

New
Specification



Rewarding Learning

General Certificate of Secondary Education
2018

Centre Number

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Candidate Number

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Mathematics

Unit M1
(With calculator)
Foundation Tier



[GMC11]

GMC11

THURSDAY 24 MAY, 9.15am–11.00am

TIME

1 hour 45 minutes.

INSTRUCTIONS TO CANDIDATES

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.

You must answer the questions in the spaces provided.

Do not write outside the boxed area on each page or on blank pages.

Complete in black ink only. **Do not write with a gel pen.**

All working should be clearly shown since marks may be awarded for partially correct solutions.

When rounding is necessary give answers to **2 decimal places** unless stated otherwise.

Answer **all thirty** questions.

INFORMATION FOR CANDIDATES

Functional Mathematics is assessed in this unit.

The total mark for this paper is 100.

Figures in brackets printed down the right-hand side of pages indicate the marks awarded to each question or part question.

You may use a calculator.

You should have a calculator, ruler, compasses and a protractor.

The Formula Sheet is on page 2.

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32GMC1101

Formula Sheet

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

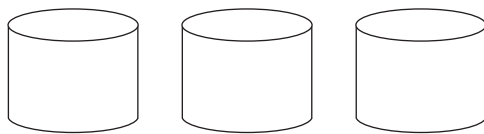


$$\text{Volume of prism} = \text{area of cross section} \times \text{length}$$

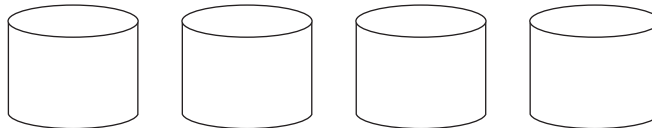


1 The pictogram shows the amount of paint sold.

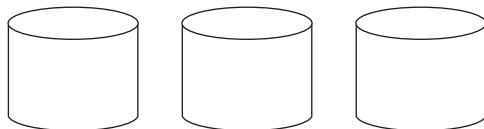
Gloss



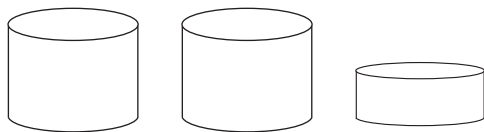
Satin



Matt

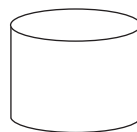


Outdoor



Undercoat

(a) 30 litres of matt paint were sold. Complete the key.



represents ____ litres [1]

(b) How many litres of satin paint were sold?

Answer _____ litres [1]

(c) How many more litres of gloss than outdoor paint were sold?

Answer _____ litres [1]

(d) 160 litres of paint were sold.

Complete the pictogram for undercoat.

[2]

[Turn over



2 (a) Draw a straight line 11.7 centimetres long in the space below.

[1]

(b) Change 11.7 centimetres to millimetres.

Answer _____ mm [1]

3 A plumber works on a job for 3 hours.

His call-out charge is £30

(a) Use this formula to calculate the cost of the job.

$$\text{Cost (£)} = \text{number of hours worked} \times 15 + \text{call-out charge}$$

Answer £ _____ [1]

(b) How much does the plumber charge per hour?

Answer £ _____ [1]



4 Jack asked 10 students how they travel to school.

They said

bus walk bus bus cycle walk walk car cycle walk

(a) Which way of travelling is the mode?

Answer _____ [1]

(b) What percentage of students cycle to school?

Answer _____% [1]



5 Eva works in a bakery.

(a) (i) Eva earns £7.85 an hour.

She works 35 hours each week.

How much does Eva earn each week?

Answer £ _____ [1]

(ii) How much does Eva earn in a year?

Answer £ _____ [2]

(b) Eva's boss earns twenty-one thousand three hundred and fifty pounds a year.

Write this amount in figures.

