

## Cycle 1 mock exam preparation: aiming for a grade 9 (higher)

W/C Monday 29 September

Revision timetable:

	Monday 29 September	Tuesday 30 September	Wednesday 1 October	Thursday 2 October	Friday 3 October	Saturday 4 October	Sunday 5 October
<b>Securing a grade 5, aiming for a grade 6: higher</b>	<ul style="list-style-type: none"> <li>• Mean, median, mode and range</li> </ul>	<ul style="list-style-type: none"> <li>• Frequency tables</li> </ul>	<ul style="list-style-type: none"> <li>• Scatter graphs</li> </ul>	<ul style="list-style-type: none"> <li>• Cumulative frequency</li> </ul>	<ul style="list-style-type: none"> <li>• Fraction arithmetic</li> </ul>	<ul style="list-style-type: none"> <li>• Fractions of amounts</li> </ul>	<ul style="list-style-type: none"> <li>• Fractions – worded problems</li> </ul>

### Notes

- 20 marks = 20 minutes (time yourself!)
- Show all of your working out
- Use the link to CorbettMaths to look at videos to support

**Mode** – the number that appears the most

**Median** – the number in the middle (when the numbers are in order)

**Mean** – the average of all the numbers (add together and divide by how many numbers there are)

**Range** – the biggest subtract the smallest

1. Here are seven cards. Each card has a number on it.

12	5	10	18	12	11	9
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- a) Work out the range of the numbers on the cards

(3 marks)

(1 mark)

- b) Work out the median of the numbers on the cards

(2 marks)

- c) Work out the mean of the numbers on the cards

(2 marks)

2. Reece has seven number cards, each with a positive number on it. Shown below are the numbers on five of the cards.

8	11	5	14	10		
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The range of the numbers is 16  
The mode is 8

Work out the two missing numbers.

(2 marks)

3. Maya is growing sunflowers.  
The tallest sunflower is 1.4 metres.  
The range of the heights is 58 centimetres.

Find the height of the shortest sunflower.  
Include units for your answer.

4. In Tia's pencil case she has

6 pencils that have a mean mass of 7g  
10 pens that have a mean mass of 12g  
4 markers with a mean mass of 15g

Find the mean mass of the 20 items in Tia's pencil case.

(3 marks)

5. Walter has 5 baskets of apples.

There are 9 apples in each of three of the baskets.  
There are 24 apples in each of the other two baskets.

Work out the mean number of apples per basket.

(3 marks)

1. The table shows the ages of the players in an under-21 rugby squad.

Age	Frequency
18	5
19	5
20	9
21	4

- a) Find the range from the table

(1 mark)

- b) Find the mode

(1 mark)

- c) Find the mean

(2 marks)

2. The table gives information about the number of pets owned by each of 30 students in a class.

Number of pets	Frequency
0	11
1	12
2	6
3	1

- a) Find the median

(2 marks)

- b) Find the range from the table

(1 mark)

- c) Find the mode

(1 mark)

- d) Find the mean

(2 marks)

3. The table shows the number of sweets in 20 bags.

Number of sweets	Frequency
23	1
24	4
25	9
26	3
27	3

Calculate the mean.

(3 marks)

4. Thirty students were asked how many cats they owned. The results are shown in the table.

Number of cats	Number of children
0	6
1	13
2	7
3	3
4	1

Calculate the mean number of cats owned per child.

(3 marks)

## Scatter Graphs

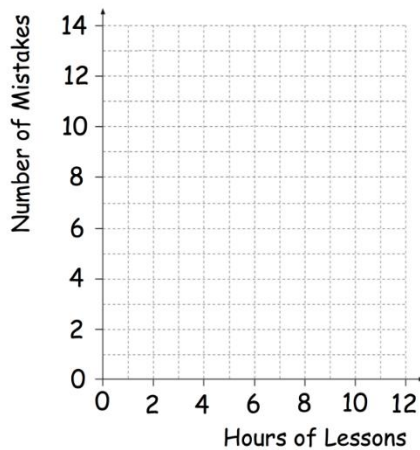
- You MUST draw a line of best fit!

