

Candidate Name	Centre Number	Candidate Number
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GCSE

185/08

**MATHEMATICS (2 Tier)
FOUNDATION TIER
PAPER 2**

A.M. MONDAY, 1 June 2009

2 hours

ADDITIONAL MATERIALS

A calculator will be required for this paper.

INSTRUCTIONS TO CANDIDATES

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

Take π as 3.14 or use the π button on your calculator.

INFORMATION FOR CANDIDATES

You should give details of your method of solution especially when a calculator is used.

Unless stated, diagrams are not drawn to scale.

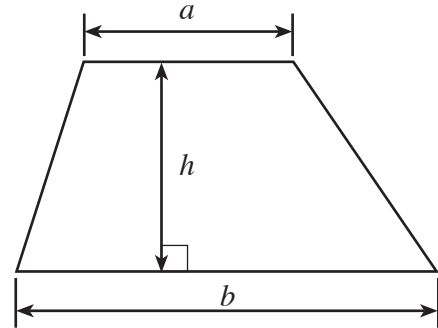
Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

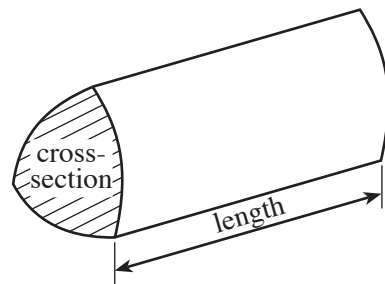
For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1	5	
2	4	
3	6	
4	4	
5	5	
6	7	
7	4	
8	4	
9	5	
10	6	
11	5	
12	4	
13	4	
14	4	
15	5	
16	6	
17	5	
18	5	
19	4	
20	2	
21	6	
TOTAL MARK		

Formula List

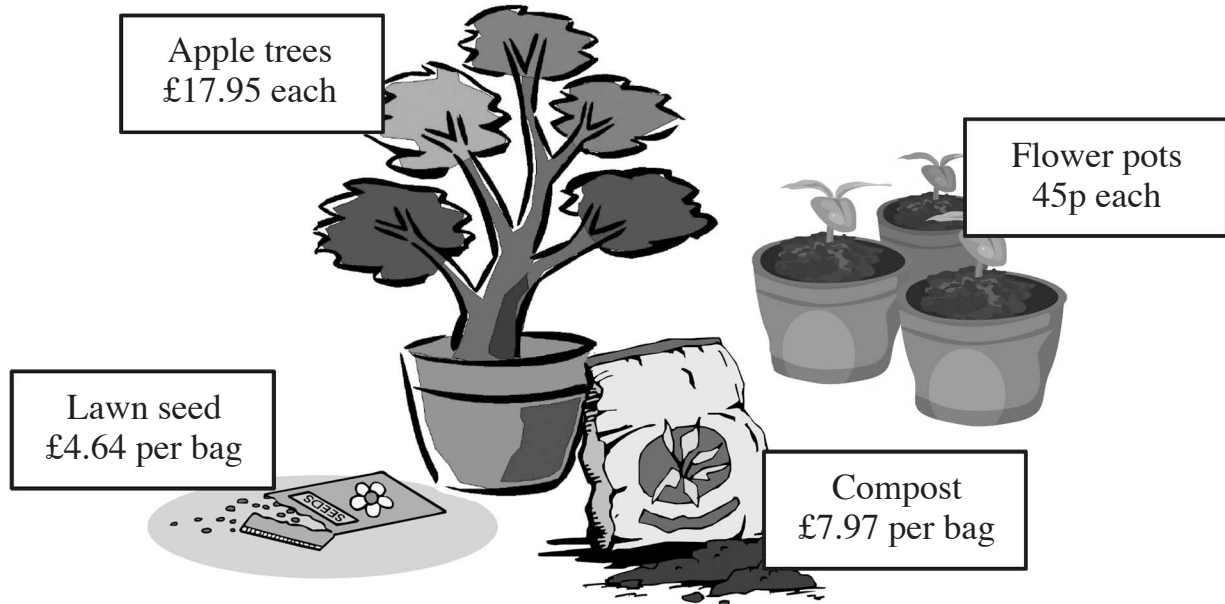
Area of trapezium = $\frac{1}{2} (a + b)h$



Volume of prism = area of cross-section \times length



1. Chris visits a garden centre.
He sees the following display in the gardening section.



- (a) Chris buys 2 apple trees, 8 flower pots, 4 bags of compost and 3 bags of lawn seed.
Complete the following table to show his bill for these items.

