

1 £42 is shared equally between 3 friends.

How much does each friend get?

$$\begin{aligned} & \pounds 42 \div 3 \\ & = \pounds 14 \quad \textcircled{1} \end{aligned}$$

$$\begin{array}{r} 14 \\ 3 \overline{)42} \\ \underline{3} \phantom{0} \\ 12 \\ \underline{12} \\ 0 \end{array}$$

£..... 14       $\textcircled{1}$

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(Total for Question 1 is 2 marks)

2 Danny buys,

- 1 loaf of bread for £1.20
- 1 bottle of milk for 70p
- 2 packets of cheese for £2.30 each packet

Danny pays with a £10 note.

He says,

“I should get £3.30 change.”

Is Danny correct?

You must show how you get your answer.

$$\begin{aligned} \text{Total} &= 1.20 + 0.70 + 2 \times 2.30 \\ &= 1.20 + 0.70 + 4.60 \\ &= 6.50 \quad (1) \end{aligned}$$

According to BIDMAS, we need to multiply this first before adding

$$\begin{aligned} \text{change} &= 10.00 - 6.50 \\ &= \text{£} 3.50 \quad (1) \end{aligned}$$

$\therefore$  No, Danny is wrong. (1)

(Total for Question 2 is 3 marks)

3 Rachel records the temperature in her garden at noon each day.

On Monday, the temperature was  $5^{\circ}\text{C}$ .

On Tuesday, the temperature was  $10^{\circ}$  less than the temperature on Monday.

On Wednesday, the temperature was  $3^{\circ}$  greater than the temperature on Tuesday.

Find the difference between the temperature on Monday and the temperature on Wednesday.

You must show all your working.

$$\text{Temperature : Monday} = 5^{\circ}\text{C}$$

$$\begin{aligned} \text{Tuesday} &= 5^{\circ}\text{C} - 10^{\circ}\text{C} \\ &= -5^{\circ}\text{C} \end{aligned}$$

$$\begin{aligned} \text{Wednesday} &= -5^{\circ}\text{C} + 3^{\circ}\text{C} \\ &= -2^{\circ}\text{C} \quad (1) \end{aligned}$$

When 2 symbols meet =

$$(-)(-) = +$$

$$(-)(+) = -$$

$$(+)(+) = +$$

$$(+)(-) = -$$

$$\begin{aligned} \text{Difference between} \\ \text{Monday and Wednesday} &: 5^{\circ}\text{C} - (-2^{\circ}\text{C}) \\ &= 5^{\circ}\text{C} + 2^{\circ}\text{C} \\ &= 7^{\circ}\text{C} \quad (1) \end{aligned}$$

7

..... $^{\circ}\text{C}$

(Total for Question 3 is 2 marks)

- 4 3 kg of carrots cost £1.80  
2 kg of carrots and 5 kg of potatoes cost a total of £3.45

Work out the total cost of 4 kg of carrots and 2 kg of potatoes.  
You must show all your working.

$$\begin{aligned} 1 \text{ kg of carrots} &= \pounds 1.80 \div 3 \\ &= \pounds 0.60 \quad \textcircled{1} \end{aligned}$$

$$2 \text{ kg of carrots} + 5 \text{ kg of potatoes} = \pounds 3.45$$

$$\begin{aligned} 5 \text{ kg of potatoes} &= \pounds 3.45 - 2(\pounds 0.60) \rightarrow \text{Rearrange the equation so the potatoes are on one side} \\ &= \pounds 2.25 \end{aligned}$$

$$\begin{aligned} 1 \text{ kg of potato} &= \pounds 2.25 \div 5 \\ &= \pounds 0.45 \quad \textcircled{1} \end{aligned}$$

multiply the terms first

$$\begin{aligned} \text{Total cost of 4 kg of carrots} &= \underline{(4 \times 0.60)} + \underline{(2 \times 0.45)} \quad \textcircled{1} \\ \text{and 2 kg of potatoes} &= 2.40 + 0.90 \\ &= \pounds 3.30 \quad \textcircled{1} \end{aligned}$$

£..... 3.30

(Total for Question 4 is 4 marks)

5 (a) Work out  $3.67 \times 4.2$ 

$$\begin{array}{r}
 \overset{1}{3}.\overset{1}{6}7 \\
 \times 4.2 \quad \textcircled{1} \\
 \hline
 734 \\
 + 1468 \\
 \hline
 \textcircled{1} 15.414 \quad \textcircled{1}
 \end{array}$$

multiply the numbers as usual without taking account the decimal point

Place the decimal point in the answer. The total decimal places in the answer will be the sum of decimal places of both terms.

