



Data Calculator

Revision Pack



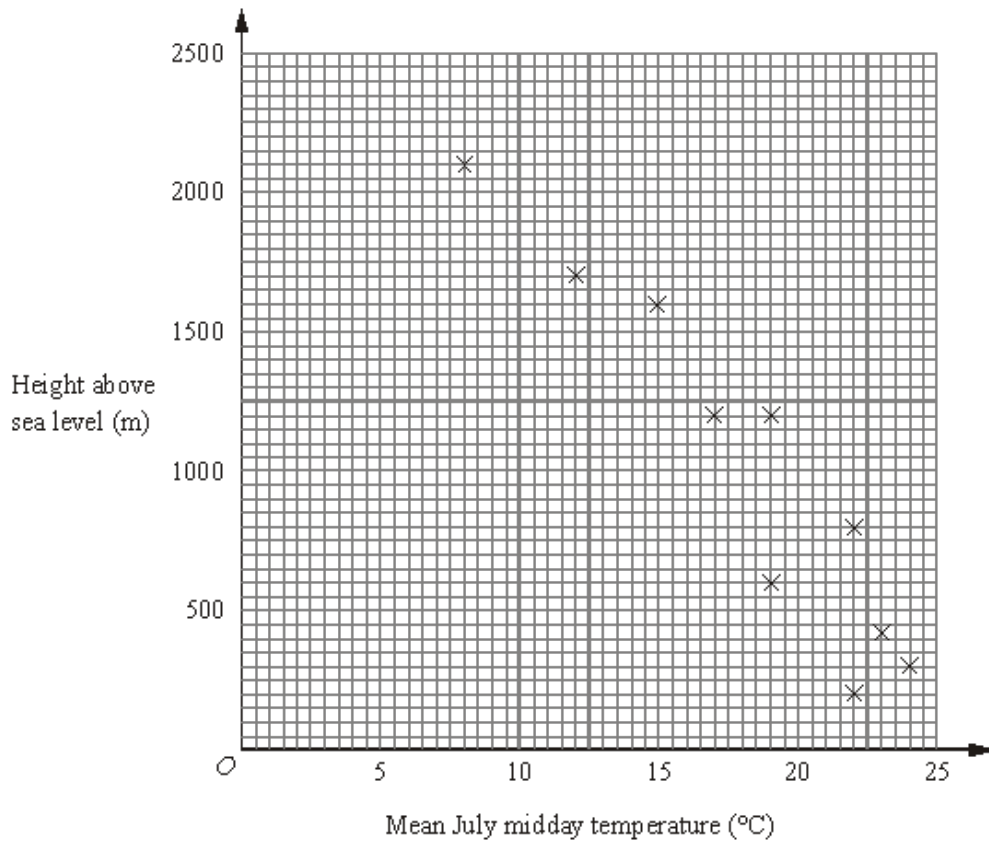
34 minutes



35 marks

To use alongside mymaths.co.uk and livemaths.co.uk to revise for your GCSE exam

Q1. The scatter graph shows information for some weather stations. It shows the height_ of each weather station above sea level (m) and the mean July midday temperature ($^{\circ}\text{C}$) for that weather station.



The table shows this information for two more weather stations.

Height of weather station above sea level (m)	1000	500
Mean July midday temperature ($^{\circ}\text{C}$)	20	22

(a) Plot this information on the scatter graph. (1)

(b) What type of correlation does this scatter graph show?
 (1)

(c) Draw a line of best fit on the scatter graph. (1)

A weather station is 1800 metres above sea level.

(d) Estimate the mean July midday temperature for this weather station.
 $^{\circ}\text{C}$ (1)

At another weather station the mean July midday temperature is 18°C.

(e) Estimate the height_ above sea level of this weather station.

..... m

(1)
(Total 5 marks)

Q2. There are 3 red pens, 4 blue pens and 5 black pens in a box.
Sameena takes a pen, at random, from the box.

(a) Write down the probability that she takes a black pen.

.....

(2)

(b) Write down the probability that Sameena takes a pen that is **not** black.

.....