1. Eight students sat a music test.

The table shows information about how many hours of lessons they had and the number of mistakes made in the test.

Hours of lessons	8	2	5	3	10	7	11	6
Number of mistakes	8	12	7	9	2	6	1	5

- (a) Show this information on the scatter graph below.



A student is awarded a prize if they make less than 3 mistakes.

- (b) How many students are awarded a prize?

(2)

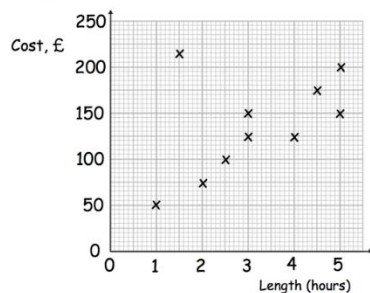
- (c) Complete the sentence below.

Generally the more hours of lessons, the ..... mistakes are made.

(1)

(1)

2. Mr Hamill is a plumber.  
The scatter graph shows the cost and length of his last 10 jobs.



Circle the outlier.

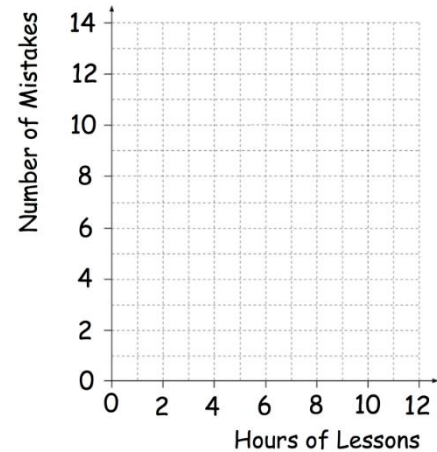
(1)

3. Eight students sat a music test.

The table shows information about how many hours of lessons they had and the number of mistakes made in the test.

Hours of lessons	8	2	5	3	10	7	11	6
Number of mistakes	8	12	7	9	2	6	1	5

- (a) Show this information on the scatter graph below.



(2)

A student is awarded a prize if they make less than 3 mistakes.

- (b) How many students are awarded a prize?

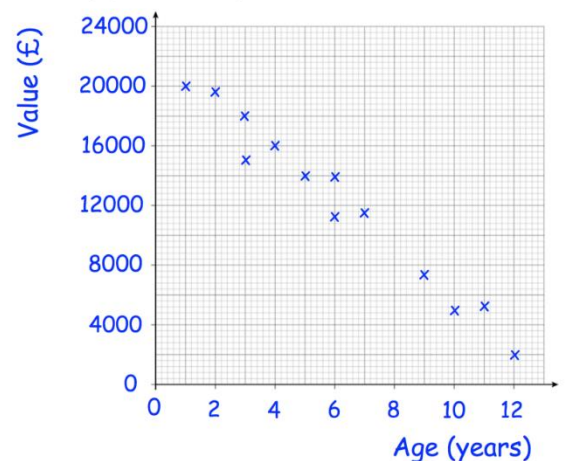
(1)

- (c) Complete the sentence below.

Generally the more hours of lessons, the ..... mistakes are made.

(1)

4. The scatter graph shows the age and value of some cars.



Using the scatter graph, find an estimate for the value of an 8 year old car.

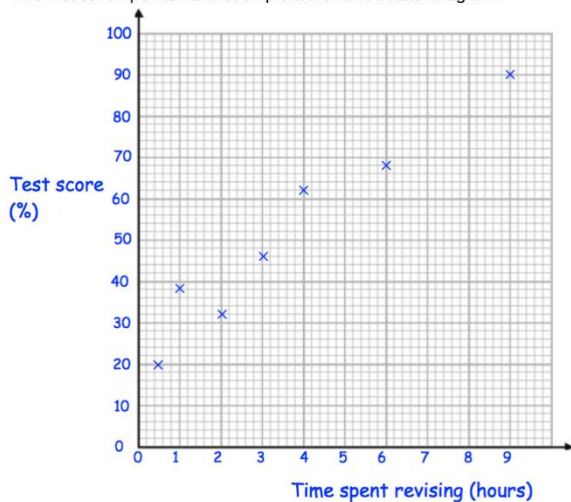
£.....