3.67 has 2 d.p., 4.2 has 1 d.p., answer will have 3 d.p.

$$\begin{array}{r}
 15.414 \quad \textcircled{1} \\
 \hline
 (3)
 \end{array}$$

(b) Work out  $59.84 \div 1.6$   
 $\times 10 \quad \times 10$  ← multiply both terms by 10 to convert 1.6 to an integer

$$\begin{array}{r}
 37.4 \quad \textcircled{1} \\
 16 \overline{) 598.4} \quad \textcircled{1} \\
 \underline{-48} \\
 118 \\
 \underline{-112} \\
 6.4 \\
 \underline{-6.4} \\
 .
 \end{array}$$

$$\begin{array}{r}
 37.4 \\
 \hline
 \textcircled{1} (3)
 \end{array}$$

(Total for Question 5 is 6 marks)

- 6 On Monday, Sandy pays for 2 plane tickets, 7 nights in a hotel and 2 theme park tickets.

	dollars	
each plane ticket	600	$\times 2$
each night in a hotel	120	$\times 7$
each theme park ticket	250	$\times 2$

Show that Sandy pays more than 2500 dollars on Monday.

Sandy pays :  $(2 \times 600) + (7 \times 120) + (2 \times 250)$  ①

according to BIDMAS, we need to multiply the terms first before adding them together

$= 1200 + 840 + 500$  ①

$= 2540$  ①       $2540 > 2500$

$\therefore$  Sandy pays more than 2500

(Total for Question 6 is 3 marks)

7 Given that

$$2.96 \times 3.2 = 9.472$$

(b) find the value of  $29.6 \times 32$

$$\begin{aligned} 29.6 \times 32 &= (2.96 \times 10) \times (3.2 \times 10) \\ &= 2.96 \times 3.2 \times 100 \\ &= 9.472 \times 100 \end{aligned}$$

$$\begin{array}{r} 947.2 \text{ (1)} \\ \hline \end{array}$$

(Total for Question 7 is 1 mark)

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- 8 The table shows the total number of apples sold and the total number of oranges sold in a shop in each of three weeks.

	Week 1	Week 2	Week 3
Number of apples	86	75	92
Number of oranges	68	80	76

In total for the three weeks, more apples than oranges were sold.  
How many more?

$$\text{Apple sales : } 86 + 75 + 92 = 253$$

$$\text{Orange sales : } 68 + 80 + 76 = 224 \quad (1)$$

Difference between apples and oranges sold :

$$253 - 224 = 29 \quad (1)$$

..... 29 (1)

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(Total for Question 8 is 3 marks)

9 Work out  $\frac{2.75 \times 14.6}{10 - 1.97}$

Tips: Multiply without decimal place.  
Then, add back the total decimal places into final answer.

Numerator:

$$\begin{array}{r}
 4 \\
 275 \\
 \times 146 \\
 \hline
 1650 \\
 11000 \\
 + 27500 \\
 \hline
 40150
 \end{array}$$

$$40150 \div 1000$$

$$= 40.15 \quad (1)$$

Denominator:

$$\begin{array}{r}
 10 - 1.97 \\
 = 8.03
 \end{array}$$

$$\frac{40.15}{8.03} = 5 \quad (1)$$

5

(Total for Question 9 is 2 marks)



10 Work out  $20 \div (3 + 2)$

$$\begin{aligned} & 20 \div (3 + 2) \\ = & 20 \div 5 \\ = & 4 \text{ (1)} \end{aligned}$$

To solve the equation, we follow BIDMAS rule for step by step solution.

