



GCSE Foundation 03

Number



154 minutes



147 marks

Fractions

- Q1.** Eva owns a restaurant.
The table shows the number of customers on four days.

	Tuesday	Wednesday	Thursday	Friday
Lunch	25	22	27	31
Dinner	50	48	70	89
Total	75	70	97	120

- (a) How many **more** customers in total were there on Friday than on Thursday?

.....

Answer

(2)

- (b) She keeps a tally of the number of customers who order pudding each day.

Complete the table.

Day	Tally	Frequency
Tuesday		17
Wednesday		
Thursday		
Friday		30

(2)

- (c) What fraction of **Friday's** customers ordered a pudding?
Give your answer in its simplest form.

.....

.....

Answer

(2)

(d) Here is some information about Saturday.

Number of customers	150
Number who order pudding	50

Eva thinks the fraction of customers who ordered puddings on Saturday is greater than on Friday.

Is she correct?

You **must** show your working.

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(3)
(Total 9 marks)

Q2. Mel wants to make 20 pancakes.

She needs $\frac{1}{4}$ litre of milk to make 4 pancakes.

She has one litre of milk.

Does she have enough milk to make all the pancakes?

You **must** show your working.

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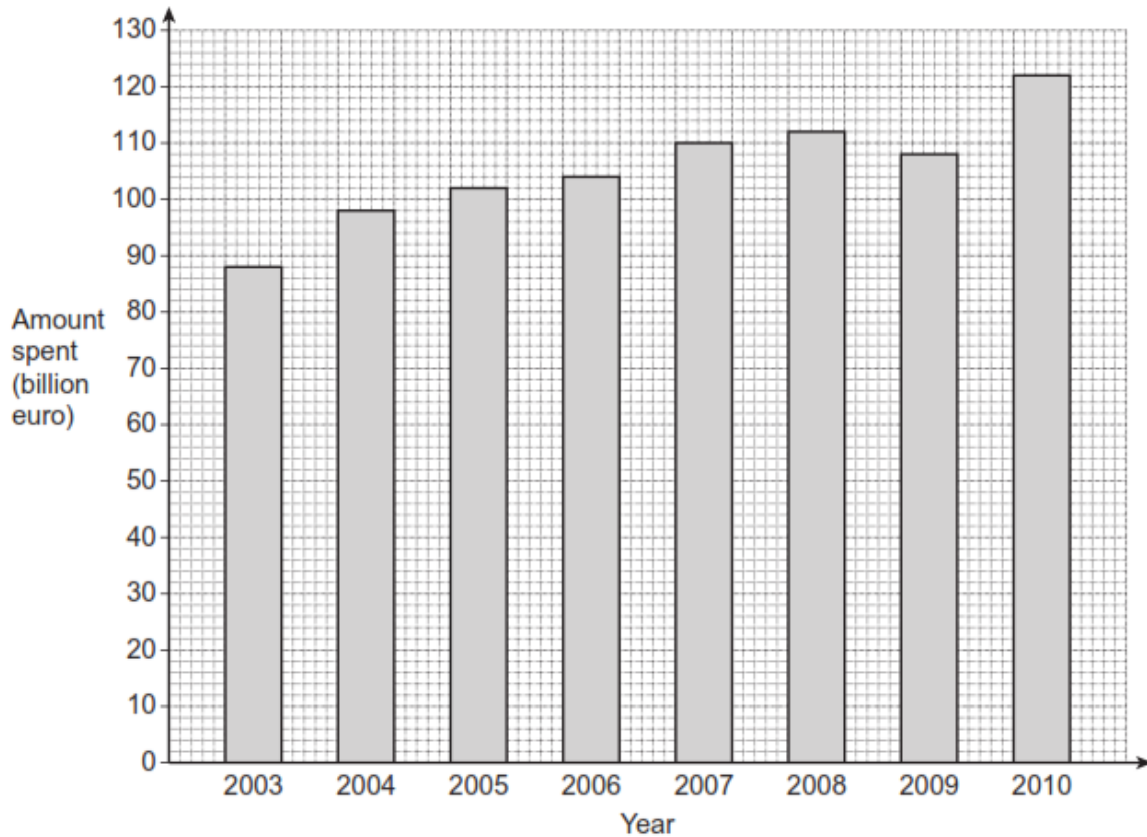
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(Total 3 marks)

Q3. The graph shows the amount spent by the European Union.



(a) Which of these years was the first that over 100 billion euro was spent?

