New Specification

**cea**
*Rewarding Learning*

Centre Number

Candidate Number

**General Certificate of Secondary Education
2018**

# 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.
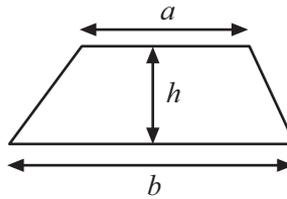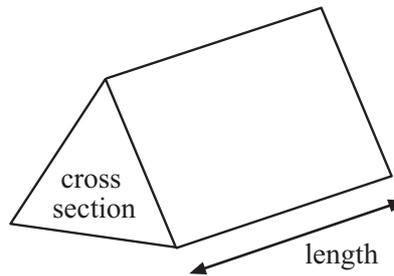The Formula Sheet is on page 2.

11722

# Formula Sheet

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



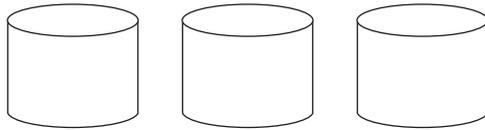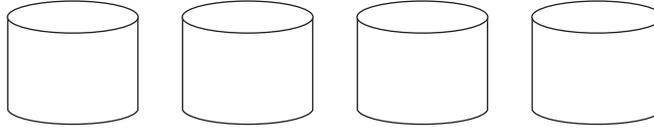**Volume of prism** = area of cross section × length



11722

*32GMC1102*

**1** The pictogram shows the amount of paint sold.

Gloss

Satin

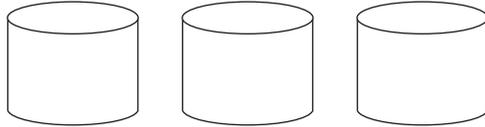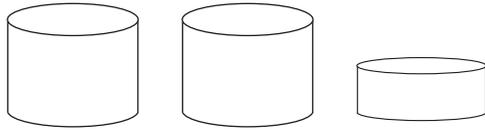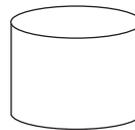Matt

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**

*32GMC1103*

**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.

**Cost (£) = number of hours worked × 15 + call-out charge**

Answer £ _____ [1]

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

Answer £ _____ [1]

11722

**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]

**[Turn over**

**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]

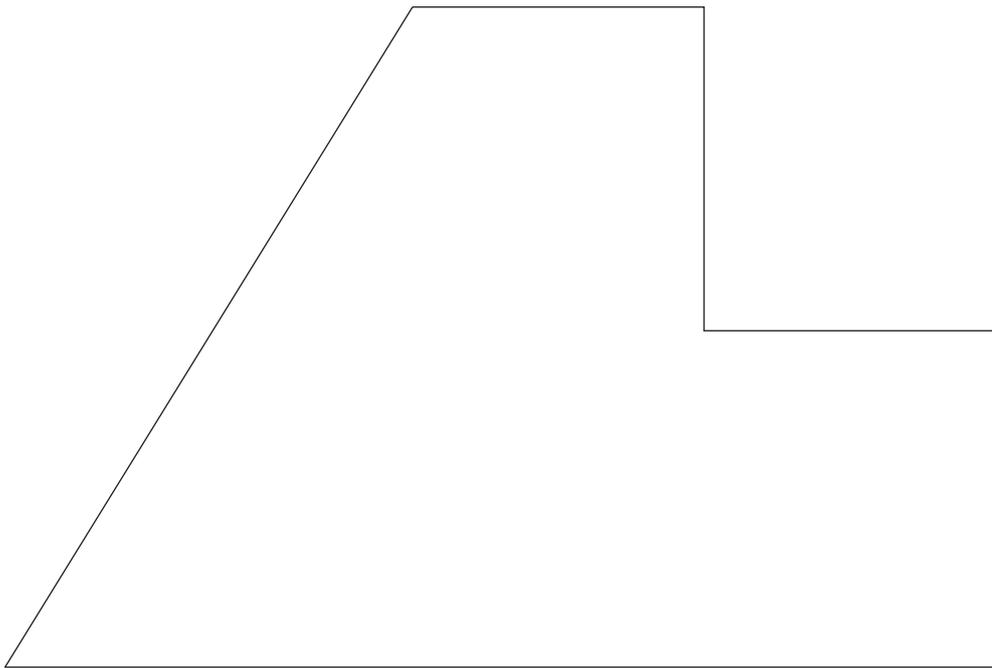**(c)** The bakery uses 5227 kg of flour every year.