Answer £ _____ [1]

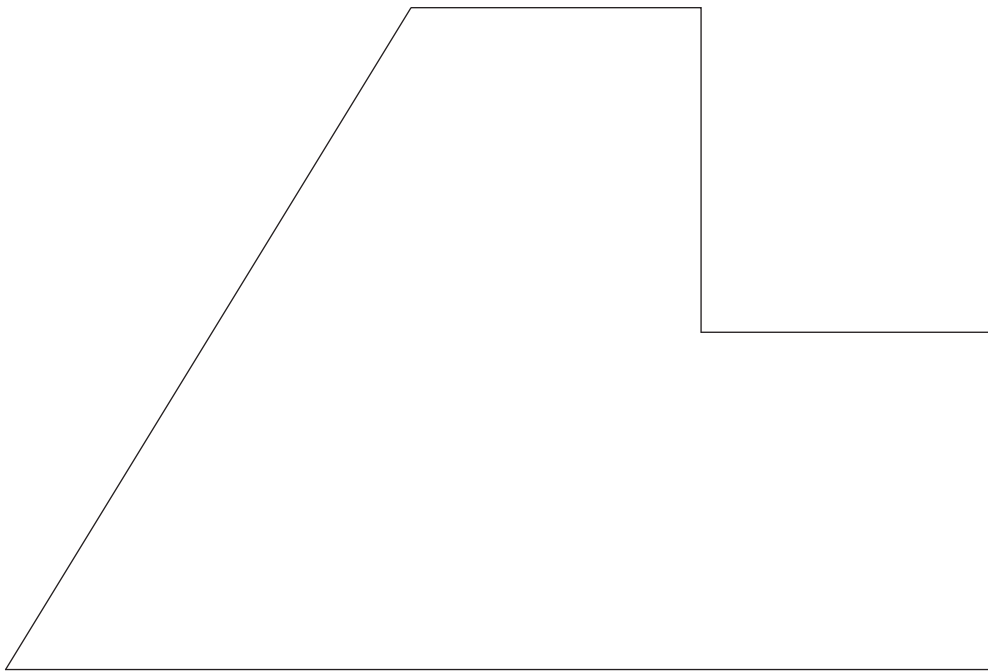
(c) The bakery uses 5227 kg of flour every year.

Round this amount to the nearest hundred kilograms.

Answer _____ kg [1]



6 A polygon is shown.



(a) What is the name of this polygon?

Answer _____ [1]

(b) How many **interior** angles are right angles?

Answer _____ [1]

(c) Draw one straight line to split the polygon into two trapeziums.

[1]

[Turn over



7 Part of the menu in McFarmers restaurant is shown.

McFarmers		
Wrap	Salad	Drink
Cheese £1.75	Green 99p	Small 60p
Chicken £1.95	Bean £1.25	Medium 90p
Beef £2.65	Tuna £1.55	Large £1.15

(a) Ali orders a Cheese Wrap, a Tuna Salad and a Small Drink.

How much change does he get from £5?

Answer £ _____ [2]

(b) Beth spends £4.09 on a Wrap, Salad and Drink.

List the items she orders.

Answer _____ Wrap _____ Salad _____ Drink [1]



8 Kim's locker passcode is a three-digit number.

All three digits are different.

The first digit is a factor of 14

The second digit is a factor of 15

The third digit is the **product** of the first two digits.

What is Kim's passcode?

Answer First digit _____ Second digit _____ Third digit _____ [2]

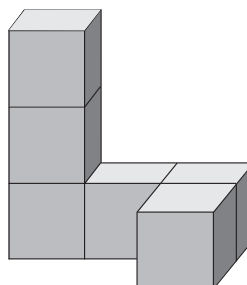
[Turn over



9 (a) This structure is built from 1 cm cubes.

Jay thinks the volume of the structure is 6 cm^2

Explain why he is wrong.



Front

Answer _____ [1]

(b) Draw the front elevation of this structure.