- ① solve bracket
- ② solve division

4

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(Total for Question 10 is 1 mark)

11 Fay is planning a trip to a theme park for 1 adult and 2 children.

These are the costs for the trip.

Total cost of petrol	£23
Tickets to theme park	£33 each adult £24.50 each child
Meals	£15 each adult £10 each child

Fay has £200 to spend.  
She pays all the costs.

How much money does she have left?

Total costs for the trip :

$$\text{Petrol} = \text{£ } 23$$

$$\begin{aligned} \text{Tickets} &= 1 \text{ adult} + 2 \text{ children} \\ &= \text{£ } 33 + 2(\text{£ } 24.50) \\ &= \text{£ } 33 + \text{£ } 49 \\ &= \text{£ } 82 \end{aligned}$$

$$\begin{aligned} \text{Meals} &= 1 \text{ adult} + 2 \text{ children} \\ &= \text{£ } 15 + 2(\text{£ } 10) \\ &= \text{£ } 15 + \text{£ } 20 \\ &= \text{£ } 35 \end{aligned}$$

$$\begin{aligned} \text{TOTAL} &= \text{£ } 23 + \text{£ } 82 + \text{£ } 35 \\ &= \text{£ } 140 \quad (3) \end{aligned}$$

$$\begin{aligned} \text{Money she has left} &: \text{£ } 200 - \text{£ } 140 \\ &= \text{£ } 60 \quad (1) \end{aligned}$$

£.....60.....

(Total for Question 11 is 4 marks)

- 12 A shop sells jars of coffee.  
Each jar of coffee costs £4

Michael has £23

- (a) Work out the greatest number of jars of coffee Michael can buy.

Number of jars of coffee Michael can buy with £23 :

$$\frac{23}{4} = 5.75 \quad \text{--- not a whole number. We cannot buy 0.75 jar of coffee. Hence, we take whole number before which is 5.}$$

Michael can only buy 5 jars of coffee.

$$\begin{array}{r} 5 \quad \textcircled{1} \\ \hline \end{array} \quad \textcircled{2}$$

In a sale on Wednesday, jars of coffee are sold at half price.

Michael thinks that he can now buy exactly twice the number of jars of coffee for £23

- (b) Is Michael correct?

You must give a reason for your answer.

Each jar of coffee = £2

$$\frac{23}{2} = 11.5 \quad \text{Michael can now buy 11 jar of coffee.}$$

No. Michael can buy 11 jars instead of 10.  $\textcircled{1}$

(1)

(Total for Question 12 is 3 marks)

13 Elena spent 120 minutes at a sports centre.

She played badminton for 50 minutes.

She used the swimming pool for  $\frac{1}{6}$  of the 120 minutes.

She used the gym for 20% of the 120 minutes.

She then spent the rest of the 120 minutes in the cafe.

(a) Work out the total time, in minutes, that Elena spent in the cafe.

Finding time Elena spends swimming :

$$\frac{1}{6} \times 120 \text{ minutes} = 20 \quad (1)$$

Time spent at cafe :

$$120 - 94 = 26 \quad (1)$$

Time spent at the gym :

$$\frac{20}{100} \times 120 \text{ minutes} = 24 \quad (1)$$

Time spend (badminton + swimming + gym) :

$$50 + 20 + 24 = 94 \text{ minutes}$$

$$\begin{array}{r} 26 \quad (1) \\ \hline \end{array} \text{ minutes} \quad (4)$$

Elena got to the sports centre at 1.30 pm.

She had asked her friend to meet her in the cafe at 3 pm.

(b) Did Elena get to the cafe by 3 pm?

Give a reason for your answer.

$$1.30 \text{ pm} + 94 \text{ mins} = 3.04 \text{ pm}$$

No, she was 4 mins late. 1

(1)

**(Total for Question 13 is 5 marks)**

- 14 Myles writes down the distance readings from his car at the start and end of a journey.

Start of journey 

1	2	4	6	8
---	---	---	---	---

 miles

End of journey 

1	2	8	4	5
---	---	---	---	---

 miles

Myles knows that the cost of petrol for this journey is 13p per mile.