Item	Cost
2 apple trees	£35.90
8 flower pots	
4 bags of compost	
3 bags of lawn seed	
Total	

[4]

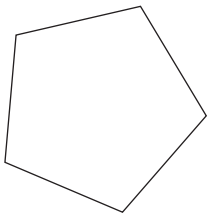
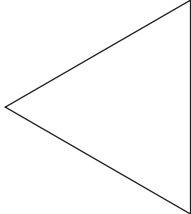
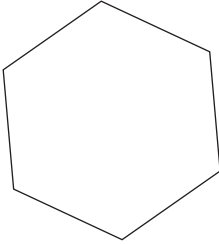
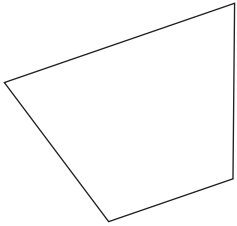
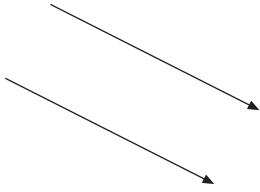

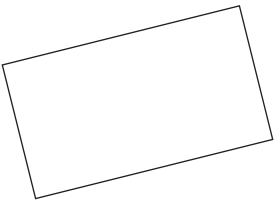
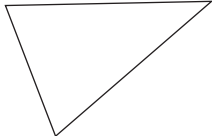
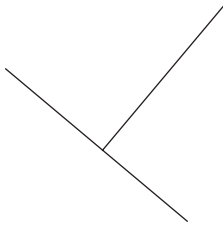
- (b) The garden centre gives a discount of 10%.
How much discount does Chris get?

[1]

2. Which metric unit is best used to measure
- the area of the floor of a classroom,
- the volume of a bucket,
- the distance of a race in athletics,
- the weight of a sack of potatoes?

[4]

3. (a)

A 	B 	C 
D 	E 	F 
G 	H 	I 

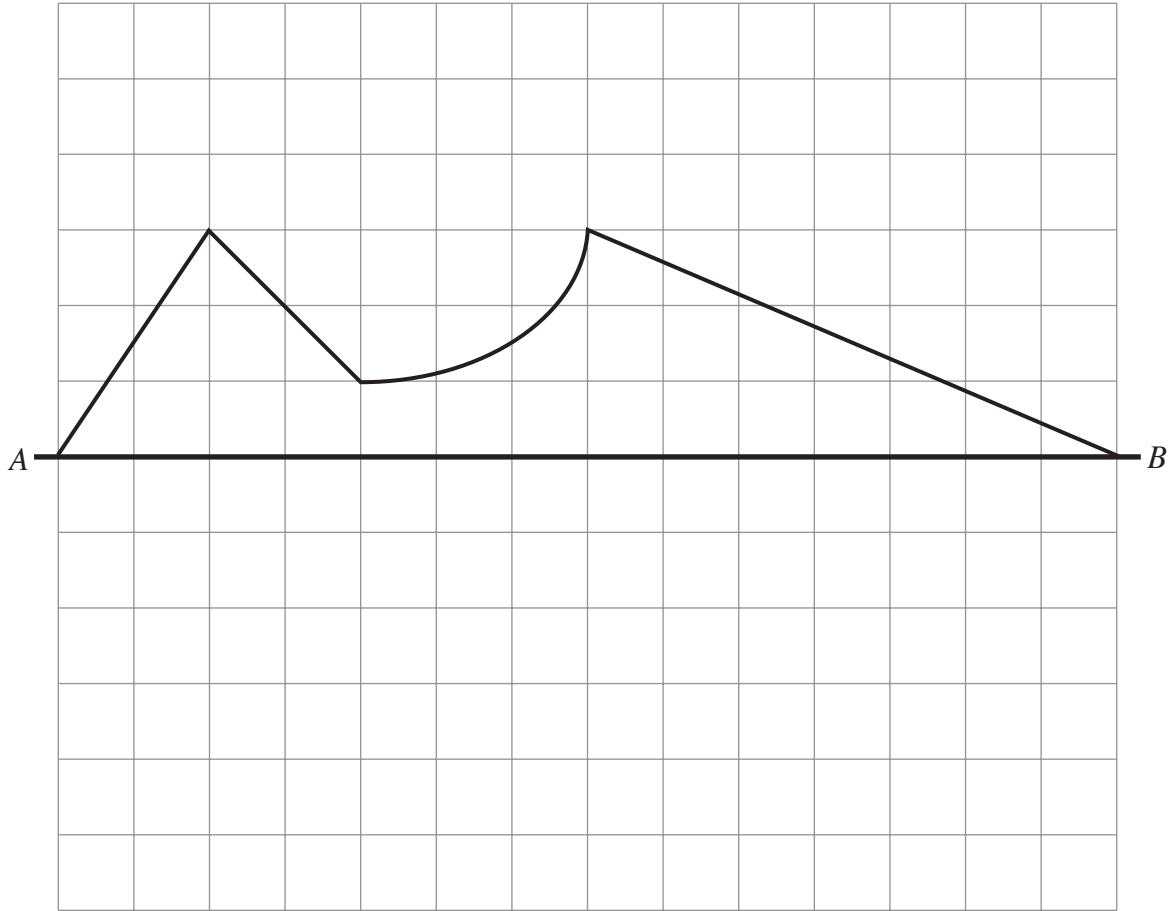
Complete the following table.