[2]

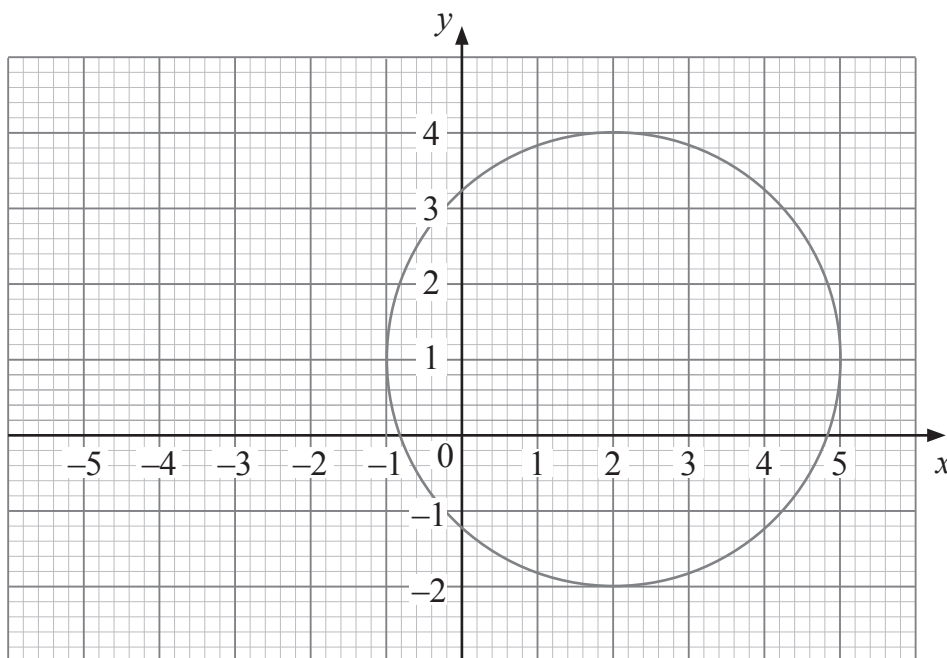


10 On a Tuesday, it was 72 days until Jill's birthday.

What day of the week was Jill's birthday?

Answer _____ [2]

11



(a) What are the co-ordinates of the centre of the circle?

Answer (_____ , _____) [1]

(b) P is the point (2, 4).

Draw the diameter PQ.

[2]

(c) What are the co-ordinates of Q?

Answer (_____ , _____) [1]

[Turn over



12 The temperature in some cities is shown in the table below.

Riga	-3°C
Helsinki	-11°C
Toronto	-6°C
Moscow	-8°C
Stockholm	-1°C

(a) List the temperatures in **ascending** order.

Answer _____, _____, _____, _____, _____ [2]

(b) How much warmer is Moscow than Helsinki?

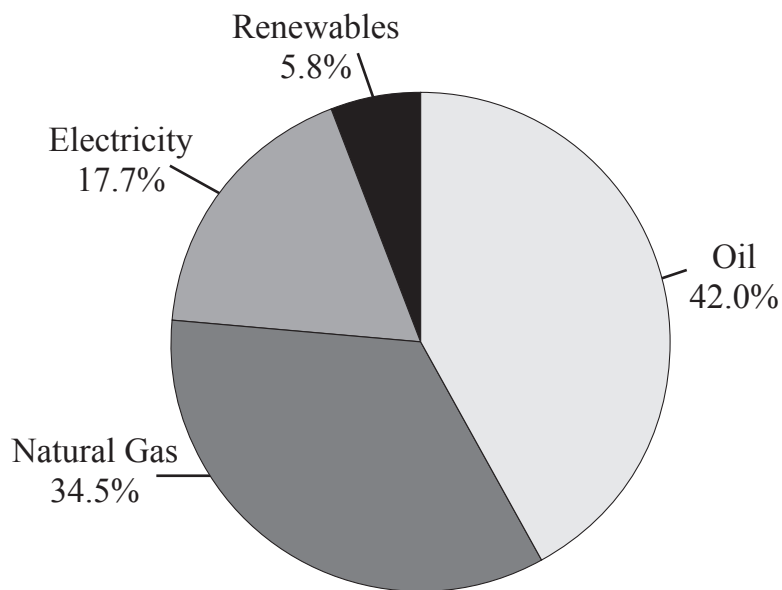
Answer _____ $^{\circ}\text{C}$ [1]

(c) What is the difference in temperature between Helsinki and Stockholm?

Answer _____ $^{\circ}\text{C}$ [1]



13 This pie chart shows energy use by type of fuel.



(a) Which type of fuel is used most?

