Write your name here

Surname		Other names

Grade One Paper
Level 1 / Level 2 GCSE
(9–1)

Centre Number

Candidate Number

Mathematics

Grade One Diagnostic

Wednesday Form Plus Maths Lesson
Time: 2 hours 30 minutes

Paper Reference
Grade 1

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.
Tracing paper may be used.

Total Marks

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions.
- Answer the questions in the spaces provided
  – *there may be more space than you need*.
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may not be used.**

Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets
  – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

Q1   Write down all the factors of 48.

………………………………………………………………………………………

(2)

Q2   Find the LCM of 56 and 88.

………………………………………………

(2)

Q3   What is $7^2 - 3^2 + 2^3$

………………………………………………

(2)

Q4   Write down the value of $\sqrt{121}$.

………………………………………

(1)

Q5   Write down all the prime numbers between 40 and 50.

…………………………………………………………………………………….

(2)

Q6   Write three thousand and seven in figures.

…………………………………………

(1)

Q7 Write 2,608 in words.

_____

_____

(1)

Q8 a $2048 \times 10,000$

………………………………………

(1)

b $412 \div 100$

………………………………………

(1)

Q9 Put the following numbers into ascending order

24   4   9.4   93.9   0.00342   0.0031342

……

(1)

Q10 Put the following numbers into order.

8   -3   7.4   -1.5   -1   -2.4

……

(1)

Q11   Write the value of the following:

a $12 - 14 =$

b $-20 - 13 =$

c $-7 - (-4) =$

d $-8 + 38 =$

e $-7 + (-6) =$

(5)

Q12   Write the value of the following:

a $-8 \times 4 =$

b $7 \times (-5) =$

c $-10 \div (-2) =$

d $-15 \div 3 =$

e $20 \div (-5) =$

(5)

Q13   The temperature in Aberdeen is 12°C colder than it is in Leeds.
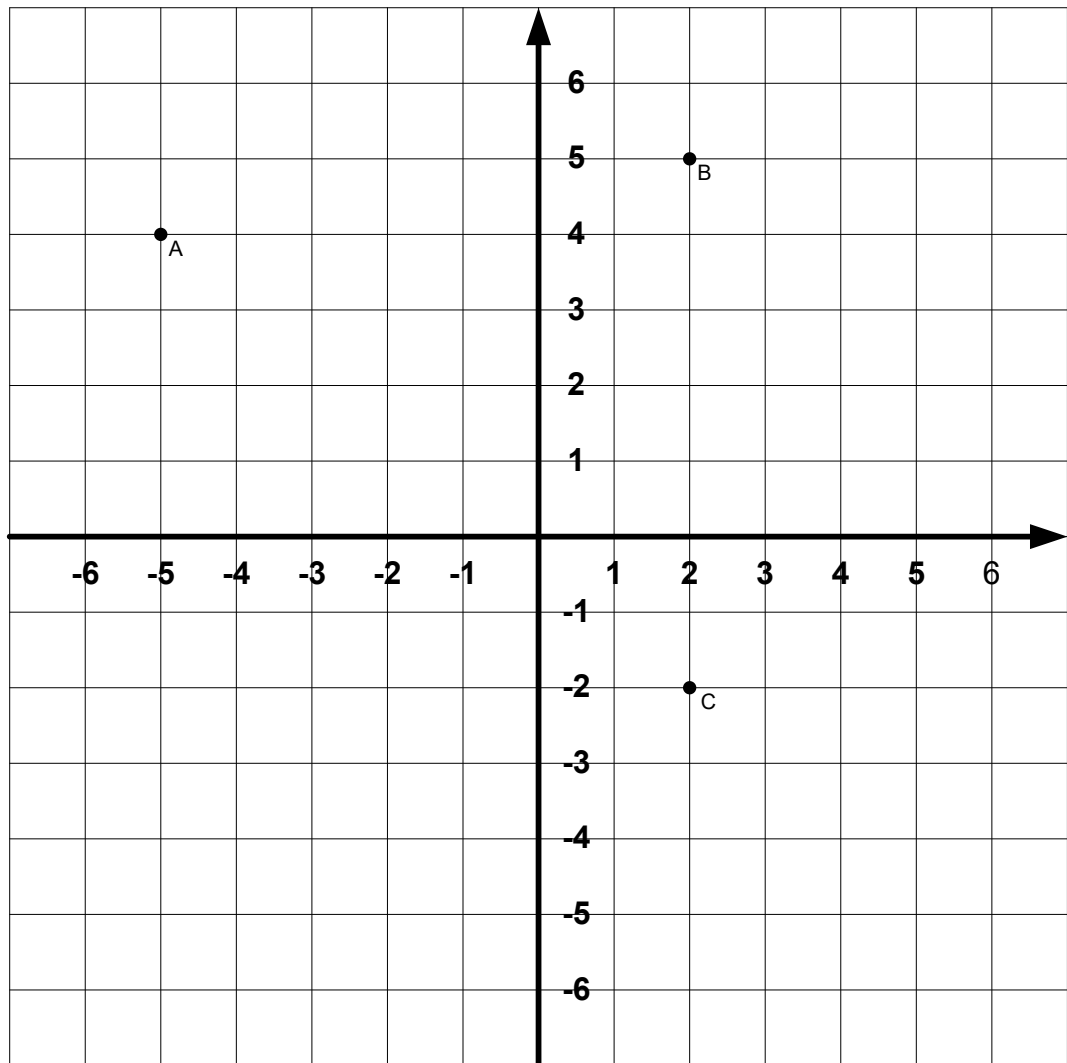
In Leeds, the temperature is 3°C.