Round this amount to the nearest hundred kilograms.

Answer _____ kg [1]

11722

*32GMC1106*

**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**

\*32GMC1107\*

**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]

11722

**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**

\*32GMC1109\*

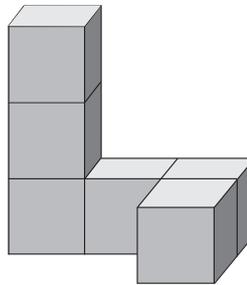**9** **(a)** This structure is built from 1 cm cubes.

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]
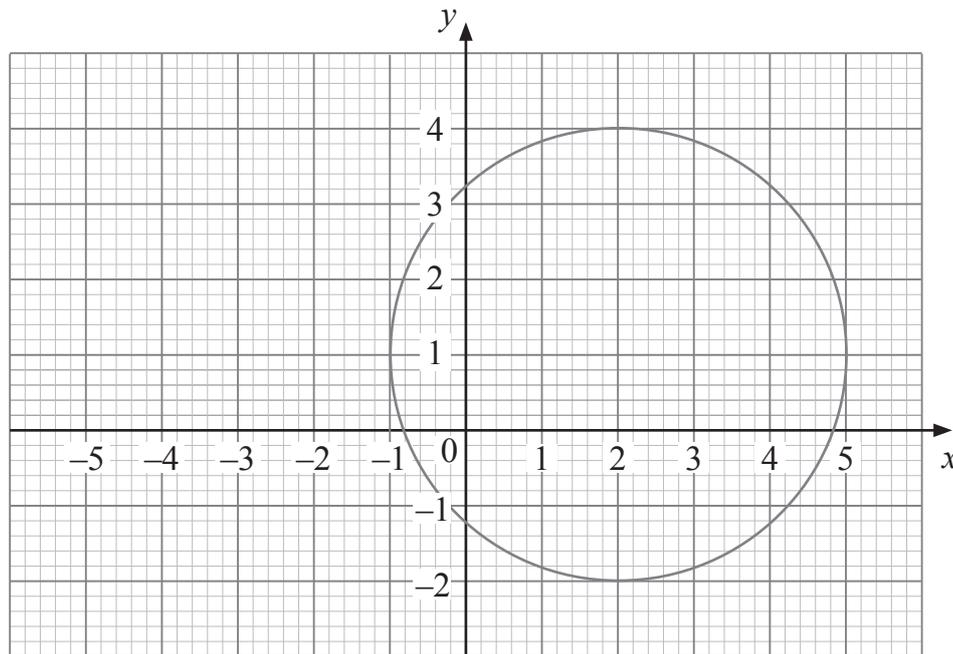
11722

**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**

11722

*32GMC1111*

**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]
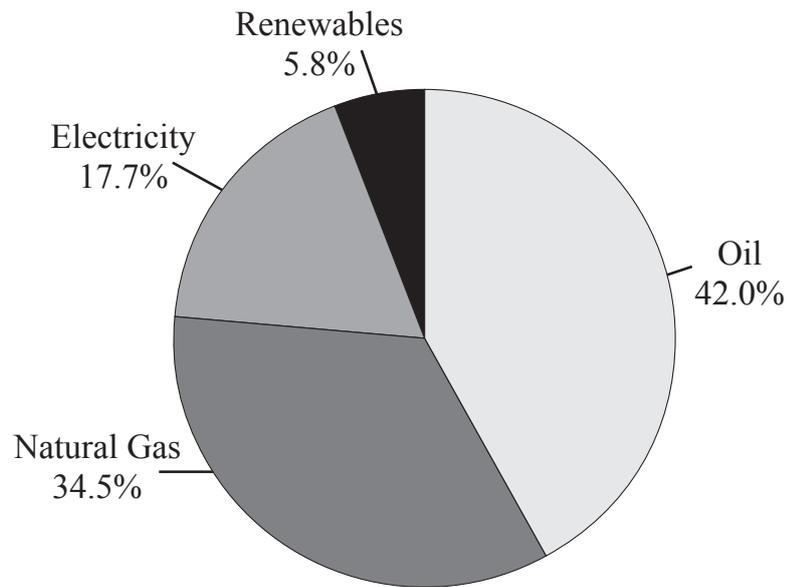
**(b)** How much warmer is Moscow than Helsinki?