Answer _____ [1]

(b) Measure the angle for electricity.

Answer _____ ° [1]

(c) Sean thinks about $\frac{3}{4}$ of energy use comes from oil and natural gas.

Explain why Sean is correct.

Answer _____
_____ [1]

(d) Complete the statement below with a suitable number in the box.

The fraction $\frac{\text{renewables}}{\text{electricity}}$ is about $\frac{1}{\boxed{}}$. [1]

[Turn over



14 The total population of Great Britain and Ireland is 70 million.

Information about this population is given in the table.

England	54.9 million
Northern Ireland	1.9 million
Republic of Ireland	4.6 million
Scotland	5.5 million
Wales	

(a) What is the population of Wales?

Answer _____ million [2]

(b) Sue thinks the population of Northern Ireland and Republic of Ireland makes up more than 10% of the total population of Great Britain and Ireland.

Do you agree?

Explain your answer.

Answer _____ because _____
_____ [2]



15 (a) Work out the size of the angle marked x .

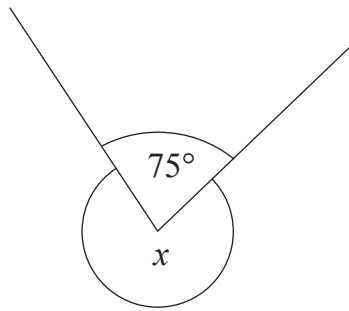


diagram not
drawn accurately

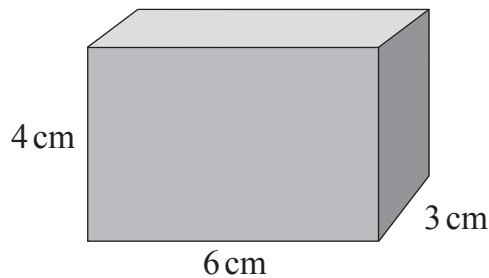
Answer _____ $^\circ$ [1]

(b) Circle the name of the quadrilateral with rotational symmetry of order 2

square kite parallelogram trapezium [1]

Look at the box below.

(c) (i) How many 1 cm cubes are needed to fill this box?



Answer _____ cubes [1]

(ii) What is the perimeter of the top face of the box?

Answer _____ cm [1]

[Turn over



16 (a) Seven factory workers take part in a charity swim.

Altogether they swim 179 lengths of a pool.

How many lengths does each worker swim on average?

Give your answer correct to **1 decimal place**.

Answer _____ lengths [2]

The seven factory workers **and** their manager earn these weekly wages:

£294, £245, £300, £288, £300, £259, £290 and £850

(b) What is the median weekly wage?

Answer £ _____ [2]

(c) Which of these is **most** affected by the manager's weekly wage of £850?

range median mean mode

Answer _____ [1]



17 (a) Write 2 **prime** numbers between 60 and 70

Answer _____ and _____ [2]

(b) Which of these is both a **square** number and a **cube** number?

8 16 36 64 100

Answer _____ [1]

(c) What is the **square root** of one million?

Answer _____ [1]

[Turn over



18 (a) Bikes normally cost $\pounds b$ each.

In a sale they are each reduced by $\pounds 30$

Write an expression for the cost of a bike in the sale.

Answer _____ [1]

(b) Cycling helmets normally cost $\pounds h$ each.

In a sale they are each reduced to half-price.

Write an expression for the cost of a cycling helmet in the sale.

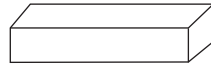
Answer _____ [1]

(c) Write an expression for the total cost of 4 bikes and 4 cycling helmets in the sale.

Answer _____ [2]



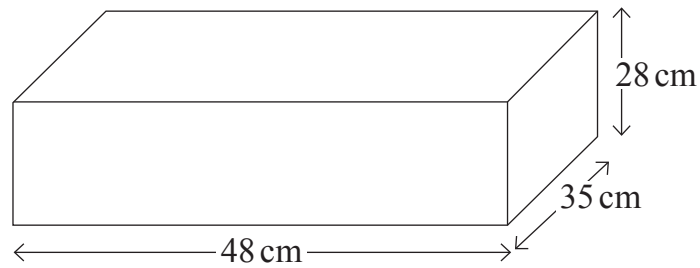
19 The packaging for a tube of toothpaste is a cuboid measuring $16\text{ cm} \times 5\text{ cm} \times 4\text{ cm}$.