What is the temperature in Aberdeen?

…………………………….

(2)

Q14 The co-ordinates of the vertices of a shape shown on the grid below.

a   Write down the co-ordinates below.

A: _____

B: _____

C: _____

(3)

b   A fourth point should be on the grid as well at the point (-5,-3).

Mark the point with an **X**.

(1)

Q15   A line runs from (3, 9) to (5, 6).

Bill needs to mark the midpoint of the line.
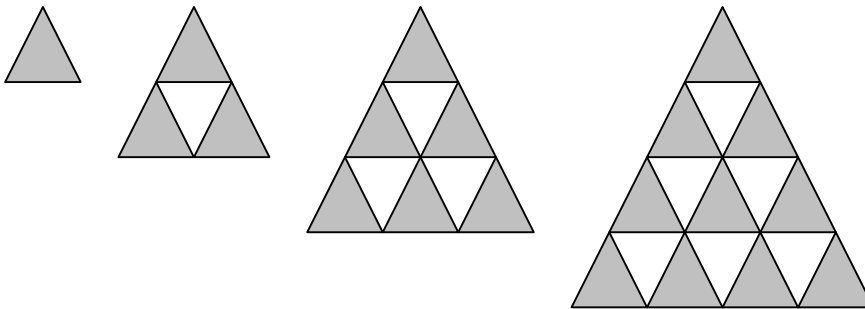
At what co-ordinates should Bill mark the midpoint?

…………………………………….

(2)

Q16   Below is an arithmetic sequence of numbers.

Write down the values of the missing numbers.

_____ , 25, 28, 31, 34, _____ , _____

(3)

Q17   Look at the pattern below.

Draw the next sequence in the pattern.

(2)

Q18   Look at the sequence of numbers below.

34, 40, 46, 52, 58

a   Write a rule explaining how this sequence changes from term to term.

_____

_____

(1)

b   What would be the tenth term in this sequence?

....

(1)

c   Is the number 86 in this sequence? Explain how you know.

_____

_____

_____

(1)

Q19   Simplify the following expressions

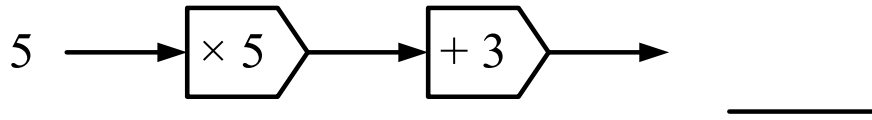a $q \times q \times q =$

b $3a + b + 4a - 2b =$

c $3(2f + 3) =$

d $t^2 + 3t^2 + 5t - 2t^2 =$

e $3x(2x + y) =$

(5)

Q20   Look at the function machines below.

a   Work out the missing quantities.