Answer _____ °C [1]

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

Answer _____ °C [1]

11722

**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 $\dfrac{1}{\boxed{\phantom{00}}}$ . [1]

**[Turn over**

11722

*32GMC1113*

**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]

11722

*32GMC1114*

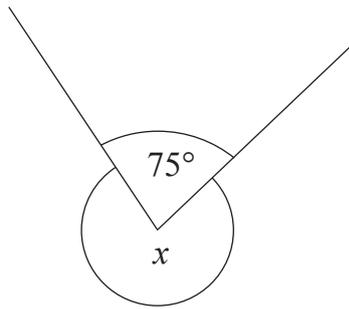**15** **(a)** Work out the size of the angle marked $x$.

diagram not
drawn accurately

$75°$

$x$

Answer _____ ° [1]
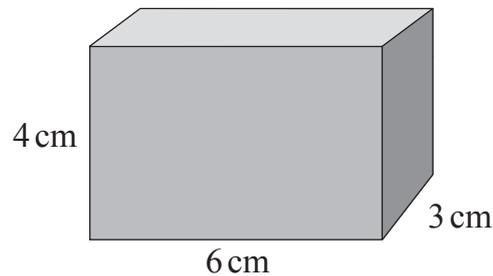
**(b)** Circle the name of the quadrilateral with rotational symmetry of order 2

square        kite        parallelogram        trapezium        [1]

Look at the box below.

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

4 cm

3 cm

6 cm

Answer _____ cubes [1]

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

Answer _____ cm [1]

**[Turn over**

*32GMC1115*

**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]

11722

**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**

11722

**18 (a)** Bikes normally cost £$b$ each.

In a sale they are each reduced by £30

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

Answer _____ [1]

**(b)** Cycling helmets normally cost £$h$ each.

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

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

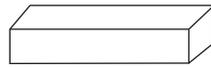Answer _____ [1]

**(c)** Write an expression for the total cost of 4 bikes and 4 cycling helmets in the sale.
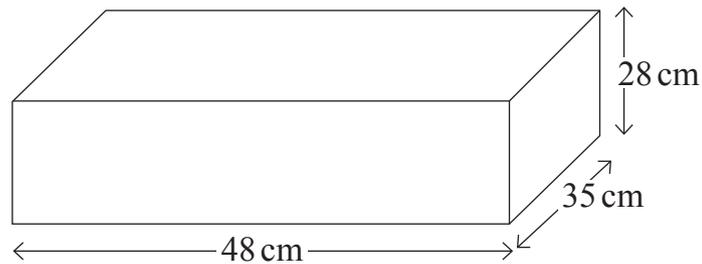
Answer _____ [2]

11722

**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**

11722

**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]

11722

**21**



diagram not drawn accurately
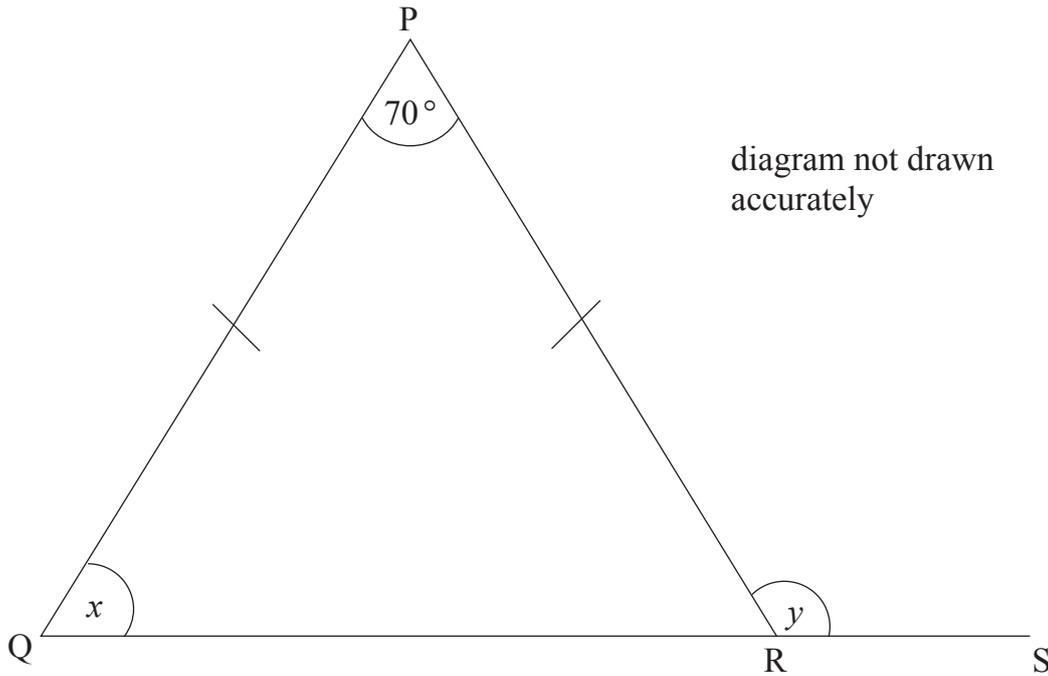
PQR is an isosceles triangle with PQ = PR.