The manufacturer wants to be able to pack 150 of these tubes into a cardboard box.

The box is a cuboid.

The box measures $48\text{ cm} \times 35\text{ cm} \times 28\text{ cm}$.



Will the box be big enough to hold 150 tubes of toothpaste in their packaging?
You must show working to explain your answer.

Answer _____ [3]

[Turn over



20 Male and female care assistants work in a nursing home.

Some can work weekdays only, some can work weekends only and some can work both.

(a) Complete the two-way table below.

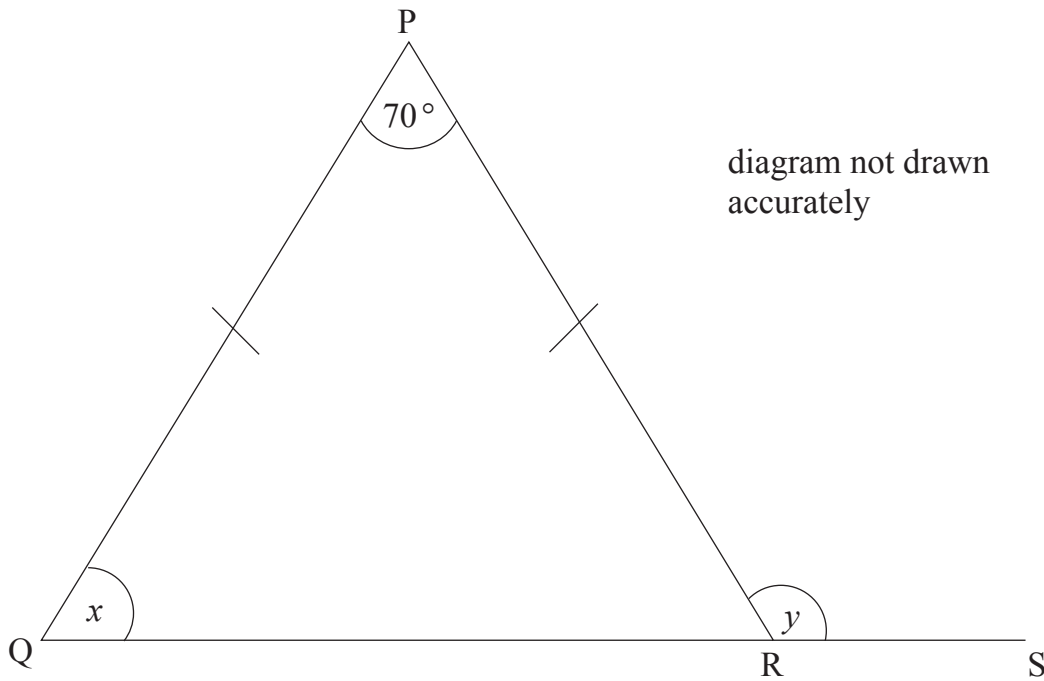
	Weekdays only	Weekends only	Both	Total
Male	1			8
Female		3		
Total	3		10	21

[2]

(b) How many male care assistants can work on weekends?

Answer _____ [1]





PQR is an isosceles triangle with $PQ = PR$.

QRS is a straight line.

(a) Work out the size of the angle marked x .

Answer _____ ° [2]

(b) Work out the size of the angle marked y .

Answer _____ ° [1]

[Turn over



22 (a) Write $\frac{3}{8}$ as a decimal.