Answer

(1)

(b) In which year did the amount spent fall?

Answer

(1)

(c) $\frac{9}{20}$ of the amount spent in 2007 was on farming.

How much was spent in 2007 on farming?

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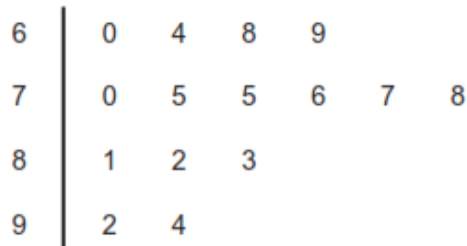
Answer billion euro

(3)

(Total 5 marks)

Q4. The stem-and-leaf diagram shows the number of visitors to a castle over 15 days.

Key: 7 | 0 represents 70 visitors



(a) How many days had more than 80 visitors?

.....

Answer

(1)

(b) Work out the range.

.....

Answer

(2)

(Total 3 marks)

Q5. (a) Write 80% as a decimal.

Answer

(1)

(b) Write 0.7 as a fraction.

Answer

(1)

(c) Write $\frac{3}{4}$ as a decimal.

Answer

(1)

- (d) Write 80%, 0.7 and $\frac{3}{4}$ in order with the smallest first.

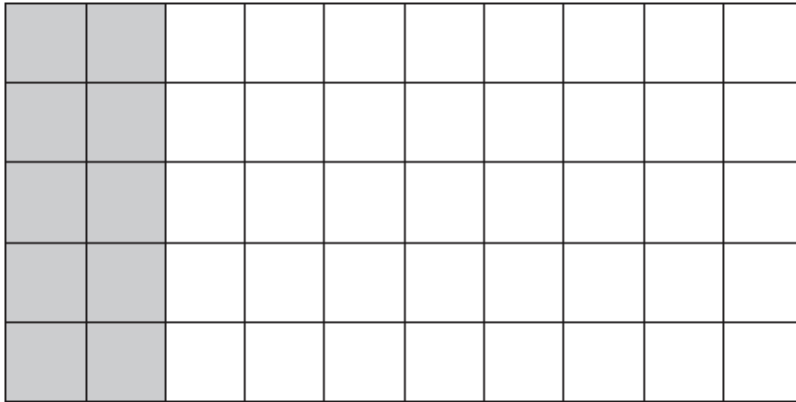
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Answer , ,

(1)

(Total 4 marks)

Q6.



- (a) What fraction of the grid is shaded?
 Give your answer in its simplest form.

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Answer

(2)

- (b) How many **more** squares need to be shaded so that 60% of the grid is shaded?

.....

Answer

(3)

(Total 5 marks)

Q7. A car park is open from 9 am to 6 pm.

- (a) (i) 80 cars enter between 9 am and 10 am.
One-quarter of these cars are silver.

How many silver cars enter between 9 am and 10 am?

.....

Answer

(1)

- (ii) 115 cars enter between 10 am and 11 am.
Kim says, "Exactly one-quarter of these cars are silver."

Show that she is wrong.

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.....

(1)

- (b) A data logging machine counts cars entering and leaving the car park.

Hour ending at	Cars entering	Cars leaving
10 am	80	5
11 am	115	25
12 noon	75	40
1 pm	35	35
2 pm	50	50
3 pm	40	45
4 pm	20	65
5 pm	10	115
6 pm	5	30

- (i) The car park is empty at 9 am.

How many cars are in the car park at 10 am?

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Answer

(1)

- (ii) Barriers stop cars entering when the car park is full.
The car park is full at 12 noon.

How many cars are in the car park when it is full?

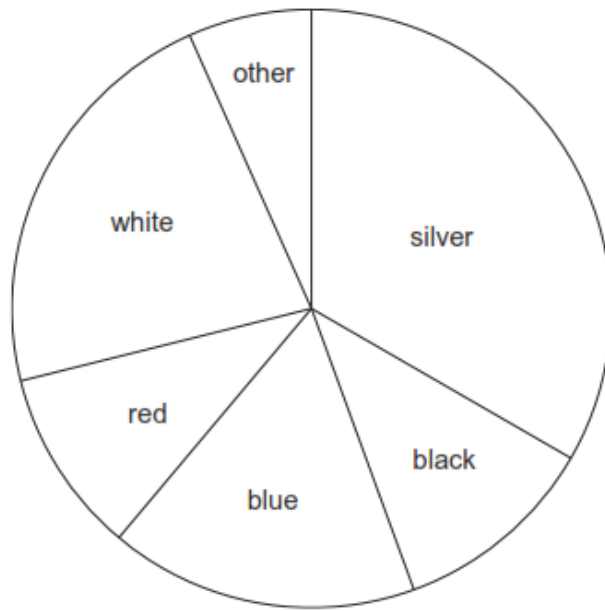
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Answer

(3)

- (c) The pie chart shows information about the colours of the cars in the car park one day.