(2)

5. The table shows the time spent revising and the test scores of ten students.

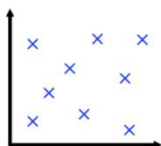
Time spent revising (hours)	9	0.5	1	4	6	2	3	7	5	8
Test result (%)	90	20	38	62	68	32	46	70	60	86

The first seven points have been plotted on this scatter diagram.

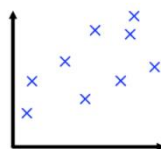


- (a) Complete the scatter diagram. (1)
- (b) Describe the relationship shown in the scatter diagram. (1)
- .....
- (c) Draw a line of best fit on your scatter diagram. (1)
- (d) Another student has spent 4.5 hours revising. Use your line of best fit to estimate their test result. (1)
- .....%

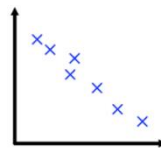
6. Match each scatter graph to the best description of the type and strength of correlation.



Strong positive correlation



Weak positive correlation



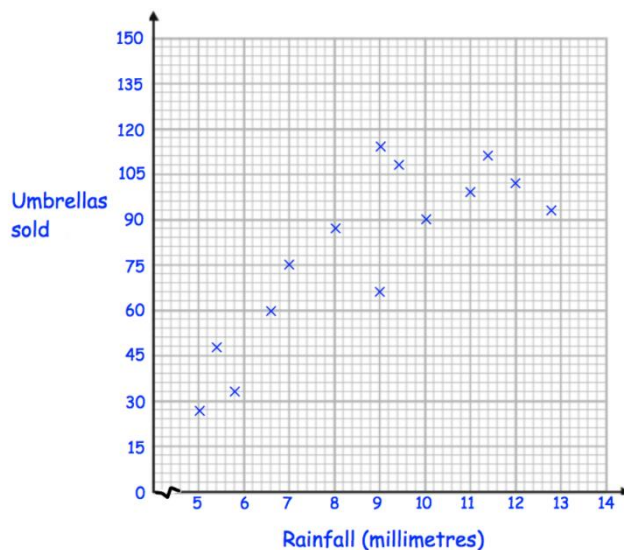
No correlation

Weak negative correlation

Strong negative correlation

7. A shop sells umbrellas.

The scatter graph shows information about the number of umbrellas sold each week and the rainfall that week, in millimetres.



- (a) Describe the relationship between the rainfall and umbrellas sold. (1)
- .....

- (b) What is the most number of umbrellas sold in one week? (1)
- .....

- (c) What is the greatest amount of rainfall in one week? (1)
- .....

- (d) In how many weeks did the shop sell over 105 umbrellas? (1)
- .....

In another week, there was 6mm of rain.

- (e) Estimate the number of umbrellas sold. (2)
- .....

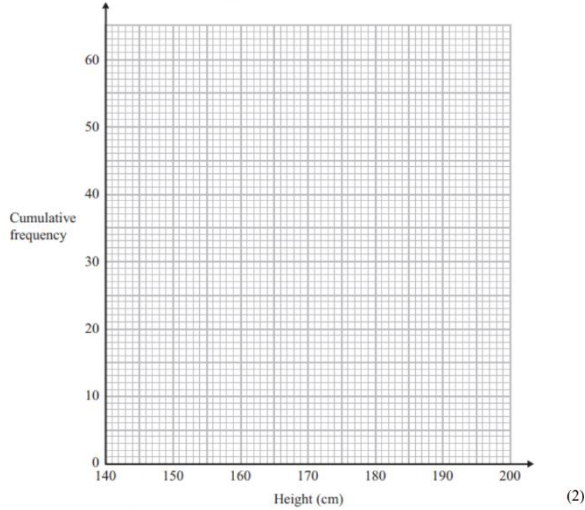
- (f) Explain why it may **not** be appropriate to use your line of best fit to estimate the number of umbrellas sold in a week with 25mm of rainfall. (1)
- .....