Diagram	Letter
two perpendicular lines	I
an equilateral triangle	
a parallelogram	
a hexagon	
a rectangle	

[4]

(b) Complete the following figure so that it is symmetrical about the line AB .

[2]



4. The formula for the cost of hiring a hedge trimmer is

$$\text{Cost} = \text{Number of days} \times \text{£21} + \text{Hiring Fee}$$

(a) Find the **Cost** when the **Number of days** is 4 and the **Hiring Fee** is £15.

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[2]

(b) Find the **Hiring Fee**, when the **Cost** is £230 and the **Number of days** is 10.

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[2]

5. The ages of 9 people are:

46 60 74 51 35 46 63 53 40

(a) Find the mean age for these people.

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[3]

(b) Find the median of these ages.

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[2]

6. The table shows the cost, in £s, of sending parcels.

Weight in kg	Delivery by 9:00 am next day	Delivery by 10:00 am next day	Delivery by 12:00 noon next day
1 - 10	42.99	34.99	20.99
11	44.89	36.69	22.64
12	46.79	38.39	24.29
13	48.69	40.09	25.94
14	50.59	41.79	27.59
15	52.49	43.49	29.24
16	54.39	45.19	30.89

- (a) Hywel sends a parcel that weighs 13 kg for delivery by 10:00 am next day.
How much did it cost?

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[1]

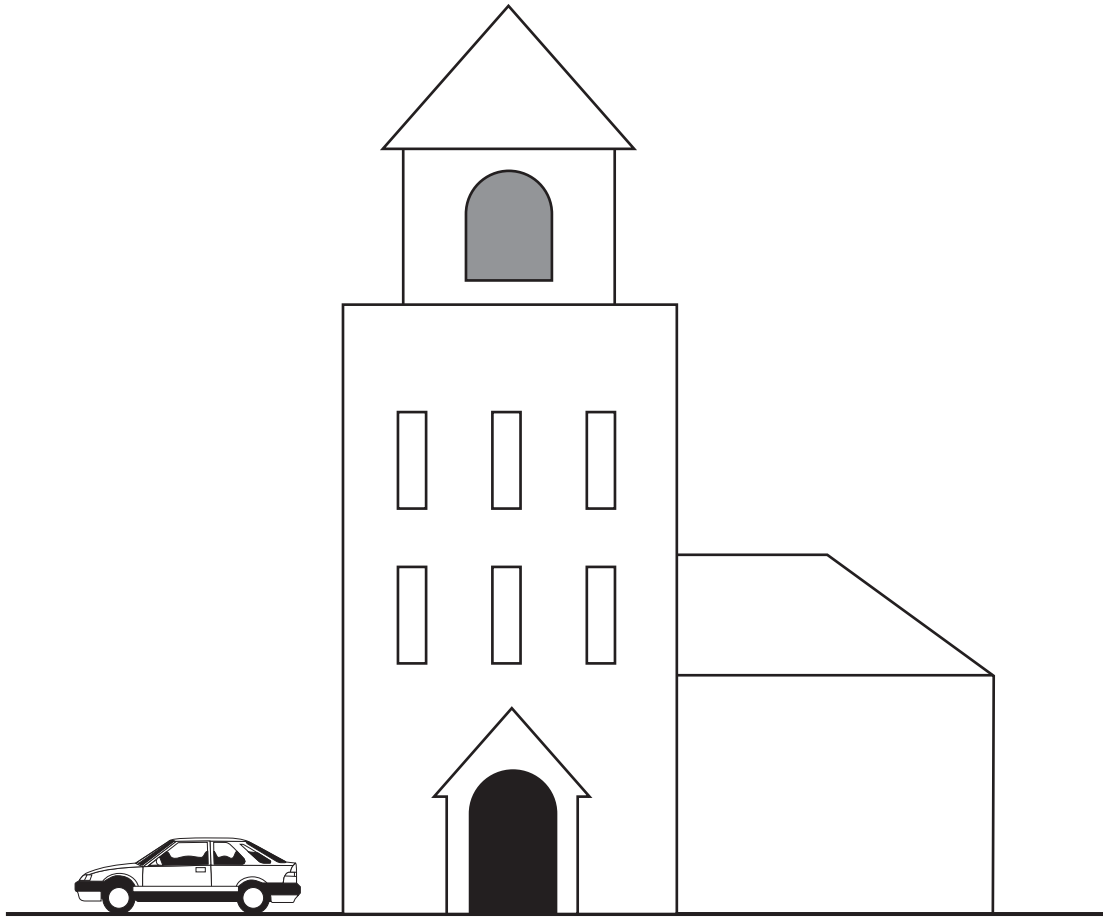
- (b) A parcel weighs 5 kg.
How much more does it cost to send this parcel to be delivered by 9:00 am the next day rather than by 12:00 noon the next day?