Work out the total cost of the petrol used for this journey.

Give your answer in pounds.

*Finding the total distance of the journey*

$$\begin{aligned} \text{End of journey} - \text{Start of journey} &= 12\ 845 - 12\ 468 \\ &= 377 \text{ miles} \quad (1) \end{aligned}$$

*Finding the total cost of petrol used throughout the journey*

$$\begin{aligned} 377 \text{ miles} \times 13 \text{ p per mile} &= 4901 \text{ p} \quad (1) && 1 \text{ } \pounds = 100 \text{ p} \\ = 4901 \text{ p} \div 100 & \quad (1) \\ = \text{ } \pounds 49.01 & \quad (1) \end{aligned}$$

£..... 49.01

(Total for Question 14 is 4 marks)

- 15 Safiya wants to hire a van.

She uses this rule to work out the cost of hiring a van for a number of days.

Cost = £45 × number of days
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Safiya is going to hire the van for 7 days.

Work out the cost.

$$\begin{aligned} \text{Cost of hiring a van} &= \text{ } \pounds 45 \times 7 \quad (1) \\ &= \text{ } \pounds 315 \quad (1) \end{aligned}$$

£..... 315

(Total for Question 15 is 2 marks)

16 208 bars of chocolate were sold from a shop.

$\frac{1}{4}$  of these bars of chocolate were large bars.

The rest of the bars of chocolate were small bars.

All the large bars of chocolate were sold for £1 each.

All the small bars of chocolate were sold for 60p each.

Work out the total amount of money for which the 208 bars of chocolate were sold.

Give your answer in pounds.

Finding the number of large bars:

$$\frac{1}{4} \times 208 = 52 \quad (1)$$

$$\begin{array}{c} \times 100 \\ \curvearrowright \\ \text{£ } 1 = 100 \text{ p} \\ \curvearrowleft \\ \div 100 \end{array}$$

Finding the number of small bars:

$$208 - 52 = 156$$

Finding the total amount of money which 208 bars are sold for:

$$52(1) + 156\left(\frac{60}{100}\right)$$

$$= 52 + 93.6 \quad (1)$$

$$= 145.6 \quad (1)$$

£..... 145.60

(Total for Question 16 is 3 marks)

17 Four students play a game.

The table shows the number of points each student has.

Student	Ali	Barbara	Calliope	Danesh
Number of points	143	121	45	19

Barbara has more points than Danesh.

(a) How many more?

*Finding difference between Barbara's points and Danish's*

$$121 - 19 = 102$$

102 (1)

(1)

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(Total for Question 17 is 1 mark)

- 18 200 students chose one language to study.  
Each student chose one language from French or Spanish or German.

Of the 200 students,

- 90 are boys and the rest of the students are girls
- 70 chose Spanish
- 60 of the 104 students who chose French are boys
- 18 girls chose German.

Work out how many boys chose Spanish.

	French	Spanish	German	Total
Girls	(44)	(48)	18	(110)
Boys	60	(22)	(8)	90
Total	104	70	(26)	200

Finding total choosing German :

$$G = 200 - 104 - 70 = 26 \text{ (1)}$$

Finding boys choosing German :

$$\text{Boys} : 26 - 18 = 8$$

Finding boys choosing Spanish :

$$\text{Spanish} : 90 - 60 - 8 = 22 \text{ (1)}$$

22

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(Total for Question 18 is 3 marks)



19 There are 30 women and 20 men at a gym.

The mean height of all 50 people is 167.6 cm

The mean height of the 20 men is 182 cm

Work out the mean height of the 30 women.

Finding the total height of 50 people :

$$167.6 \text{ cm} \times 50 = 8380 \text{ cm} \quad (1)$$

Finding the total height of 20 men :

$$182 \text{ cm} \times 20 = 3640 \text{ cm}$$

Finding mean height of 30 women :

$$\frac{8380 - 3640}{30} = 158 \text{ cm} \quad (1)$$

158

..... cm

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(Total for Question 19 is 3 marks)

20 Work out  $-9 + 5$

$-4$  ✓ ①

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**(Total for Question 20 is 1 mark)**

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21 Max sees this special offer in a shop.