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**

11722

**22 (a)** Write $\frac{3}{8}$ as a decimal.
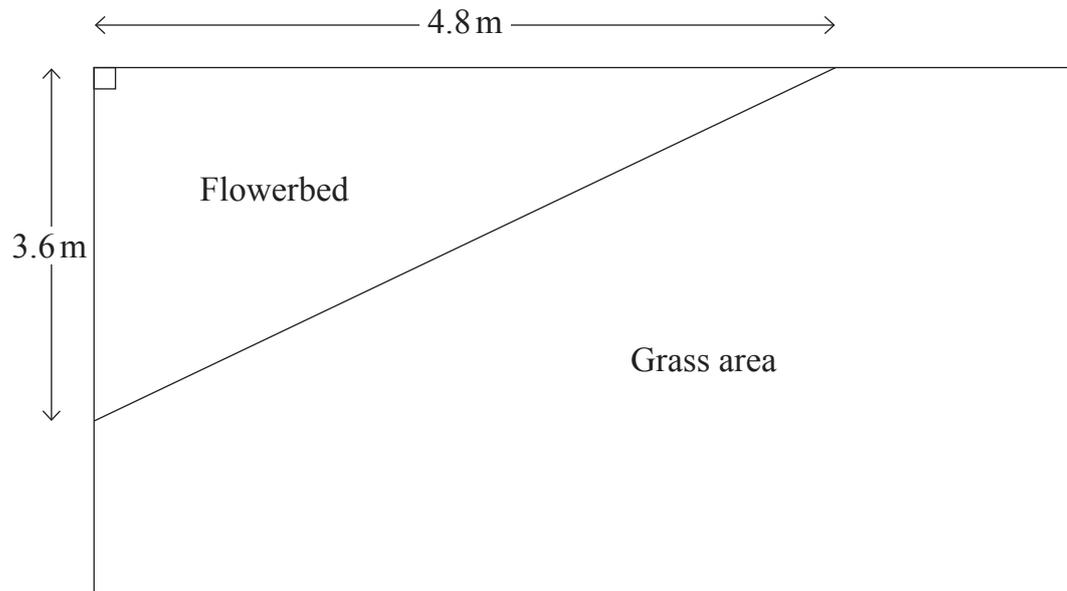
Answer _____ [1]

**(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 _____ m$^2$ [2]

**[Turn over**

11722

\*32GMC1123\*

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

```
4 | 9
5 | 0   5   5   6   8   8
6 | 0   2   4
7 | 1   3                    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]

11722

*32GMC1124*

**(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.

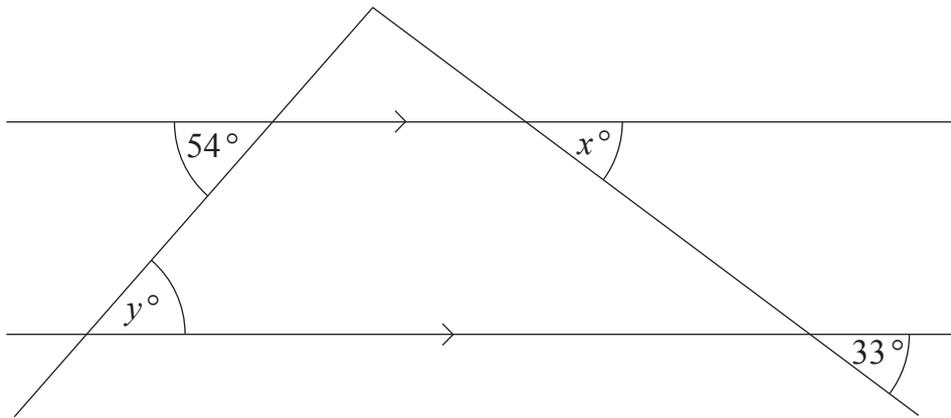Work out his telephone bill for last month.

Answer £ _____ [3]

**[Turn over**

11722

\*32GMC1125\*

\*32GMC1125\*

**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]

11722

*32GMC1126*

**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]

11722