$5 \longrightarrow \boxed{\times 5} \longrightarrow \boxed{+3} \longrightarrow$ _____

_____ $\longrightarrow \boxed{\times 5} \longrightarrow \boxed{+3} \longrightarrow 43$
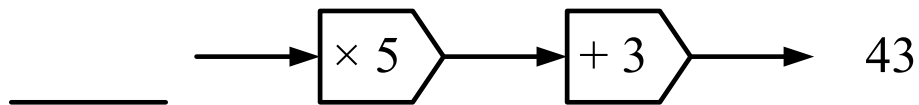
(2)

b   Write an equation that would perform the same function if we put **x** into the input.

(2)

Q21   Solve the equation
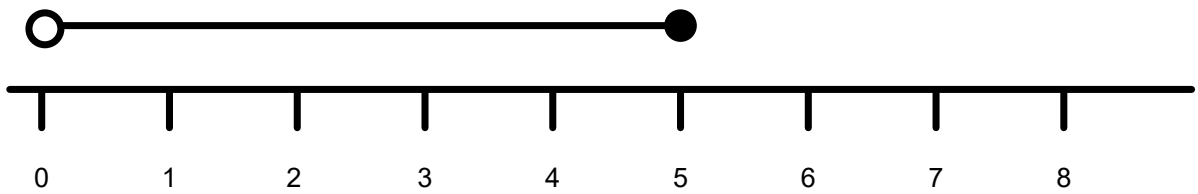
a $x + 2 = 30$

b $5x - 6 = 34$

(3)

Q22   The variable x is an integer within the range $7 \leq x < 12$.

Write down all the possible values of x.

....

(2)

Q23   State the inequalities shown on the number lines below.

....

(2)

Q24   Draw the inequality $1 < x < 5$ onto the number line below.

(2)

Q25   Look at the picture of the 3D shape below.
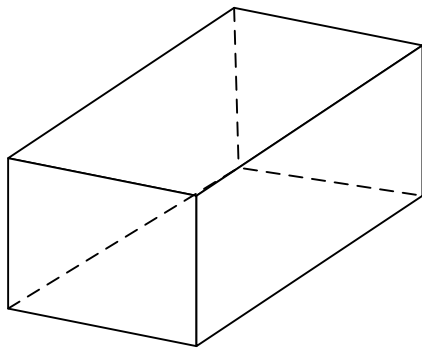
a   What is the name of the shape?

....

(1)

b   Complete the following sentence.

The shape above has _____ faces, _____ edges and _____ vertices.
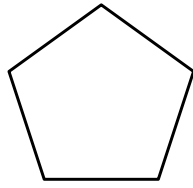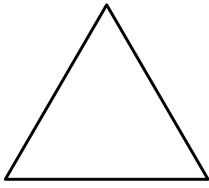
(2)

Q26   Below are some nets of cubes.

Tick nets that will work to form a cube.
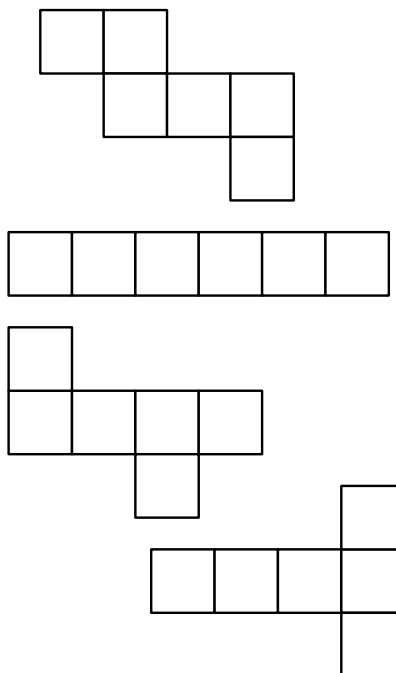
(2)

Q27   Name each of the following shapes.

....
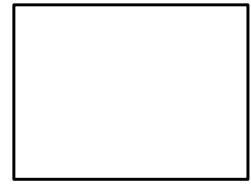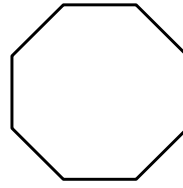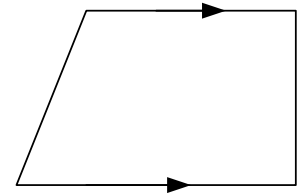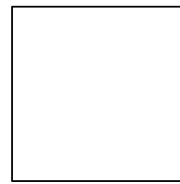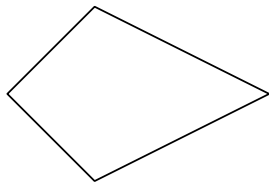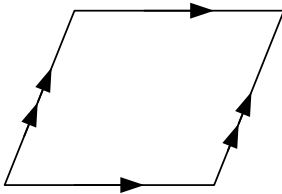
(4)

Q28   Name each of the following quadrilaterals.