Buy one large plate and get one small plate for half the normal price.

The normal price of a large plate is £2

The normal price of a small plate is 80p

so half = 40p

Max wants to buy 6 large plates and 6 small plates using this offer.

He has £15

Has Max got enough money?

You must show how you get your answer.

with the offer: 1 large plate + half £ for 1 small plate

$$\begin{array}{r} \text{he wants} \\ \text{6 of each} \end{array} \downarrow \quad \begin{array}{r} \text{£} 2 \\ \times 6 \end{array} \quad + \quad \begin{array}{r} 40 \text{ p} \\ \times 6 \end{array} \quad \checkmark \textcircled{1}$$

$$\text{£} 12 \quad + \quad \text{£} 2.40 \quad \checkmark \textcircled{1}$$

$$= \text{£} 14.40 \quad \checkmark \textcircled{1}$$

Final statement : Yes he has enough money  $\checkmark \textcircled{1}$   
because it only costs £14.40

(Total for Question 21 is 4 marks)

22 A total of 700 tickets were on sale for a football match.

452 of the tickets were sold.

(a) How many tickets were not sold?

$$\begin{array}{r} 700 \text{ total} \\ - 452 \text{ sold} \\ \hline 248 \text{ remaining} \end{array} \quad \checkmark \textcircled{1}$$

$$\begin{array}{r} \checkmark \textcircled{1} \\ 248 \end{array}$$

(2)

For a different football match,

297 tickets were sold for £9.50 each.

399 tickets were sold for £19.50 each.

(b) Work out an estimate for the total amount of money paid for these tickets.

You must show all your working.

estimate = rounding the numbers

297 tickets × £9.50 a ticket

↳ rounds to 300 tickets × £10 a ticket  $\checkmark \textcircled{1}$   
= £3000 total

399 tickets × £19.50 a ticket

↳ rounds to 400 tickets × £20 a ticket  $\checkmark \textcircled{1}$   
= £8000 total

£3000 + £8000 = £11,000

$$\begin{array}{r} \checkmark \textcircled{1} \\ \text{£ } 11,000 \end{array}$$

(3)

(c) Is your answer to part (b) an underestimate or an overestimate?

Give a reason for your answer.

Overestimate because we rounded the price and tickets  
up  $\checkmark \textcircled{1}$

(1)

(Total for Question 22 is 6 marks)

23 Work out  $\frac{6}{7} \times \frac{5}{12}$

Give your answer as a fraction in its simplest form.

Simplify first

$$\frac{6 \times 5}{7 \times 12}$$

6 and 12  
can both be  
divided by 6

$$\overset{\text{J}}{\textcircled{1}} \frac{1 \times 5}{7 \times 2} = \frac{5}{14}$$

$$\overset{\text{J}}{\textcircled{1}} \frac{5}{14}$$

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(Total for Question 23 is 2 marks)

24 Work out  $8.46 \div 0.15$

$$\frac{8.46}{0.15} \times \frac{100}{100} = \frac{846}{15} \quad \checkmark \textcircled{1}$$