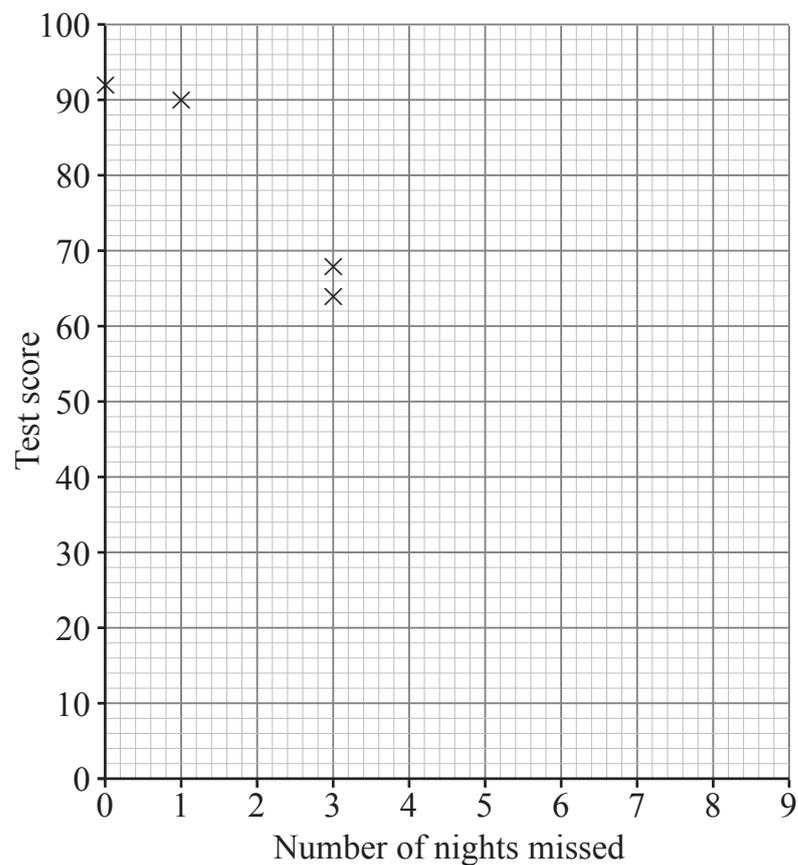
**29 (a)** Multiply out and simplify

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

Answer _____ [3]

**(b)** Factorise

$$4x + 10$$

Answer _____ [1]

*32GMC1128*

**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

*32GMC1129*

**BLANK PAGE**

**DO NOT WRITE ON THIS PAGE**

11722

*32GMC1130*

**BLANK PAGE**

**DO NOT WRITE ON THIS PAGE**

11722

**For Examiner's use only**

| Question Number | Marks |
|---|---|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| 8 | |
| 9 | |
| 10 | |
| 11 | |
| 12 | |
| 13 | |
| 14 | |
| 15 | |
| 16 | |
| 17 | |
| 18 | |
| 19 | |
| 20 | |
| 21 | |
| 22 | |
| 23 | |
| 24 | |
| 25 | |
| 26 | |
| 27 | |
| 28 | |
| 29 | |
| 30 | |
| **Total Marks** | |

**Examiner Number**

# DO NOT WRITE ON THIS PAGE

11722/3

*32GMC1132*