....
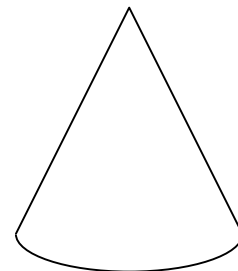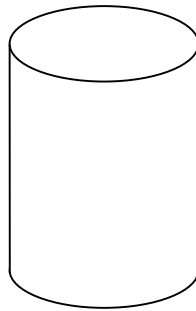
(4)

Q29   Name each of the solid shapes below.

....
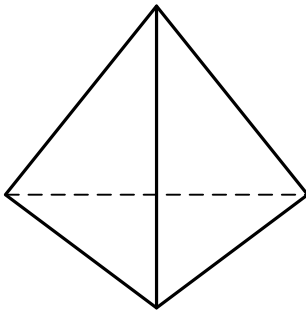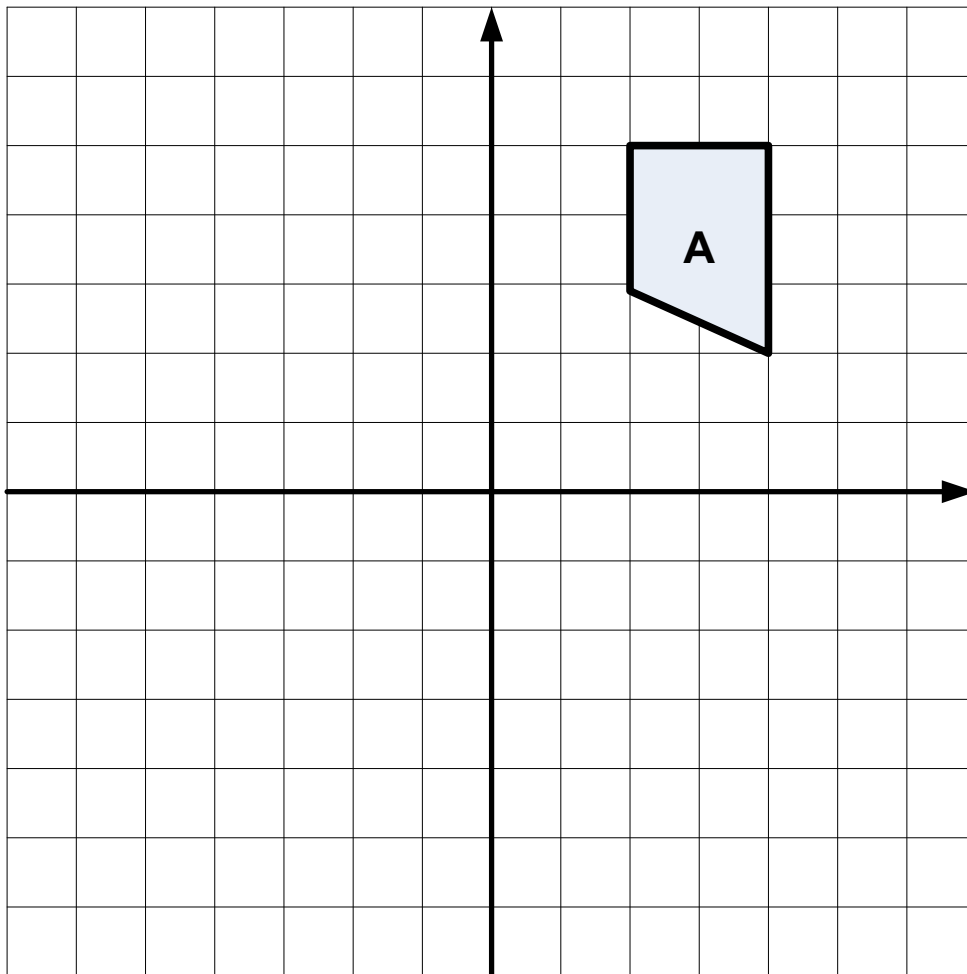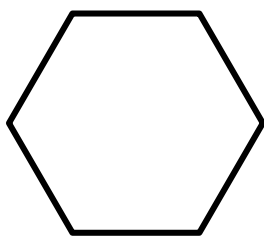
(3)

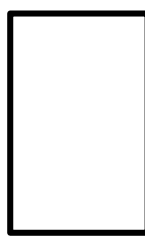**Q30**   On the diagram below, reflect the shape in the y axis.

