Mark schemes

Q1.

(a) $\frac{3}{10}$ or 0.3 or 30%

B1

(b) strong positive

B1

(c) Straight ruled line of best fit

Through (30, 1) to (35, 1)

and (60, 6) to (65, 6)

B1

4

B1

(d) Refers to danger when extrapolating outside the range of the data given
or
Refers to difficulty of interpolation at certain points
eg 35 lessons suggests 1 or 2 tests

oe

eg line of best fit might not continue

eg 20 lessons suggests 0 tests

B1

[5]

Q2.

Straight ruled line of best fit

Through (1, 9000) to (1, 10 000) and (8, 800) to (8, 1800)

B1

3400

Reads correctly from their straight line of best fit with negative gradient

Within $\frac{1}{2}$ *square*

SC1 [3200, 3800] with no straight line of best fit drawn

B1ft

[2]

Q3.

(a) Higher temperature lower soup sales

Lower temp more soup sold

B1

Additional Guidance

Less soup when warm

Sales go down as temperature goes up

B1

Sell more soup when it is cold

B1

As temperature gets higher the soup gets lower

B1

The hotter the day is the less people want soup because it is hot

B1

The hotter the temperature the less likely someone is going to buy soup

B1

When more soup is sold the weather gets colder

B0

Soup sales depend on temperature

B0

Negative correlation

B0

As the temperature decreases the monthly sales of soup decreases

B0

As the soup gets hotter the sales go down

B0

The lower the average the more sales of soup

B0

It decreases as monthly temperature increases

B0

(b) **Alternative method 1**

Straight line of best fit drawn

Line of best fit must be long enough to go between [(4, 460), (4, 600)] and [(22.5, 120) , (25, 180)]

M1

470

ft their line if M1 awarded (± ½ small square accuracy)

Must be read from 7 (± ½ small square)

SC1 no LOBF or wrong LOBF and answer in range [420, 540]. If point shown must be at 7 (± ½ small square)

A1ft

Alternative method 2

Chooses (4, 560) and any other point ($x1$, $y1$) or (10, 390)

Calculates $560 - 3 \times \frac{(560 - y_1)}{x_1 - 4}$

or $y_1 + \frac{(x_1 - 7)(560 - y_1)}{(x_1 - 4)}$

M1

Correct answer for their chosen value
(10, 390) gives 475
Value given to 3 sf at least

8.5	480	507
9.5	380	462
10.5	400	486
11.5	360	480
13.5	300	478
15	360	505
16.5	260	488
19	300	508
21.5	240	505
22.5	120	489
25	180	506

SC1 interpolation does not score M1 but answer in range [420, 540]

A1

Additional Guidance

(4, 560) to (10, 390)
(4 + 10) ÷ 2 = 7
(560 + 390) ÷ 2 = 475

M1, A1

(4, 560) to (8.5, 480)
480 + (1.5 ÷ 4.5) × (560 – 480)
506.66

M1, A1

Line of best fit in range and answer in range but read from 7.5

M1, A0

[3]

Q4.

(a) LOBF drawn. Must be a straight line between (15, [110, 120]) to (25, [150, 170])

M1

Value read from LOBF at h = 145, may be rounded or truncated to nearest integer

ft their line ± ½ square

SC1 answer in range [21, 23] with M0 scored

A1ft

(b) Complete answer

Correct substitution

Correct evaluation and conclusion

Person	Length	Value (calculated, stated)	Conclusion
A	11	104 (108)	No
B	25	160 (160)	Yes
C	18	132 (140)	No
D	28	172 (180)	No

E	15	120 (120)	Yes
F	21	144 (140)	No
G	17	128 (118)	No
H	26	164 (164)	Yes
I	13	112 (100)	No
J	24	156 (150)	No

or $h = 4f + 60$ drawn and correct conclusion eg B is OK because on line

B1 for correct substitution with incorrect evaluation and correct conclusion for their value

B1 for correct substitution with partial evaluation and correct conclusion for their value if it had been evaluated

B1 for correct substitution with correct evaluation and incorrect conclusion for their value

B1 if $h = 4f + 60$ drawn

B2

[4]

Q5.

(a) All 3 points correctly plotted

$\pm\frac{1}{2}$ *sq* *Ignore extras*

B1

(b) Negative correlation

or

As the time spent learning words increased, the number of incorrect words decreased

oe

B1

(c) Line of best fit drawn

Between (3, 5) to (3, 6) to between (7, 1) and (7, 3)

And at least from 3 to 7 horizontally

M1

4

ft a correct lobf

Accept integer answers only

SC1 for 3 or 4 if no lobf or incorrect lobf

A1

(d) No line of best fit may change

or No Line of best fit cannot continue in the same way (becomes negative)

Not possible to be sure mistake is not made in test/pressure of test/human error/different individuals

Cannot say as 12 is beyond the range of the data

oe

B1

[5]

Q6.

(a) All four points plotted correctly
(275, 125), (150, 190), (125, 225), (180, 175)

B1 for two or three correct plots

B2

(b) Appropriate line of best fit

A straight line at least 4 squares wide which goes through, or would go through, the two gates (125, 175 – 225) and (275, 75 – 125)

B1

(c) Correct reading from their graph

ft their negative, straight line of best fit

If B0 awarded in (b), accept answer in range [145, 150]

B1ft

Additional Guidance

Allow ±½ square tolerance but condone rounding up to the next 5 or down to the previous 5

[4]