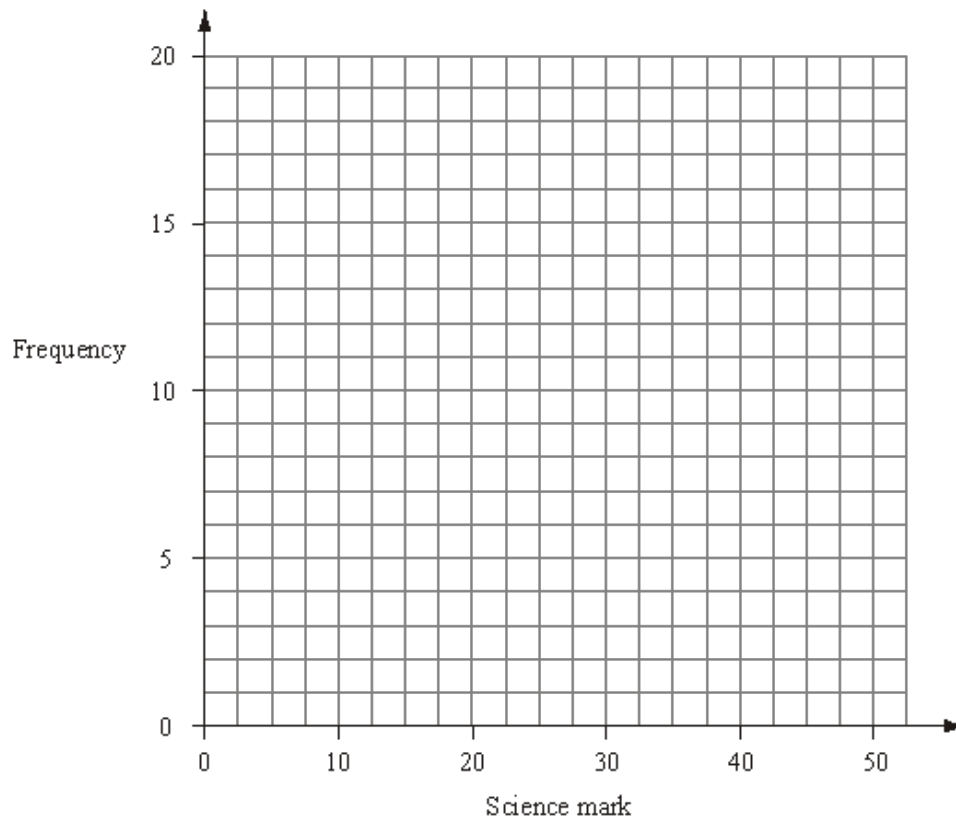
(1)
(Total 3 marks)

- Q3.** 60 students take a science test.
The test is marked out of 50.

This table shows information about the students' marks.

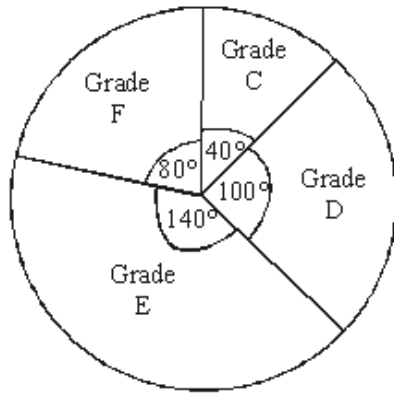
Science mark	0–10	11–20	21–30	31–40	41–50
Frequency	4	13	17	19	7

On the grid, draw a frequency polygon to show this information.



(Total 2 marks)

Q4. The pie chart gives information about the mathematics exam grades of some students.



Mathematics exam grades

Diagram **NOT** accurately drawn

(a) What grade was the mode?

.....

(1)

(b) What fraction of the students got grade D?

.....

(1)

8 of the students got grade C.

(c) (i) How many of the students got grade F?

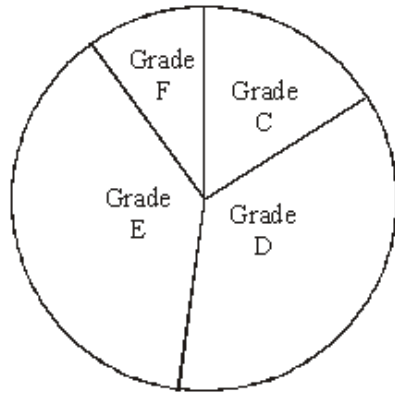
.....

(ii) How many students took the exam?

.....

(3)

This accurate pie chart gives information about the English exam grades for a different set of students.



English exam grades

Sean says “More students got a grade D in English than in mathematics.”

- (d) Sean could be **wrong**.
Explain why.

.....
.....

(1)
(Total 6 marks)

Q5. Majid carried out a survey of the number of school dinners 32 students had in one week.

The table shows this information.