(2)

Q31   How many orders of rotational symmetry do each of the shapes below have?

....
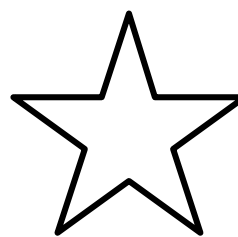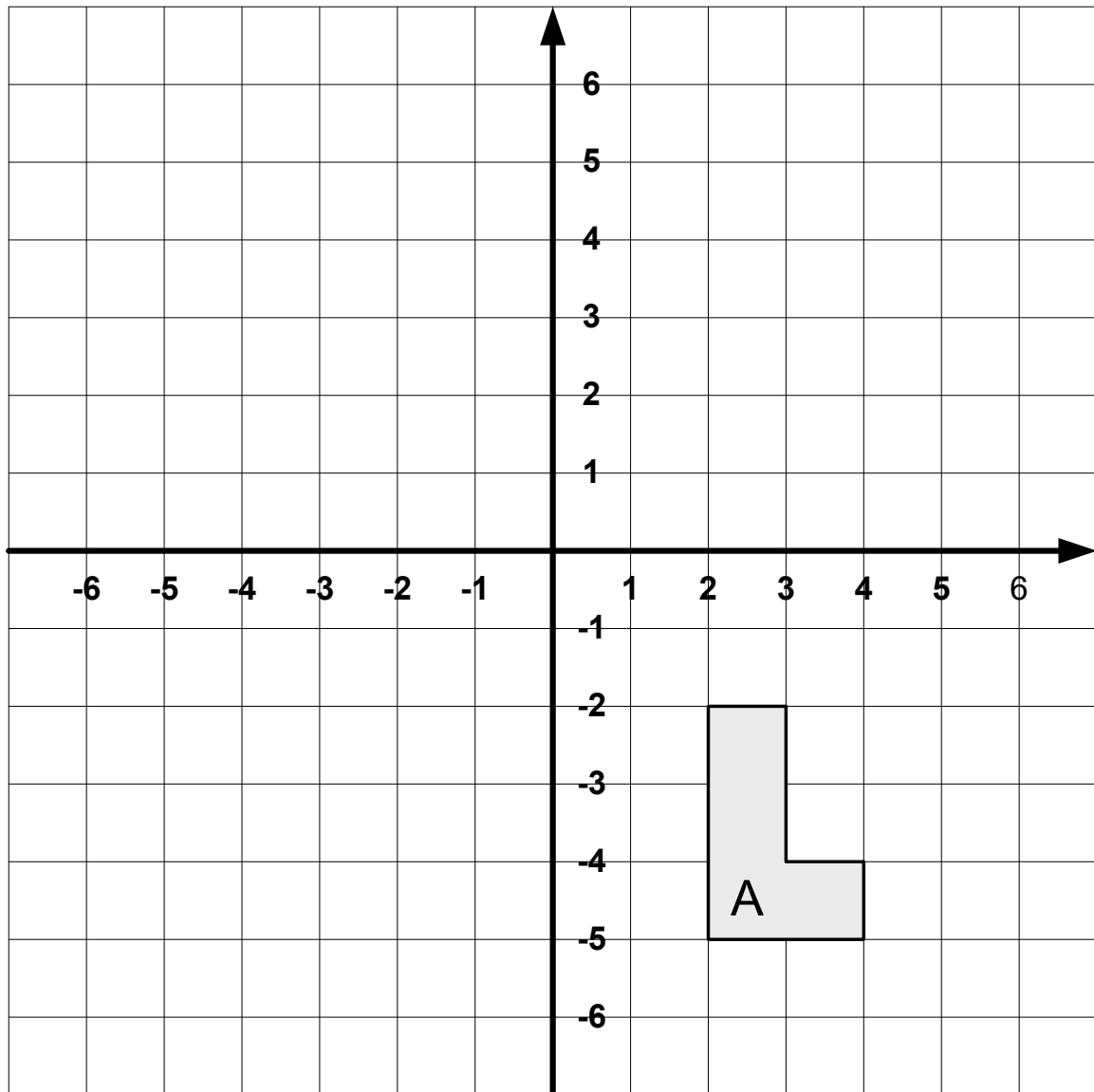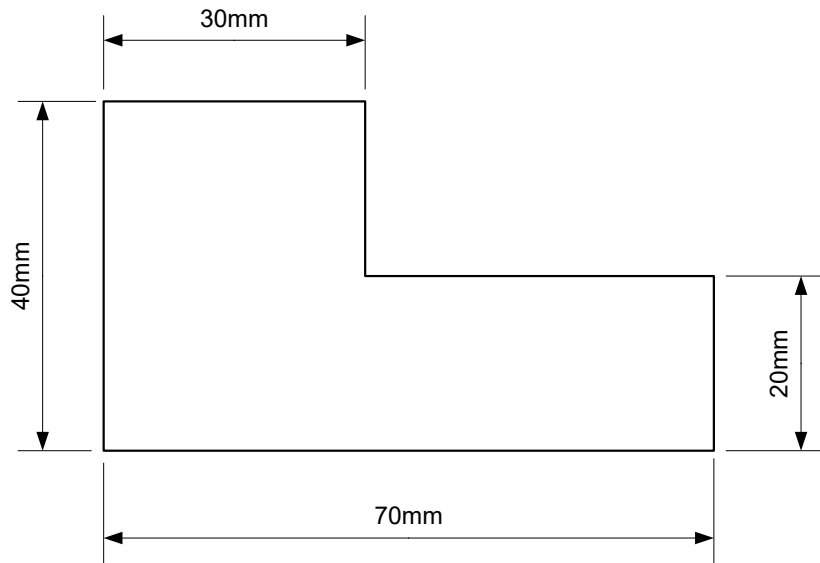
(3)