1. The cumulative frequency table shows the height, in cm, of some tomato plants.

Height	Cumulative Frequency
$140 < h \leq 150$	7
$140 < h \leq 160$	17
$140 < h \leq 170$	32
$140 < h \leq 180$	51
$140 < h \leq 190$	57
$140 < h \leq 200$	60

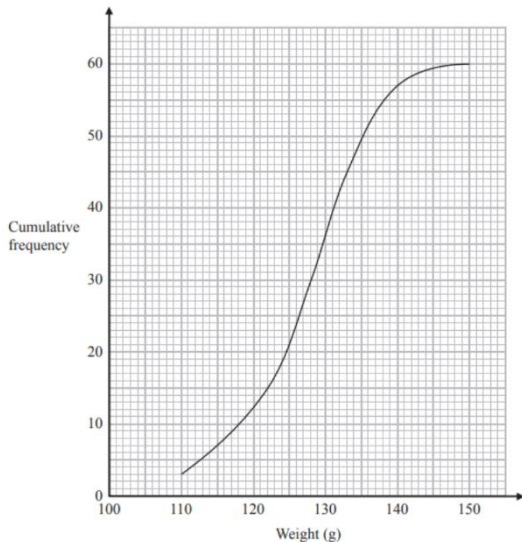
- (a) On the grid, plot a cumulative frequency graph for this information.



- (b) Find the median height.

.....cm  
(1)

2. The cumulative frequency graph gives some information about the weights of some objects.



- (a) Find the median weight.

- (b) Find the inter quartile range.

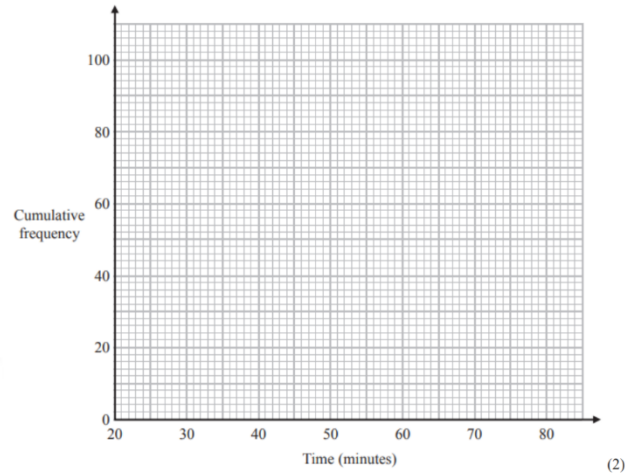
.....g  
(1)

(2)

3. The frequency table shows the time taken for 100 people to travel to an event.

Time (minutes)	Frequency
$20 < t \leq 30$	9
$30 < t \leq 40$	16
$40 < t \leq 50$	20
$50 < t \leq 60$	29
$60 < t \leq 70$	15
$70 < t \leq 80$	11

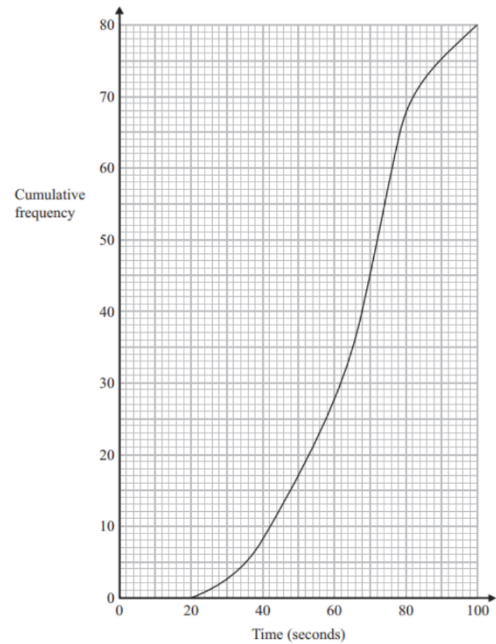
- (a) On the grid, plot a cumulative frequency graph for this information.



- (b) Find an estimate for the median time taken.

.....minutes  
(1)

4. The cumulative frequency graph gives some information the times it took people to complete a challenge.



- (a) Find the median time.

- (b) Find the number of people who took longer than 80 seconds to complete the challenge.