$$15 \overline{) 846.0} \quad \checkmark \textcircled{1}$$

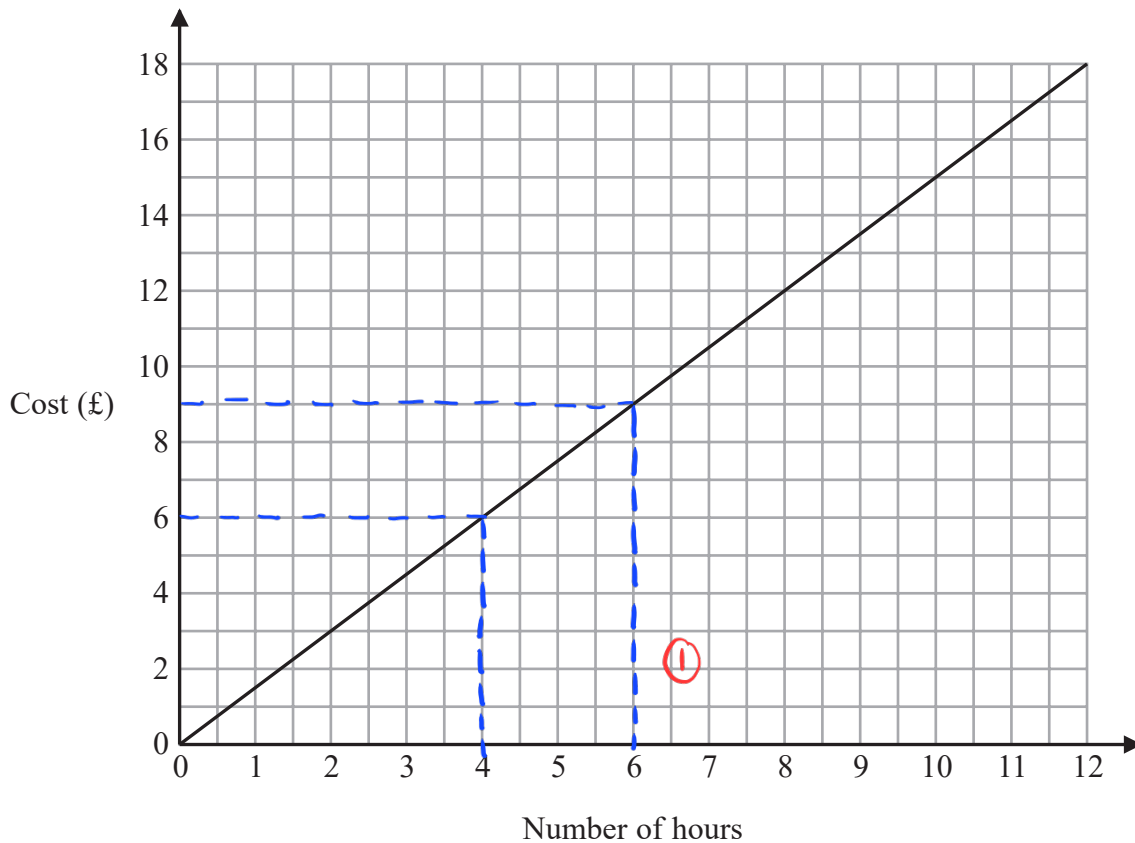
15
30
45
60
75
90

$$\begin{array}{r} 056.4 \\ \underline{75} \\ 96 \\ \underline{90} \\ 60 \\ \underline{60} \\ 0 \end{array}$$

56.4  $\checkmark \textcircled{1}$

(Total for Question 24 is 3 marks)

25 This graph can be used to find the cost of parking a car in a car park for up to 12 hours.



(a) Use the graph to find the cost of parking a car for 4 hours.

£..... 6 (1)

Justin drives into the car park at 0800 in the morning.  
When he drives out of the car park he has to pay £9

(b) At what time does Justin drive out of the car park?

∴ Justin parked for 6 hours .

∴ He drive out of the car park at: 0800 + 6 hours (1)

= 14:00 or 2pm (1)

..... 2 pm  
(3)

(Total for Question 25 is 4 marks)

26 The table shows information about the weights of the people in a hotel lift.

Weight	Number of people
40 kg	1
50 kg	2
60 kg	4
70 kg	5
80 kg	3
90 kg	1

Show that the total weight of the people in the lift is less than 1200 kg.

$$\begin{aligned}\text{Total weight} &= (40 \text{ kg} \times 1) + (50 \text{ kg} \times 2) + (60 \text{ kg} \times 4) + (70 \text{ kg} \times 5) \\ &\quad + (80 \text{ kg} \times 3) + (90 \text{ kg} \times 1) \quad (1) \\ &= 40 \text{ kg} + 100 \text{ kg} + 240 \text{ kg} + 350 \text{ kg} + 240 \text{ kg} + 90 \text{ kg} \quad (1) \\ &= 1060 \text{ kg} < 1200 \text{ kg} \quad (\text{shown}) \\ &\quad (1)\end{aligned}$$

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(Total for Question 26 is 3 marks)



- 27 Wayne begins walking at 8.30 am.  
He walks for 1 hour and 45 minutes.

$$1 \text{ hour} = 60 \text{ minutes}$$

Wayne then rests for 15 minutes.  
He then walks for 85 minutes to a cafe.