Q32 On the diagram below, rotate Shape A 90° counter-clockwise about point (0, -1).

(3)

Q33   Below is a shape.

a   What is the perimeter of the shape?

……………………………………….. mm

(3)

b   What is the area of the shape?

……………………………………….. mm²

(3)

Q34 Angela has a hospital appointment at 11:30 am.

Angela is ready to leave the house 45 minutes after she has woken up.

It takes Angela 20 minutes to walk from her house to the bus stop.

Angela travels on the bus for 35 minutes from the bus stop to the railway station where she has to wait 10 minutes for her train.

The train journey takes Angela 55 minutes.

Once she has got off the train, it is just ten minutes walk from the railway station to the hospital.

She likes to arrive quarter of an hour before her appointment.

The night before her appointment, Angela has to set her alarm.

What is the latest time she should set her alarm clock to, in order to arrive at the hospital when she wants?

…………………………………….

(4)

Q35 Write down the most sensible to use for the following:

      a   Weight of a pencil

…………………………………..

(1)

      a   Distance between Leeds and Bradford

…………………………………..

(1)

      a   Amount of water in a kettle

…………………………………..

(1)

Q36   Below is a list of the number of minutes that a group of passengers had to wait for a bus.

   12   15   12   25   4   15   12   26   20   18

a   Calculate the median time that the passengers had to wait.

………………………
   (2)

b   Calculate the mode time that the passengers had to wait.

………………………..
   (1)

c   Calculate the mean time that the passengers had to wait.

………………………
   (3)