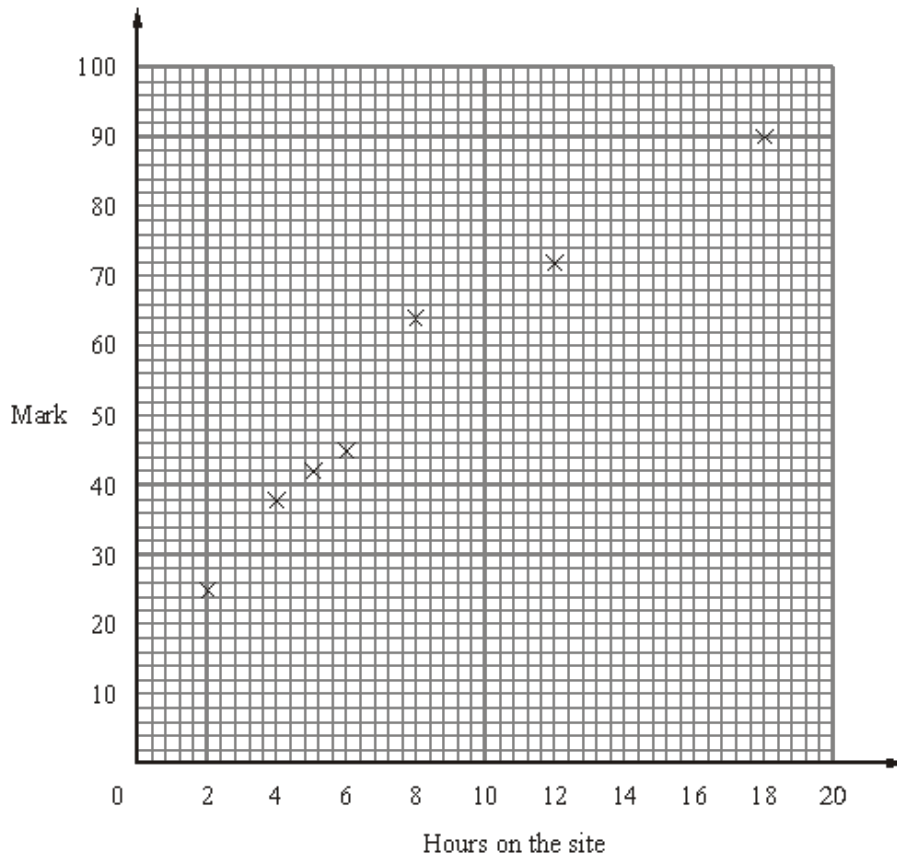
Number of school dinners	Frequency	
0	0	
1	8	
2	12	
3	6	
4	4	
5	2	

Calculate the mean.

.....

(Total 3 marks)

Q6. Some students revised for a mathematics exam. They used an internet revision site. The scatter graph shows the times seven students spent on the internet revision site and the marks the students got in the mathematics exam.



Here is the information for 3 more students.

Hours on the site	7	10	16
Mark	50	56	78

- (a) Plot this information on the scatter graph. (1)
- (b) What type of correlation does this scatter graph show?

- (1)
- (c) Draw a line of best fit on the scatter graph. (1)

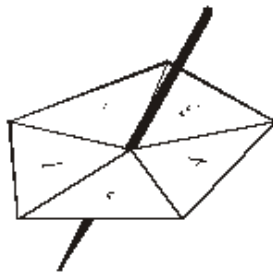
A student spent 11 hours on the internet revision site.

(d) Use the line of best fit to estimate this student's mathematics exam mark.

.....

(1)
(Total 4 marks)

Q7. Here is a 5-sided spinner.



The sides of the spinner are labelled 1, 2, 3, 4 and 5

The spinner is biased.

The probability that the spinner will land on each of the numbers 1, 2, 3 and 4 is given in the table.

Number	1	2	3	4	5
Probability	0.15	0.05	0.2	0.25	x

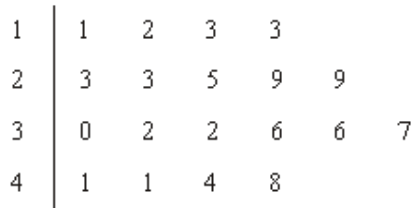
Work out the value of x .

$x =$

(Total 2 marks)

Q8. Jason collected some information about the height_s of 19 plants.

This information is shown in the stem and leaf diagram.



Key: 4|8 means 48mm

Find the median.

..... mm

(Total 2 marks)

Q9. Sethina recorded the times, in minutes, taken to repair 80 car tyres. Information about these times is shown in the table.

Time (t minutes)	Frequency		
$0 < t \leq 6$	15		
$6 < t \leq 12$	25		
$12 < t \leq 18$	20		
$18 < t \leq 24$	12		
$24 < t \leq 30$	8		

Calculate an estimate for the mean time taken to repair each car tyre.

..... minutes

(Total 4 marks)

Q10. The table shows information about the number of hours that 120 children used a computer last week.

Number of hours	Frequency
$0 < h \leq 2$	10
$2 < h \leq 4$	15
$4 < h \leq 6$	30
$6 < h \leq 8$	35
$8 < h \leq 10$	25
$10 < h \leq 12$	5

Work out an estimate for the mean number of hours that the children used a computer. Give your answer to 2 decimal places.

..... cm

(Total 4 marks)

M1.