Answer _____ [1]

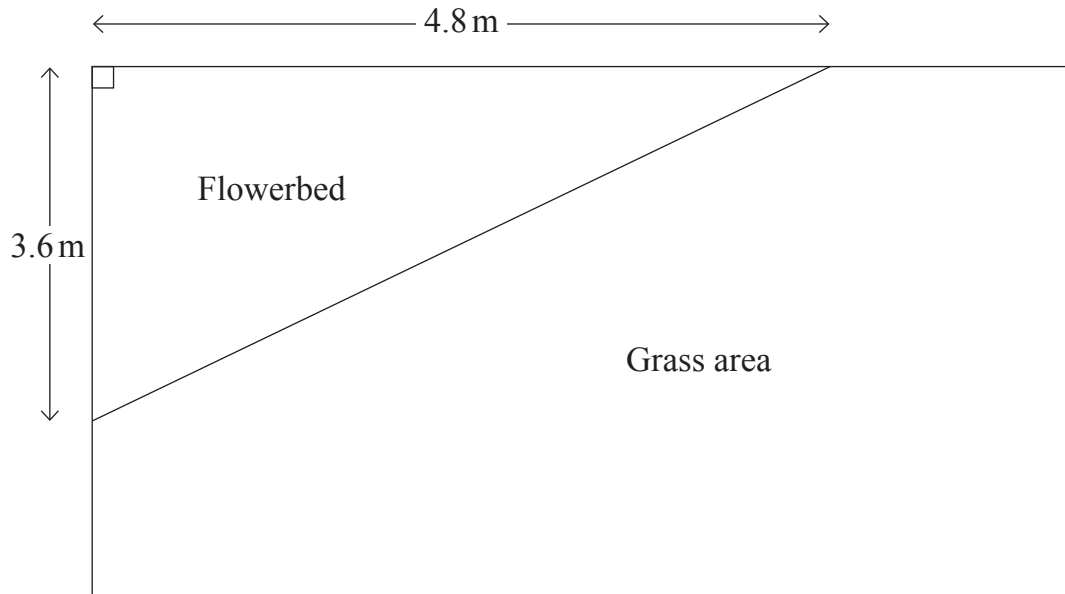
(b) What percentage is £9 of £16?

Answer _____ % [2]



23 A garden has a flowerbed in the corner.

A diagram of the garden is shown below.



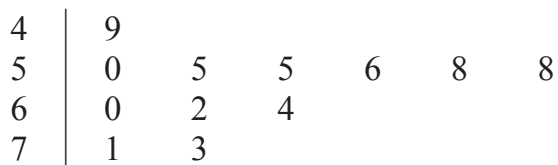
Calculate the area of the flowerbed.

Answer _____ m² [2]

[Turn over



24 The life expectancy for males in 12 countries in Africa for 2015 is shown in the following stem and leaf diagram.



Key: 5 | 3 means 53 years

(a) How many of these countries had a life expectancy for males of less than 58 years?

Answer _____ [1]

(b) For the above data work out

(i) the median,

Answer _____ years [1]

(ii) the range.

Answer _____ years [1]



- (c) In 1975 the life expectancy for males in the same 12 countries had a median of 49 years and a range of 30 years.

Compare the life expectancy for males in these 12 countries in **2015** with the life expectancy for males in **1975**

[2]

- 25 John has a telephone with the following costs.

Line rental: £18.99 per month

Call charge: 5.8p per minute

Last month John made calls lasting 385 minutes.

Work out his telephone bill for last month.

Answer £ _____ [3]

[Turn over



26

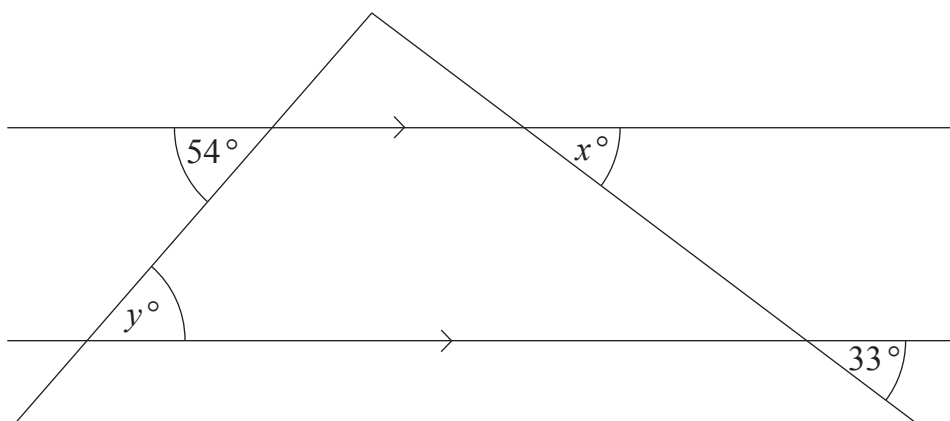


diagram not
drawn
accurately

Write down the values of x and y .