Q37 Bill did a study on the favourite colours of people in his class.
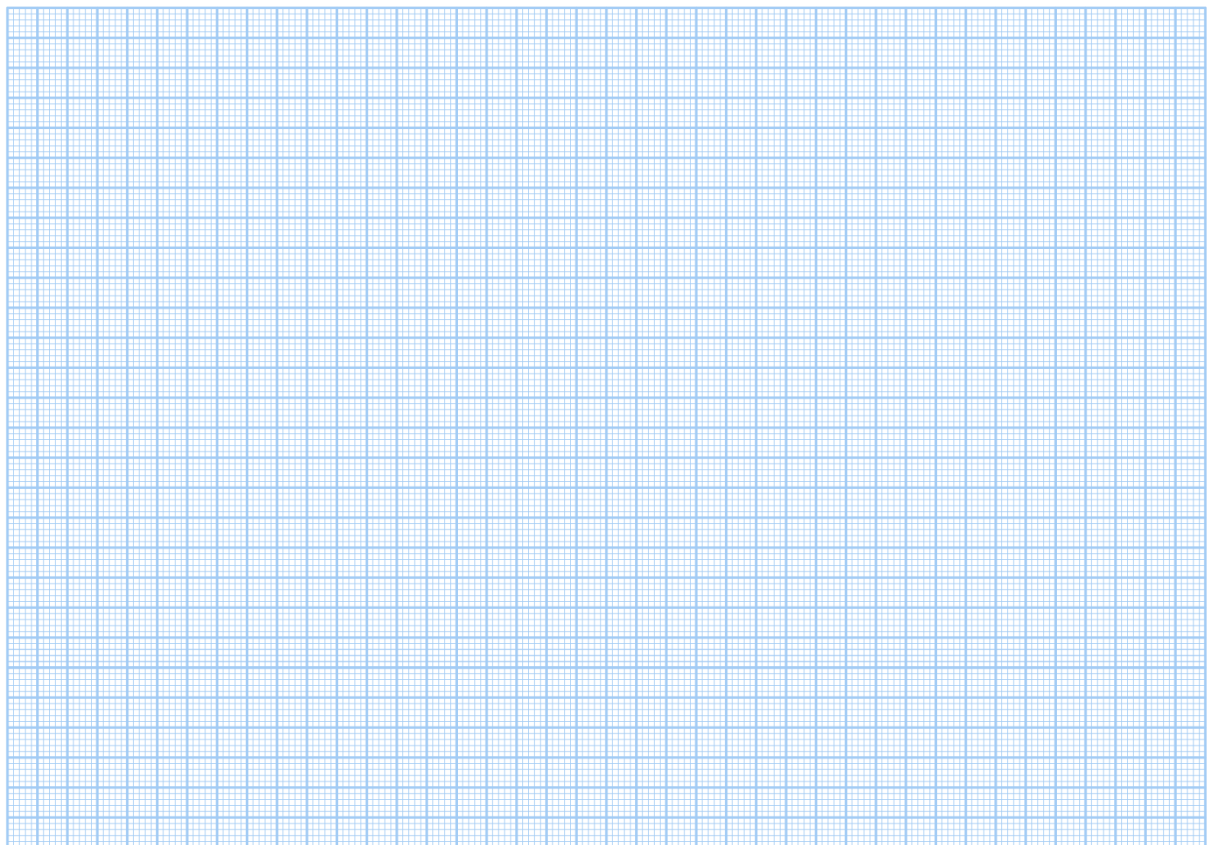
The results are listed below.

Red	Blue	Green	Yellow	Green	Blue	Blue
Red	Red	Red	Green	Yellow	Purple	Green
Blue	Blue	Blue	Blue	Red	Purple	Purple
Red	Green	Blue	Green	Blue	Blue	Red

a Fill in the tally chart below.