	Working	Answer	Mark	Additional Guidance
(a)	Points plotted		1	B1 points plotted ± 1 full smallest square tolerance.
(b)		Negative	1	B1
(c)		lobf	1	B1 lobf that goes between (8,2000) and (8,2400) and between (24,0) and (24,500)
(d)		11-13	1	B1 11-13 or ft (tol ± 1 square) from single straight line segment with a negative gradient
(e)		850-1150	1	B1 850-1150 or ft (tol ± 1 square)) from single straight line segment with a negative gradient
Total for Question: 5 marks				

M2.

	Working	Answer	Mark	Additional Guidance
(a)		$\frac{5}{12}$	2	M1 for $\frac{n}{12}$ or $n \div 12$ or $\frac{n}{3+4+5}$ or $n \div (3+4+5)$ where n is an integer ≤ 12 A1 $\frac{5}{12}$ or 0.41(6...) or 41.6%
(b)	$1 - \frac{5}{12}$	$\frac{7}{12}$	1	B1 ft $1 - \frac{5}{12}$ provided the answer is positive, or $\frac{7}{12}$ or 0.58(3...)
Total for Question: 3 marks				

M3.

Answer	Mark	Additional Guidance
Polygon	2	B2 Complete polygon (ignore histograms and any lines below a mark of 5 or above a mark of 45), but award B1 if there is a line joining the first to the last point. (B1 One vertical or horizontal plotting error OR incorrect but consistent error in placing the midpoints horizontally OR correct plotting but not joined). Plotting tolerance :1/2 square; points to be joined by lines (ruled or hand drawn, but not curves).
Total for Question: 2 marks		

M4.

	Working	Answer	Mark	Additional Guidance
(a)		Grade E	1	B1 for E, e Grade E, e, or 140°
(b)		100/360	1	B1 5/18 oe
(c)(i)	$8 \times 2 = 16$	16	3	B1 cao
(ii)	$360/40 \times 8 = 72$	72		M1 360/40 \times 8 oe, or 360/80 \times "16" oe, or "16" \times 4.5 or attempts to find an association eg 8 + 16 + 20 + 28 A1 cao or ft from (i)
(d)		Reason	1	B1 reason (eg %, not actual numbers; do not know how many students, etc)
Total for Question: 6 marks				

M5.

Working	Answer	Mark	Additional Guidance
$(0 \times 0) + 1 \times 8 + 2 \times 12 + 3 \times 6 + 4 \times 4 + 5 \times 2$ $=76$ $76 \div ((0) + 8 + 12 + 6 + 4 + 2)$	2.375	3	M1 for 1×8 and 2×12 and 3×6 and 4×4 and 5×2 condone one error or sight of 76. M1 (dep on 1st M1) for $\sum fx + \sum f$ A1 for 2.375 or 2.37 or 2.38 or 2.4
Total for Question: 3 marks			

M6.

	Answer	Mark	Additional Guidance
(a)	3 plotted correctly	1	B1 \pm 1square
(b)	Positive	1	B1 for positive (correlation)
(c)	LOBF	1	B1 for line within guidelines; line goes from between (2, 18) and (2, 32) to between (16, 78) and (16, 90)
(d)	62 – 67	1	B1 for 62 – 67 OR ft from a single straight line graph of positive gradient \pm 1 square
Total for Question: 4 marks			

M7.

Working	Answer	Mark	Additional Guidance
$1 - (0.15 + 0.05 + 0.20 + 0.25)$	0.35	2	M1 for $1 - (0.15 + 0.05 + 0.20 + 0.25)$ A1 for 0.35 oe
Total for Question: 2 marks			

M8.

Answer	Mark	Additional Guidance
30	2	M1 for finding the middle value or indication of 0, 29, 29.5, 30.5, 31, 31.5, 32 or writing “10 th value” oe A1 cao
Total for Question: 2 marks		

M9.

Working	Answer	Mark	Additional Guidance
$15 \times 3 = 45$ 15×3.5 $25 \times 9 = 225$ 25×9.5 $20 \times 15 = 300$ 20×15.5 $12 \times 21 = 252$ 12×21.5 $8 \times 27 = 216$ 8×27.5 $1038 \div 80 =$ $1078 \div 80 =$	12.97 - 13.48	4	M1 for fx consistently within interval including ends (allow 1 error) M1 (dep) consistently using appropriate midpoints M1 (dep on first M) for $\Sigma fx \div \Sigma f$ A1 for 12.97 – 13.48
Total for Question: 4 marks			

M10.

Working	Answer	Mark	Additional Guidance
$\frac{10 + 45 + 150 + 245 + 225 + 55}{120}$	6.08 hours	4	M1 for mid interval values M1 for multiplying frequencies by mid-interval values M1 for adding (freq \times mid-interval values) \div 120 A1 cao
Total for Question: 4 marks			

