td></tr><tr><td>15</td><td>350</td></tr><tr><td>25</td><td>200</td></tr></table> Read up from each time: 5 min 150 m, 10 min 300 m, 15 min 350 m, 25 min 200 m. The line is flat from 15 to 20 minutes: 5 minutes. <i>1 mark: all four heights.</i> <i>1 mark: 5 minutes.</i>	Time (min)	Height (m)	5	150	10	300	15	350	25	200	2
Time (min)	Height (m)												
5	150												
10	300												
15	350												
25	200												
9	a) 28 cm b) 7 and 8	a) $138 - 110 = 28$ cm. b) Growth: 6, 6, 4, 6, 6 cm. The least (4 cm) is from age 7 to age 8. <i>1 mark each part.</i>	2										

C

Think it through *sample answers and criteria*

/ 10 marks

Q	Answer	Working / sample response	Marks
1	Sometimes	A growing plant: the highest point is at the end. A day's temperature: the highest point is in the afternoon, in the middle. So it is only sometimes true. <i>1 mark: Sometimes.</i> <i>1 mark: one example each way.</i>	2
2	Not necessarily: it is an estimate	19 °C is halfway between 16 and 22, so it is a good estimate for 10:30 am. But she did not measure it. The temperature may not have risen steadily (a cloud or a breeze could change it), so she cannot be sure. <i>1 mark: says it is only an estimate / cannot be sure.</i> <i>1 mark: explains the temperature between readings was not measured and may not change steadily.</i>	2

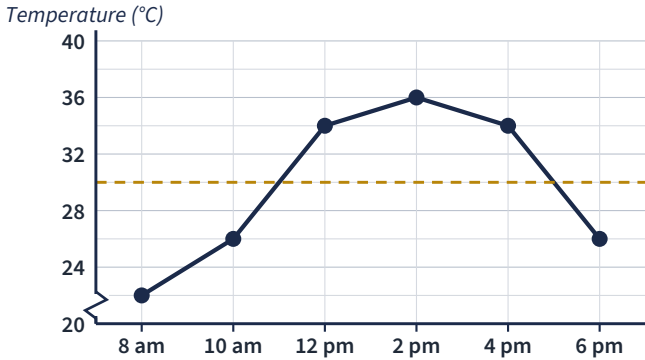
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Q	Answer	Working / sample response	Marks
3	C	A, B and D are measurements that change over time, so they suit a line graph. C is a count for each category (year level), not a change over time: use a column graph. <i>1 mark: C.</i> <i>1 mark: explains the others change over time. Accept another choice only with a correct reason.</i>	2
4	No: 25 cm	Each gridline is worth 5 cm, not 1 cm (the labels go up in 10s with one gridline between). The week 3 point is halfway between 20 and 30, so it is 25 cm. <i>1 mark: disagrees, 25 cm.</i> <i>1 mark: explains each gridline is 5 cm (he counted in ones).</i>	2
5	False	A line graph shows how something changes over time. Favourite sports are categories, so a column graph or pictograph is better. <i>1 mark: False.</i> <i>1 mark: explains line graphs are for change over time; suggests a column graph or pictograph.</i>	2

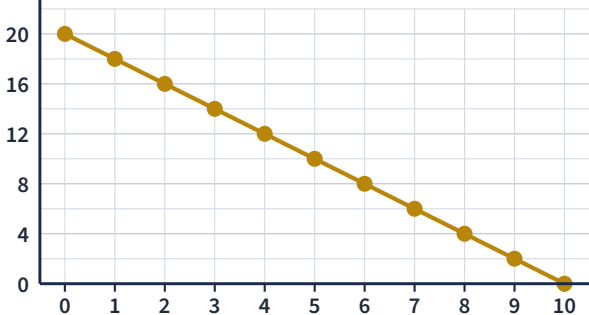
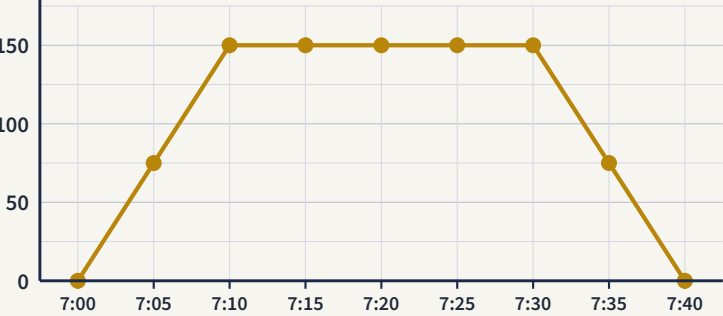
D

Challenge solutions and criteria

/ 9 marks

Q	Answer	Working / sample response	Marks
1	a) 11 am b) 5 pm c) 6 hours	Temperature (°C)  a) 26 °C at 10 am and 34 °C at 12 pm: 30 °C is halfway, at about 11 am. b) 34 °C at 4 pm and 26 °C at 6 pm: halfway, at about 5 pm. c) 11 am to 5 pm = 6 hours. <i>1 mark: about 11 am.</i> <i>1 mark: about 5 pm.</i> <i>1 mark: 6 hours (follow through).</i>	3

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Q	Answer	Working / sample response	Marks
2	b) 12 cm c) 10 hours	Height (cm)  Time (hours) a) It burns $20 - 14 = 6$ cm in 3 hours: 2 cm each hour. The line goes through 20 cm at 0 hours and 14 cm at 3 hours. b) $20 - 4 \times 2 = 12$ cm. c) $20 \div 2 = 10$ hours. 1 mark: straight line through 20 cm at 0 h and 14 cm at 3 h, reaching 0 at 10 hours. 1 mark: 12 cm. 1 mark: 10 hours.	3
3	b) 75 L c) 7:35	Water in the bath (litres)  Time a) Points: 7:00 0, 7:05 75, 7:10 150, then 150 until 7:30, 7:35 75, 7:40 0. b) Halfway through filling: 75 L. c) Halfway through emptying: 7:35. 1 mark: graph drawn correctly (rise, flat, fall at the right times). 1 mark: 75 L. 1 mark: 7:35.	3