.....seconds  
(1)

.....  
(1)

4. Work out  $1\frac{5}{6} \times \frac{2}{9}$

(2 marks)

5. Work out  $1\frac{3}{5} \div \frac{3}{4}$

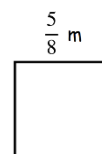
(2 marks)

6. Work out  $2\frac{1}{5} + 1\frac{1}{7}$

Give your answer as a mixed number in its simplest form.

(3 marks)

Calculate the perimeter of a square with side length  $\frac{5}{8}$  m  
Give your answer as a mixed number.



(2 marks)



**Add or Subtract** "+ or -" with different denominators

$$\frac{1}{3} + \frac{1}{4} = \frac{4}{12} + \frac{3}{12} = \frac{7}{12}$$

Change to equivalent fractions with common denominators, then add (or subtract).



**Multiplying fractions**

$$\frac{2}{3} \times \frac{5}{6} = \frac{10}{18} = \frac{5}{9}$$

Multiply the numerators, multiply the denominators, then simplify



**Dividing fractions**

$$\frac{2}{5} \div \frac{1}{2} = \frac{2}{5} \times \frac{2}{1} = \frac{4}{5}$$

Change the problem to multiplication by inverting the second fraction, then multiply

1. Work out  $\frac{4}{9} + \frac{3}{5}$

(2 marks)

2. (a) Work out  $\frac{2}{3} - \frac{1}{4}$

(2 marks)

(b) Work out  $\frac{3}{4} \times \frac{4}{9}$

Give your answer as a fraction in its simplest form.

(2 marks)

3. Work out  $\frac{3}{5} \div \frac{3}{8}$

(2 marks)

1. Work out the difference between  $\frac{3}{8}$  of 32 and  $\frac{2}{5}$  of 40

(3 marks)

2. There are 924 people in a theatre.

383 of the people are men.

356 of the people are women.

$\frac{2}{5}$  of the children are boys.

Work out how many girls are in the theatre.

(2 marks)

3.  $\frac{2}{5}$  of number **n** is 18.

Find the value of **n**.

(2 marks)

4. Ranjit is thinking of a number

$\frac{3}{4}$  of the number is 360

Work out  $\frac{2}{5}$  of the number.

(3 marks)

6. Alison is selling homemade Christmas decorations.  
She has 300 decorations that cost £2 each to make.

Alison sells 250 decorations for the full price.

She then reduces the price of each decorations by  $\frac{1}{3}$

Alison sells the remaining decorations for £6 each.

Work out how much profit Alison makes.

(5 marks)

7. Barnaby has a bag of yellow, green and pink counters.

$\frac{2}{5}$  of the counters are yellow

$\frac{1}{3}$  of the counters are green.

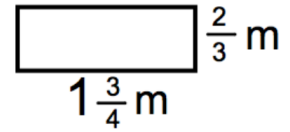
There are 48 pink counters in the bag.

Work out how many green counters are in the bag.

( marks)



4. Jessica wants to attach ribbon around her wardrobe.



She has 4 metres of ribbon.

How much more does she need?  
Give your answer as a fraction.

(2 marks)

1. The normal price of a train ticket from Ashford to London is £34.20

Ross gets  $\frac{1}{3}$  off the price of his train ticket

Work out how much Ross pays for his ticket.

2. Stan has an income of £2000 a month.

He spends  $\frac{2}{5}$  of his income on rent.

He spends  $\frac{3}{20}$  of his income on bills.

He spends  $\frac{1}{10}$  of his income on food.

Stan saves the rest of his income.

Work out how much Stan saves each month.

(4 marks)

5. Work out

$$\frac{2\pi}{9} + \frac{\pi}{4}$$

Give your answer as a fraction.

(3 marks)

(2 marks)

3. The price of a new car is £18000

In a sale, the price is reduced by  $\frac{2}{9}$

David buys the car in the sale.

He pays a £2000 deposit and pays the rest over 20 monthly payments.

Find the cost of each monthly payment.

6. The next term of a sequence is found by multiplying the previous term by  $\frac{2}{3}$

The first term in the sequence is  $\frac{1}{5}$

Find the third term in the sequence.

(3 marks)

(3 marks)