Answer $x =$ _____ [1]

Answer $y =$ _____ [1]

27 Calculate

$$\frac{\sqrt{1.1 \times 4.4}}{(3.2 - 2.65)}$$

Answer _____ [2]

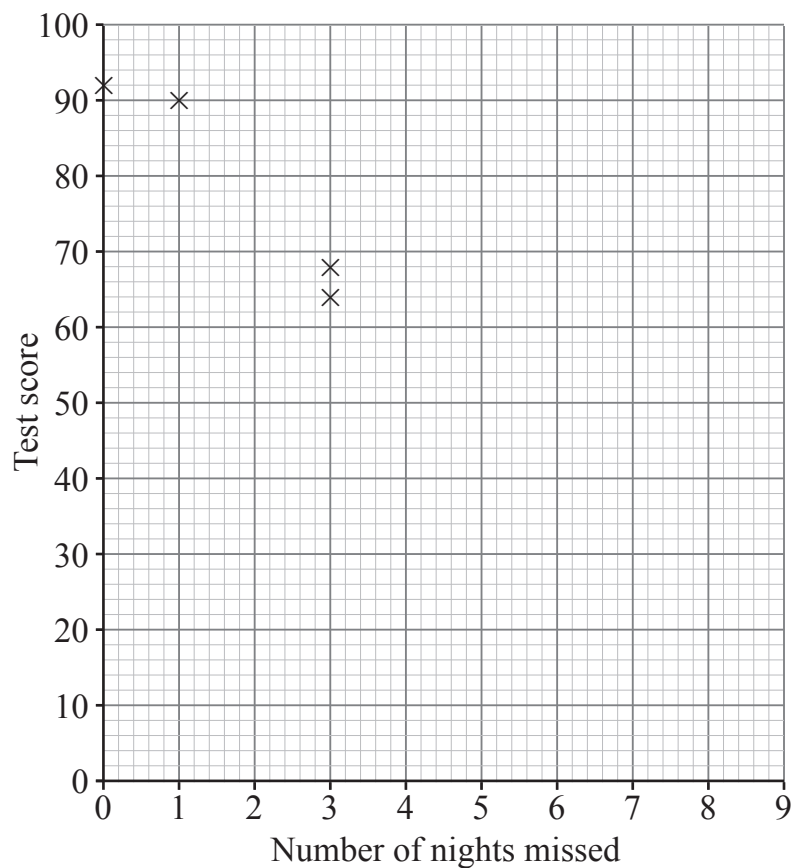


28 A group of pupils do a first aid course over 8 nights.
There is a test at the end of the course.

The table shows the number of nights each pupil misses and their test score.

Pupil	A	B	C	D	E	F	G	H	I	J
Number of nights missed	0	3	1	3	2	1	0	5	1	5
Test score	92	64	90	68	80	82	86	42	76	46

The first 4 points are plotted on the scatter graph.
Plot the last 6 points.



[2]

[Turn over



29 (a) Multiply out and simplify

$$3(x + 2) + 5(x - 1)$$

Answer _____ [3]

(b) Factorise

$$4x + 10$$

Answer _____ [1]



30 (a) Pat buys 30 boxes of crisps.

Each **box** contains 48 **packets** of crisps.

He sells 80% of the crisps at 60p a packet.

(i) How many packets does he sell at this price?

Answer _____ [2]

(ii) How much in total does he sell them for?

Answer £ _____ [1]

(b) He sells the rest at 20p a packet.
Pat paid £25 for each box of crisps.

Does Pat make a profit or loss, and how much is this profit or loss?

Answer Pat makes a _____ of £ _____ [3]

THIS IS THE END OF THE QUESTION PAPER



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Examiner Number

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