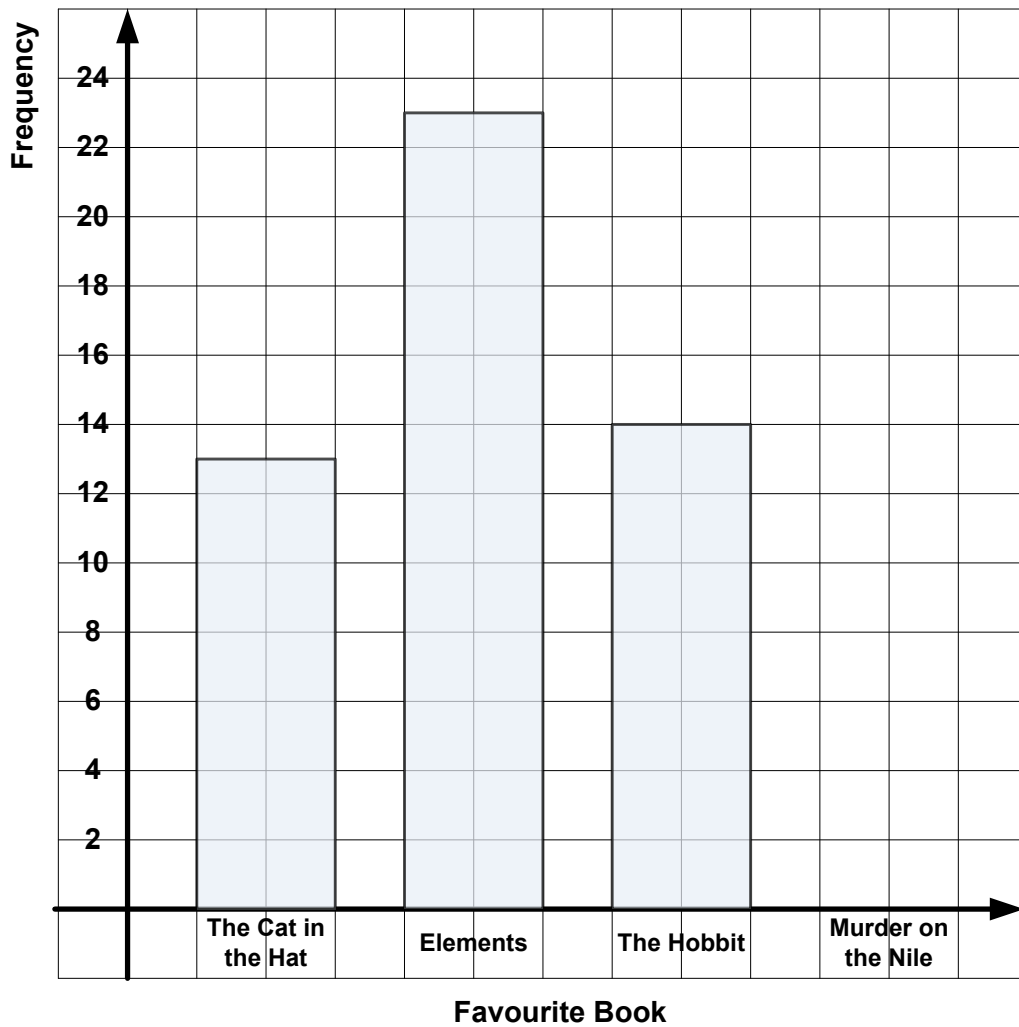| Favourite Colour	Tally	Frequency or Total

(2)

b Draw a bar chart on the graph paper below showing the information that Bill collected.

(4)

Q38   Joanne drew another bar chart.

Favourite Book

a   Seventeen people liked Murder on the Nile.

Draw this information onto the bar chart.

(2)

b   Which was the most popular book?

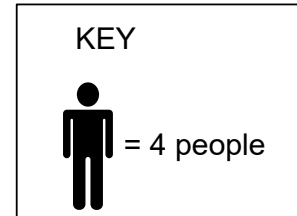………

(1)

c   How many more people liked Elements than The Hobbit?

……………………………..

(1)

Q39 The pictogram below shows the different number of people visiting a shop on Monday, Wednesday and Friday last week.

Monday	🧍🧍🧍🧍
Wednesday	🧍🧍🧍🧍🧍🧍🧍
Friday	🧍🧍🧍

KEY

🧍 = 4 people

a   How many people visited the shop on Wednesday?

……………………………….

(1)

b   How many people visited the shop altogether?

……………………………….

(1)

c   What was the mean average number of people that visited the shop?

……………………………….

(2)

Q40 A box of sweets had 35 chocolate eclairs, 20 Double Deckers and 40 Twix sweets left.

Write this as a ratio in its simplest form.

……………………………….

(2)

Q41 Put the following numbers in ascending order.

$$\frac{3}{4} \qquad \frac{2}{3} \qquad \frac{5}{8}$$

....

(2)

Q42 Simplify the following fractions

a $\frac{15}{20} =$

(1)

b $\frac{6}{12} =$

(1)

c $\frac{7}{21} =$

(1)

Q43 Convert $\frac{4}{5}$ into a percentage

....

(1)

Q44 Write $\frac{7}{100}$ as a decimal

....

(1)

Q45 Put the following numbers in order

$$\frac{1}{2} \qquad 10\% \qquad 0.25 \qquad \frac{3}{8}$$

....

(2)