Complete the sentences.

- (i) There are twice as many cars as black cars.

(1)

- (ii) $\frac{1}{3}$ of the cars are

(1)

- (d) Are there any purple cars in the car park on that day?

Tick a box.

☐

Yes

☐

No

☐

Cannot tell

Give a reason for your answer.

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.....

(1)

(Total 9 marks)

Q8. Here is a list of numbers.

7 10 16 23 27 47 60

From this list, write down

(a) the multiple of 8

Answer

(1)

(b) the factor of 30

Answer

(1)

(c) the number that is one-third of 69

Answer

(1)

(d) the cube number.

Answer

(1)

(Total 4 marks)

Q9.

(a) (i) Write $\frac{1}{4}$ as a percentage.

Answer %

(1)

(ii) Write 30% as a decimal.

Answer

(1)

(iii) Write $\frac{1}{4}$, 30% and 0.2 in order with the smallest first.

.....

.....

Answer

(1)

(b) Complete the following.

(i) $\frac{2}{3} = \frac{\boxed{}}{18}$

(1)

(ii) $\frac{\square}{4} = \frac{15}{20}$

(1)

(c) Work out $\frac{3}{8}$ as a decimal.

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Answer

(2)

(Total 7 marks)

Q10. Andy has some sweets.
He gives one-quarter of the sweets to Dan.
Dan eats five sweets and has one left.

How many sweets does Andy start with?

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.....

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Answer

(Total 2 marks)

- Q11.** John buys a phone.
He looks at the cost of 60 applications (apps).

Cost of application	Number of applications
free (0p)	30
59p	16
99p	5
£1.29	2
£1.49	1
£1.99	6

- (a) John buys all the applications costing £1.99

How much does he pay?

.....

Answer £

(2)

- (b) What fraction of the 60 applications are free?
Give your answer in its simplest form.

.....

Answer

(2)

- (c) What percentage of the 60 applications cost £1.99?

.....

.....

Circle the correct answer.

6% 10% 16% 60%

(1)

- (d) John wants to know the make of phone used by people in his class.

Write down a suitable data collection method.

Answer

(1)

(Total 6 marks)

Q12. Two-thirds of a number is 8.

Work out four times the number.

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Answer

(Total 3 marks)

Q13. The table shows the weather in London each day for 40 days.

Weather	Tally	Frequency
Sun		
Rain		
Snow		
Fog		
		Total = 40

(a) Complete the table.

(2)

(b) What fraction of the 40 days are sunny?
Give your answer in its simplest form.

.....

Answer

(2)

(c) In Manchester for the 40 days

- 16 days are sunny
- 50% of the days have rain
- there is no snow.

(i) Complete the table for Manchester.

Weather	Frequency
Sun	
Rain	
Snow	
Fog	
	Total = 40

(3)

(ii) One of the 40 days in Manchester is chosen at random.
Use a suitable probability **word** to complete the sentences.

The chance of choosing a day with snow is.....

The chance of choosing a day with rain is

(2)

(Total 9 marks)

Q14. Ann is paid £200 a week.
Each week she saves one-quarter of her pay.

(a) How much does she save each week?

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Answer £

(2)

(b) She is saving for a new carpet that costs £320.

How many weeks does it take to save enough to buy the carpet?

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Answer

(2)

(Total 4 marks)

Q15. What fraction is half way between $\frac{1}{4}$ and $\frac{1}{8}$?

Give your answer as a fraction in its simplest form.

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Answer

(Total 3 marks)

Q16. A bag contains 6 red pens, 69 black pens and 25 blue pens.

(a) Write down the number of red pens as a fraction of the total number of pens in the box.

Give your answer in its simplest form.

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.....

Answer

(2)

(b) What percentage of the pens are **not** black?

.....

Answer%

(1)

(c) Circle a word from the list to describe the chance of each of the following events.

(i) A pen chosen at random from the box is red.

impossible unlikely evens likely certain

(1)

(ii) A pen chosen at random from the box is **not** green.

impossible unlikely evens likely certain

(1)

(Total 5 marks)

Q17. Here is an advert for a summer holiday.