.....
[3]

- (c) Marion sends 2 parcels, one weighing 9 kg and the other 12 kg.
She sends the 9 kg parcel by 12:00 noon next day service.
The total cost for the 2 parcels was £59.38.
Which service did she use for the 12 kg parcel?

.....
[3]

7.



The above picture shows a car in front of a church.

Write down an **estimate** for the **actual height** of the car.

Using this estimate for the height of the car, estimate the **actual height** of the top of the church above ground level.

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[4]

8. In this table, the letters a , b , c and d represent different numbers.
The total for each row is given at the side of the table.
Find the values of a , b , c and d .

a	a	a	a	12
b	b	a	a	18
c	b	b	a	22
d	c	b	a	21

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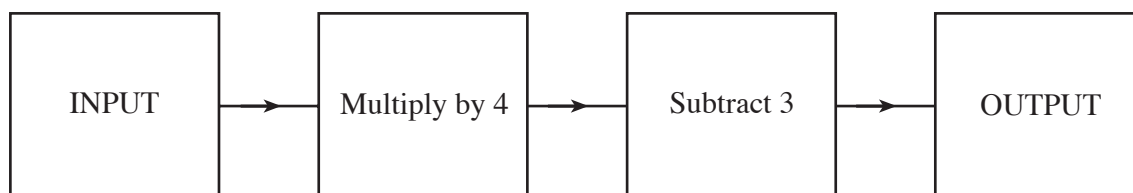
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$a =$ $b =$ $c =$ $d =$

[4]

9. (a) The diagram below represents a number machine.



- (i) When the INPUT is 8, what is the OUTPUT?

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- (ii) When the OUTPUT is 17, what is the INPUT?

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[3]

- (b) Describe **in words** the rule for continuing **each** of the following sequences.

- (i) 1, 4, 7, 10,

Rule:

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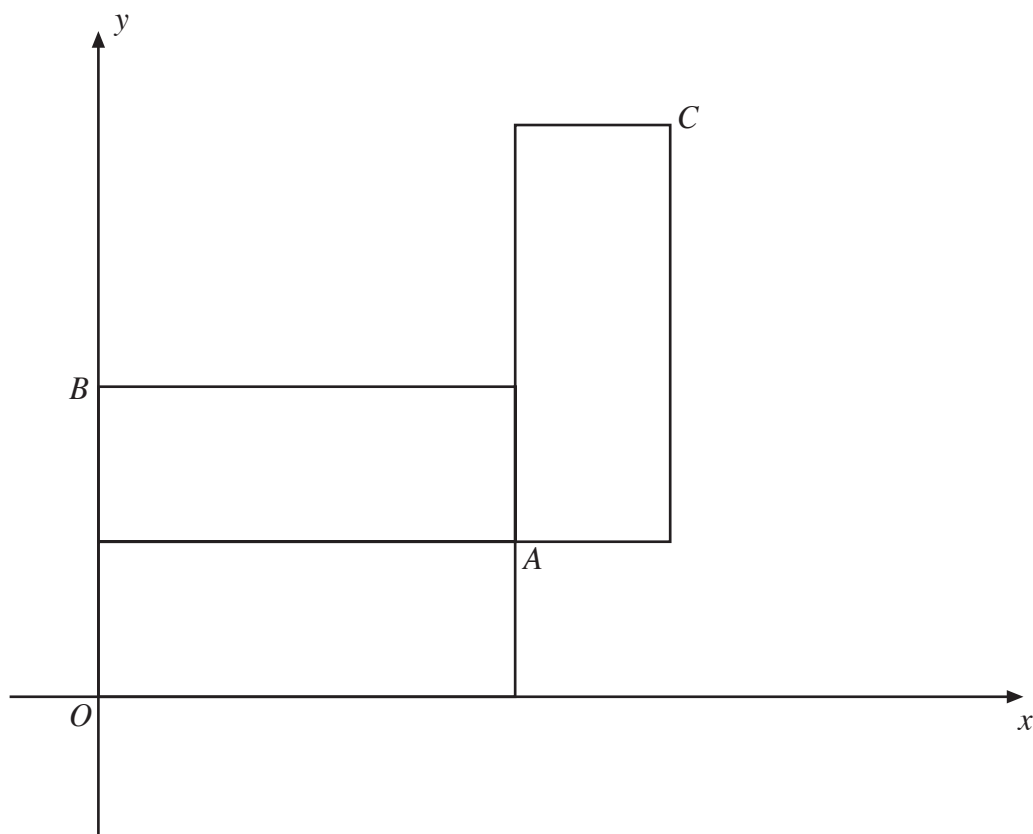
- (ii) 64, 32, 16, 8,

Rule:

.....

[2]

10. The diagram below shows 3 rectangles each of which is 12 units by 4 units.



Find the coordinates of the points A , B and C .

The coordinates of A are (..... ,

The coordinates of B are (..... ,

The coordinates of C are (..... ,

[6]

11. (a) Write down the next two terms of the following sequence.

24, 22, 18, 12,,

[2]

(b) Solve $\frac{x}{4} = 8$

..... [1]

(c) Find the value of $3a - 2b$ when $a = -1$ and $b = 5$.

..... [2]

12. Fifty patients in a hospital were asked how many visitors they had on a Sunday. The results are summarised in the following table.

Number of visitors	0	1	2	3	4	5
Frequency	3	12	14	18	2	1

(a) What is the probability that a randomly chosen patient from this group had at least 3 visitors?

..... [2]

(b) How many visitors were there altogether?

..... [2]

13. (a) Calculate 36% of 72.

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[2]

(b) Moira scores 78 marks out of a possible 120 marks.
What is Moira's score as a percentage?

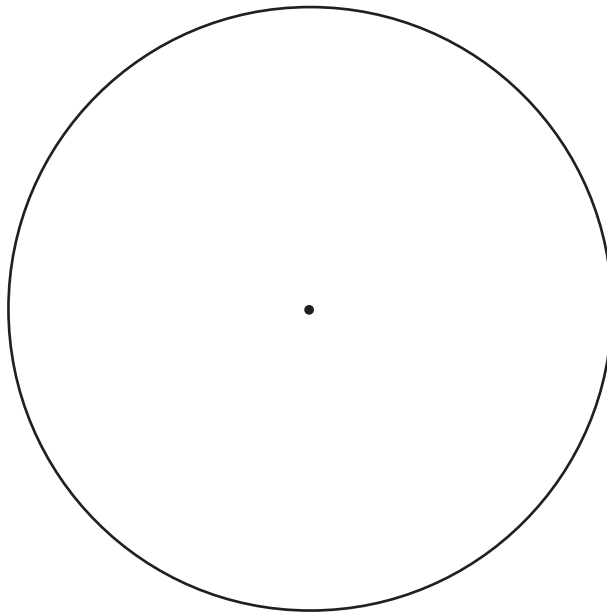
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[2]

14. A garage carries out a survey to find out the reason why 120 cars were brought into the garage. The results were as follows.

Reason	Number of cars
Service	42
Brakes	27
Bodywork	35
Other	16

Draw a pie chart to illustrate these results. You should show how you calculate the angles of your pie chart.