Does Wayne get to the cafe before 12 noon?  
You must show how you get your answer.

$$\begin{aligned} \text{Time to the cafe} &= 1 \text{ hour } 45 \text{ mins} + 15 \text{ mins} + 85 \text{ mins} \\ &= 2 \text{ hours} + 85 \text{ mins} \\ &= 2 \text{ hours} + 1 \text{ hour } 25 \text{ mins} \quad (1) \\ &= 3 \text{ hours } 25 \text{ mins} \quad (1) \end{aligned}$$

$$\begin{array}{r} \text{Time Wayne started walking} = \quad 8.30 \text{ am} \\ \quad \quad \quad \quad \quad \quad \quad \quad \quad + 3.25 \\ \hline \quad \quad \quad \quad \quad \quad \quad \quad \quad 11:55 \text{ am} \quad (1) \\ \hline \end{array}$$

Yes, Wayne gets to the cafe at 11.55 am which is  
before 12 noon. (1)

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(Total for Question 27 is 4 marks)

28 Gabriel thinks of a number.

He multiplies his number by 5 and then adds 7  
His answer is 72

What number did Gabriel think of?

let number =  $x$

$$x \times 5 + 7 = 72$$

$$5x + 7 = 72$$

$$5x = 72 - 7$$

$$5x = 65 \quad (1)$$

$$x = \frac{65}{5} \quad (1)$$

$$x = 13 \quad (1)$$

13

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(Total for Question 28 is 3 marks)

29 Jonny wants to know how much coffee he will need for 800 people at a meeting.

Each person who drinks coffee will drink 2 cups of coffee.  
10.6 g of coffee is needed for each cup of coffee.

Jonny assumes 68% of the people will drink coffee.

- (a) Using this assumption, work out the amount of coffee Jonny needs.  
Give your answer correct to the nearest gram.

Finding the number of people assumed to drink coffee :

$$\frac{68}{100} \times 800 = 544 \quad (1)$$

Finding the amount of coffee for each person :

$$10.6 \text{ g} \times 2 = 21.2 \text{ g} \quad (1)$$

Finding the total amount of coffee Jonny needs :

$$\begin{aligned} 21.2 \text{ g} \times 544 &= 11532.8 \text{ g} \quad (1) \\ &\approx 11533 \text{ g (to the nearest gram)} \quad (1) \end{aligned}$$

11533

g

(4)

Jonny's assumption is wrong.  
72% of the people will drink coffee.

- (b) How does this affect your answer to part (a)?

Jonny will need more amount of coffee. (1)

(1)

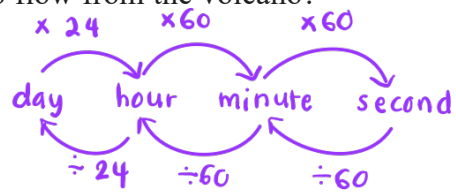
(Total for Question 29 is 5 marks)

30 Lava flows from a volcano at a constant rate of  $11.9 \text{ m}^3/\text{s}$

How many days does it take for  $67\,205\,600 \text{ m}^3$  of lava to flow from the volcano?  
Give your answer correct to the nearest day.

Finding total time it takes in seconds:

$$\frac{67\,205\,600 \text{ m}^3}{11.9 \frac{\text{m}^3}{\text{s}}} = 564\,7529.412 \text{ s} \quad \textcircled{1}$$



Converting time from seconds to days:

$$= 564\,7529.412 \text{ s} \times \frac{1 \text{ day}}{(24 \times 60 \times 60) \text{ s}}$$

$$= \frac{564\,7529.412}{86400} = 65.3 \text{ days}$$

$$= 65 \text{ days (nearest day)} \quad \textcircled{1}$$

65 ..... days

(Total for Question 30 is 3 marks)