Summer Sun

Fantastic deals with Sunbreaks Holidays



Dates	7 nights	14 nights
1 April – 30 April	£315	£575
1 May – 6 July	£220	£400

Notes

- Prices are for one adult (16 years and over)
- Children (less than 16 years) 75% of adult price
- 10% discount if booked online (www.sunbreaks.co.uk)

- (a) Martha books a 14-night holiday in May.
She books for herself, husband Billy and daughter Mary (aged 11).
She books the holiday online.

Explain clearly why the total cost will be £990.

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(4)

- (b) Salima books a 7-night holiday in April for two adults.

The travel agent adds a percentage surcharge to the cost of the holiday for booking fees.

Salima's final bill is £642.60

What was the percentage surcharge?

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Answer %

(3)
(Total 7 marks)

- Q18.** Ronan is designing a game.

He has two sets of discs laid face down on a table.

The first set of five discs are labelled 1, 3, 5, 7, 9.

The second set of four discs are labelled 2, 4, 6, 8.

Players turn over one disc, at random, from each set and add the numbers together.

- (a) Complete the table to show **all** the possible totals.

	1	3	5	7	9
2	3	5	7		
4	5				
6					
8					

(2)

- (b) What is the probability of getting a total less than six?

.....

Answer

(1)

(c) Ronan uses the game to raise money for charity.

Each player pays 20 p to play the game.

If a player gets a total of exactly 13 they win a bar of chocolate.

It costs Ronan 50 p for each bar of chocolate.

If 100 people play the game, show that Ronan should expect to raise £12.50 for charity.

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(4)
(Total 7 marks)

Q19. Tom is 60.

His daughter Fiona is $\frac{3}{5}$ of his age.

His grandson James is $\frac{4}{15}$ of his age.

How many years older than James is Fiona?

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Answer

(Total 4 marks)

Q20. Work out the value of $\frac{1}{4} + \frac{2}{3}$

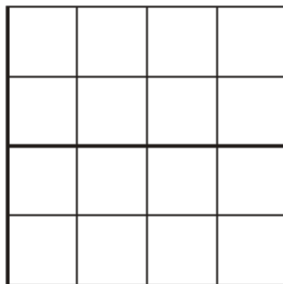
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Answer

(Total 2 marks)

Q21. How many sixteenths are there in $\frac{3}{4}$?

You may use this grid to help you.

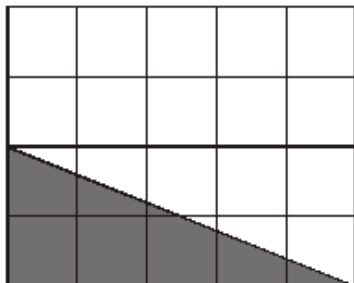


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Answer

(2)

(b) A triangle on this grid is shaded.



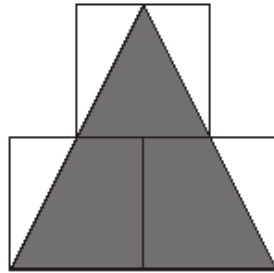
What percentage of the grid is shaded?

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Answer%

(2)

- (c) This shape consists of 3 equal squares.



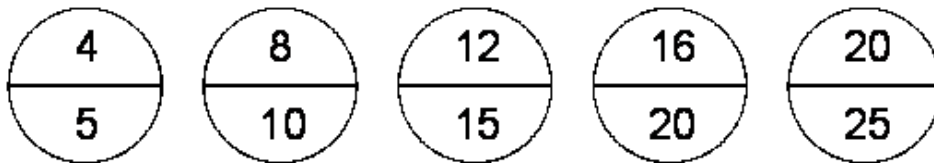
What fraction of the shape is covered by the triangle?

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Answer

(2)
 (Total 6 marks)

- Q22.** Here are some circles each containing two numbers.



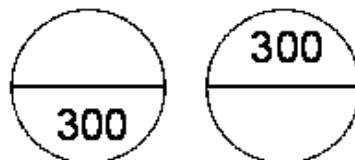
The numbers are in a pattern.

The numbers in the top of each circle are multiples of four.

The numbers in the bottom of each circle are multiples of five.

- (a) Here are two more circles in the pattern.

Write in the missing numbers.

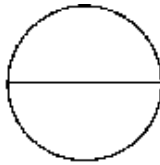


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(2)

- (b) Here is another circle in the pattern.