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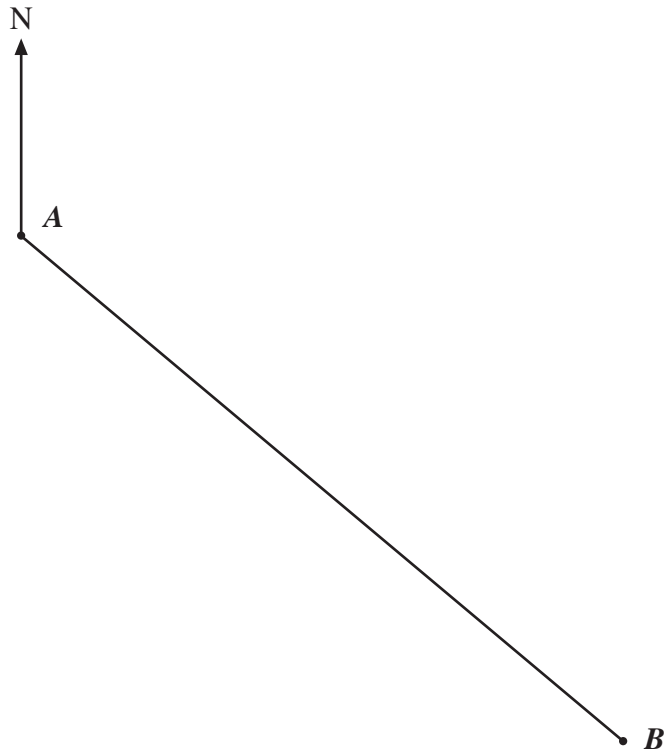
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15. (a) Below is a section of a map with scale 2 cm = 1 km.
Measure and find the straight line distance, in km, from *A* to *B*.

[3]



..... km

- (b) Plot the point *C* which is 4 km from *A* on a bearing of 146°.

[2]

16. Mr. Jones' electricity account with Welsh Energy, with some of the entries removed, is shown below.
He pays for his electricity by monthly direct debit payments. He gets a discount of £24.25 for paying in that way. Use the information given on the account to complete all of the missing entries and to calculate the balance in Mr. Jones' account.

Welsh Energy		Electricity			
Account					
<i>Period: 1st March 2009 to 31st May 2009</i>					
J Jones 13 Richmond Road Newport					
Meter reading last time	Meter reading this time	Tariff C-Customer reading E-Estimated reading	Units used	Price of each unit in pence	Amount £
7354	9734	Units used	11.25
		Quarterly charge			27.14
		Total charges		
		VAT at 5% of the total charge		
		Balance from previous quarter			21.37 CR
		Total to pay		
		Payments received			
		Direct Debit Discount			24.25 CR
		Payment received 18th March 2009			85.00 CR
		Payment received 18th April 2009			85.00 CR
		Payment received 18th May 2009			85.00 CR
		Balance to carry forward to next quarter		

Working

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17. Jim has one spin of the spinner shown below.

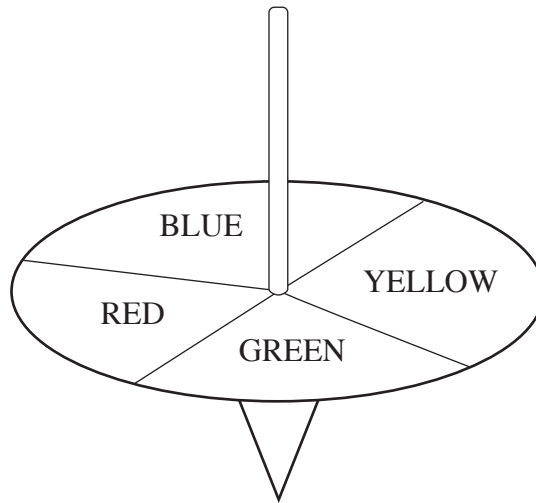


Diagram not drawn to scale.

- (a) The table below shows the probabilities of Jim obtaining YELLOW, GREEN, BLUE with one spin of the spinner. Complete the table by inserting the probability that Jim obtains RED with one spin of the spinner.

Colour	YELLOW	GREEN	BLUE	RED
Probability	0.26	0.24	0.37	

.....
 [2]

- (b) In a game, a player chooses two colours on the spinner and wins the game if either of the colours chosen is obtained with one spin of the spinner. Which **two** colours would you choose to have the best chance of winning?

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 [1]

- (c) Find the probability of obtaining either GREEN or BLUE on the spinner.

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 [2]

18. (a) The price of a digital radio, originally priced at £132, is increased by 12%. Calculate the increased price of the digital radio.

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[3]

- (b) Find $\frac{4.5 \times 3.4}{7.8 - 5.9}$ correct to one decimal place.

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[2]

19. Using your knowledge of prime factors, explain why 24×54 is a square number.

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[4]

20. Explain why $5x^3 + 2x^2 + x = 20$ has a solution between $x = 1.4$ and $x = 1.5$. Show all your calculations.

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[2]