Write the two numbers in the circle so that their total is closest to 1000



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(2)
(Total 4 marks)

- Q23.** (a) Circle the **two** fractions in the list that have the same value as $\frac{1}{4}$.

$$\frac{2}{8}$$

$$\frac{3}{10}$$

$$\frac{4}{12}$$

$$\frac{5}{25}$$

$$\frac{6}{24}$$

(2)

- (b) Write $\frac{1}{4}$ as a percentage.

Answer %

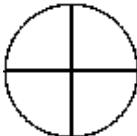
(1)

- (c) Which of these words best describes an event with a probability of $\frac{3}{4}$?

Circle the correct answer.

impossible unlikely likely certain

(1)

- (d) In a pictogram the symbol  represents 20 people.
Draw a symbol that would represent 5 people.

(1)
(Total 5 marks)

Q24. A box of coloured counters contains only red, white and blue counters.

$\frac{1}{8}$ of the counters are red.

$\frac{1}{4}$ of the counters are white.

100 counters are blue.

How many counters are in the box?

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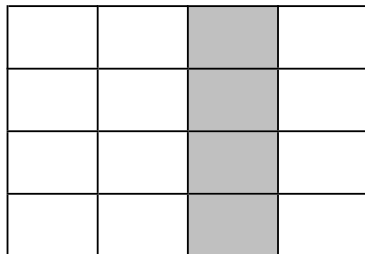
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Answer

(Total 4 marks)

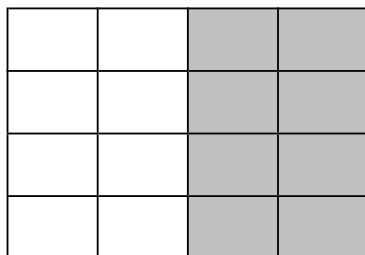
Q25. (a) What fraction of this grid is shaded?



Answer

(1)

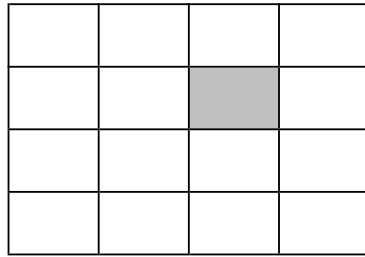
(b) What percentage of this grid is shaded?



Answer%

(1)

- (c) A fly lands on this grid at random.



Circle the word that best describes the chance that the fly lands on the shaded square.

Impossible Unlikely Likely Certain

(1)
(Total 3 marks)

- Q26.** Ten students attempted two fraction questions.

Question A: $2\frac{1}{5} + 1\frac{1}{3}$

Question B: $2\frac{1}{4} - 1\frac{1}{6} + 3\frac{1}{3}$

- (a) Work out $2\frac{1}{5} + 1\frac{1}{3}$

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Answer

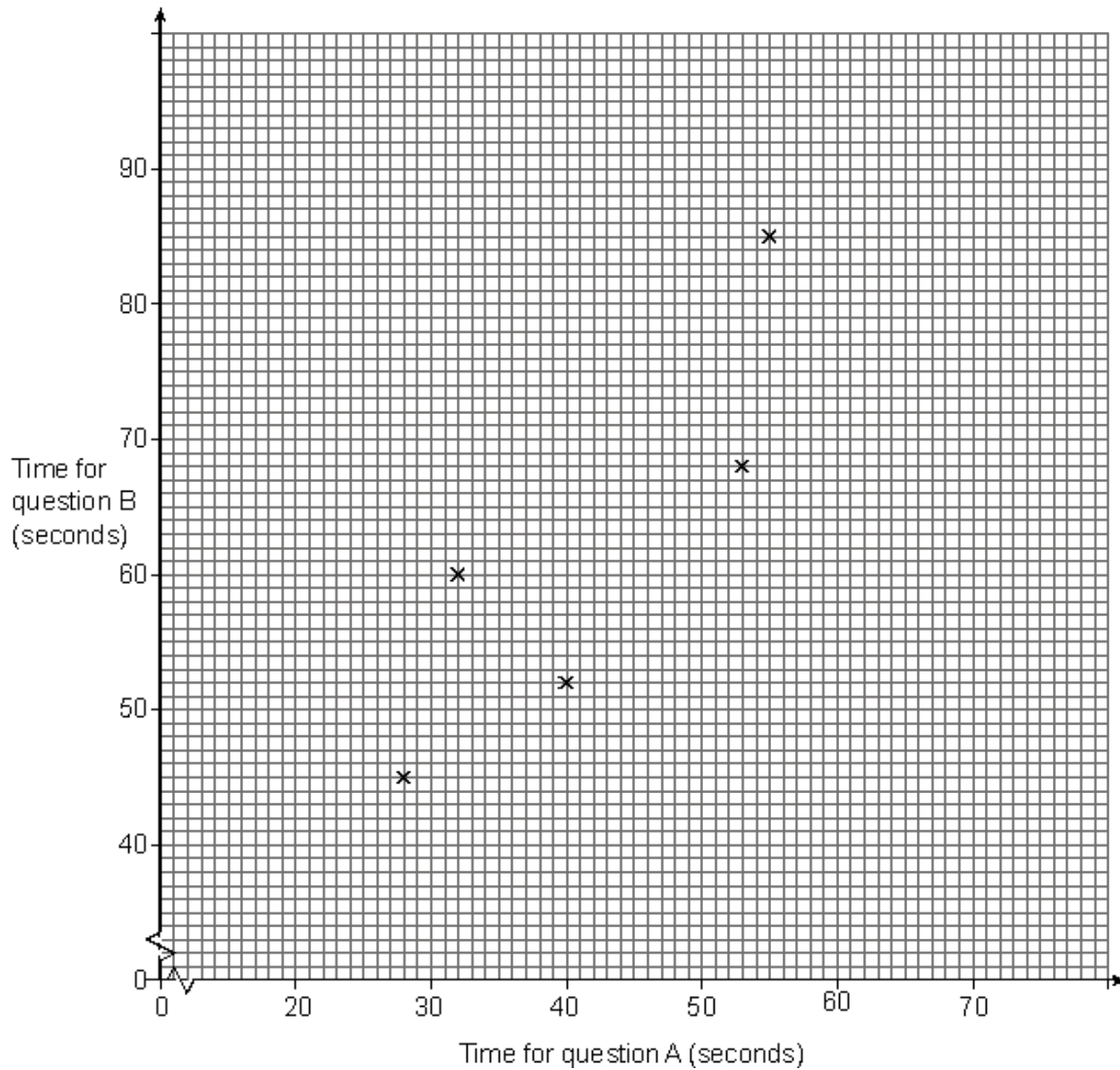
(3)

- (b) The table shows the times (to the nearest second) taken by ten students to complete each question.

Student	Amy	Ben	Cat	Don	Eli	Fay	Gil	Haq	Ian	Jan
Time for question A (seconds)	32	28	53	55	40	28	58	52	60	45
Time for question B (seconds)	60	45	68	85	52	55	70	76	48	72

Complete the scatter diagram.
The results for the first five students have been plotted.

(2)



- (c) The times for one student do **not** follow the same pattern as the others.

Which student is this?

Answer

(1)

- (d) Estimate the time a student would take to complete question B if they take 50 seconds to complete question A.

Answerseconds

(2)

(Total 8 marks)

Q27. Tom works 12 hours each week.

He earns £4 per hour.

Tom saves $\frac{1}{3}$ of his earnings each week.

How many weeks does it take Tom to save £80?

You **must** show all your working.

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Answer weeks

(Total 4 marks)

Q28.

60% of £40

$\frac{2}{5}$ of £55

Which is the larger amount?

You **must** show your working.

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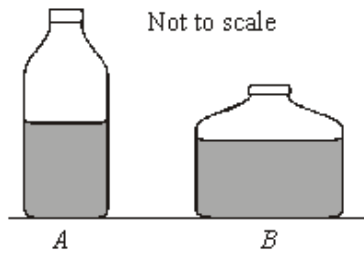
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Answer

(Total 4 marks)

- Q29.** Two bottles are on a shelf.
 The 3 litre bottle, *A*, is 55% full of water.
 The 2.5 litre bottle, *B*, is three-quarters full of water.
 Which bottle contains more water?
 You **must** show all your working.



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Answer

(Total 4 marks)

- Q30.** Tom has £2 200.
 He gives $\frac{1}{4}$ to his son and $\frac{2}{5}$ to his daughter.
 How much does Tom keep for himself?
 You **must** show all your working.

.....

.....

.....

.....

Answer

(Total 3 marks)

Q31. Jameel is buying a dining table for £250.
He pays a deposit that is half of the cost.

(a) How much is the deposit that Jameel pays?

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.....

Answer £.....

(1)

(b) Jameel will pay the remaining cost in 10 equal payments.

How much is each payment?

.....
.....

Answer £.....

(2)

(Total 3 marks)

