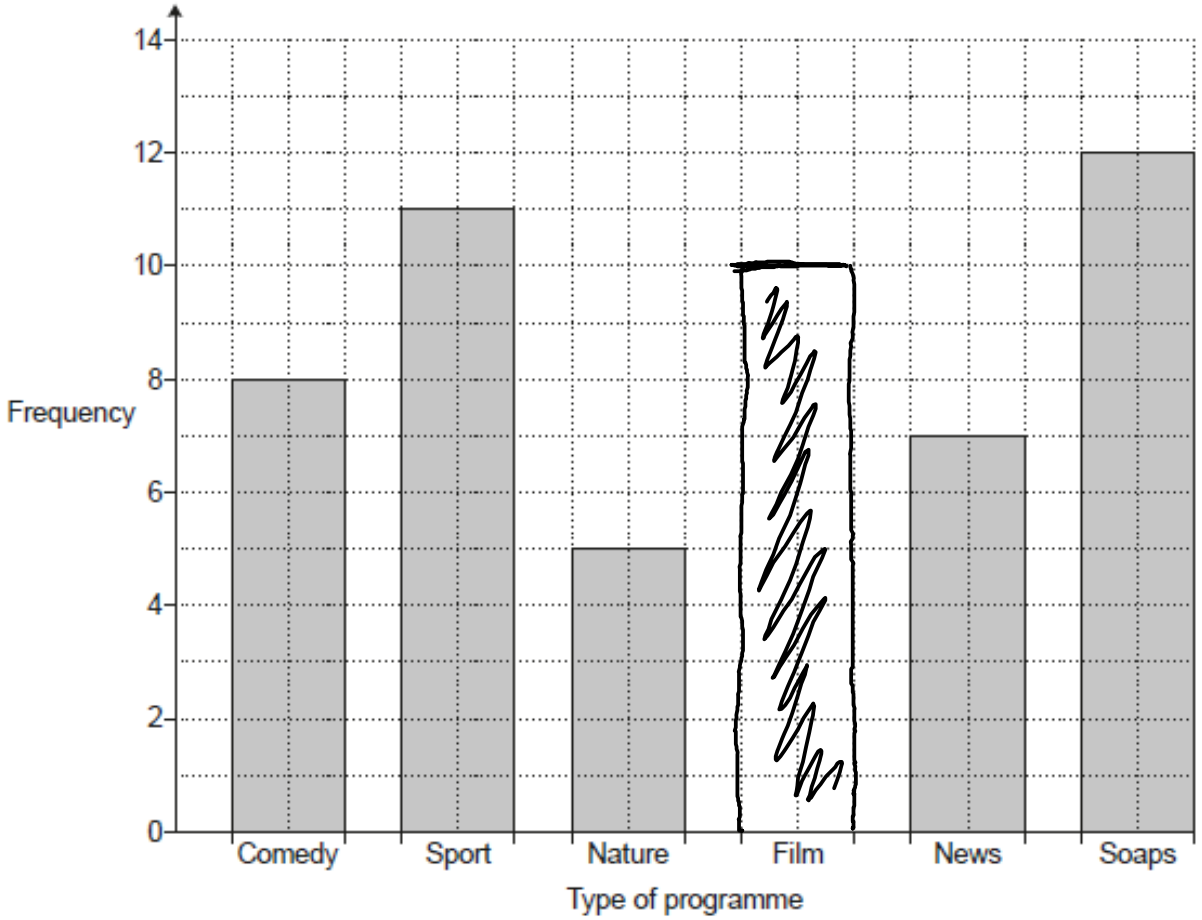
GCSE Mathematics - Paper 1 (Foundation tier)

J560/01 Paper 1 Mathematics (Foundation tier)

Question Set 5

1 Reece asked some friends what type of programme they watch most on television.
The bar chart shows some of his results.



(a) 10 people answered Film.

Complete the bar chart to show this information. **[1]**

(b) Complete these sentences.

(i) ..... Soaps ..... was chosen by the most people. **[1]**

(ii) ..... 7 ..... people chose News. **[1]**

(iii) ..... 3 ..... **fewer** people chose Nature than Comedy. **[1]**

2 (a) Write 2% as a decimal.

$\frac{2}{100} = 0.02$

(a) 0.02 [1]

(b) Write $\frac{11}{20}$ as a percentage.

$11/20 \times 100 = 55.0$

(b) 55 % [1]

3 Use one of the symbols $<$, $=$ or $>$ to make each statement true.

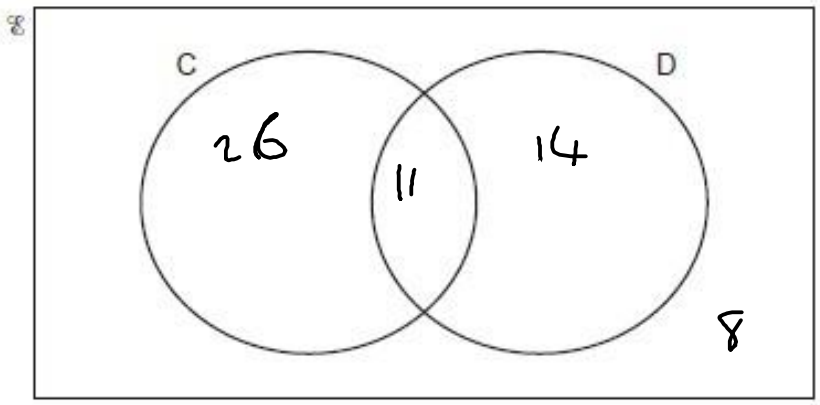
(a) 0.7 ..... $\frac{2}{3}$ [1]

(b) 27.06 ..... 27.59 [1]

4 59 families are asked whether they have a cat (C) or a dog (D).

- 26 only have a cat.
- 14 only have a dog.
- 11 have both a cat and a dog.

(a) Show this information on the Venn diagram.



[1]

(b) **(i)** How many of the families do not have a cat or a dog?

$59 - (26 + 14 + 11) = 8$

(b)(i) ..... 8 ..... **[1]**

(ii) Write your answer in the correct place on the Venn diagram. **[1]**

(c) One of the families is chosen at random.

Write down the probability that they have a dog.

$25/59$

(c) ..... 25/59 ..... **[2]**

5 Nadia thinks of a number.
She finds the square root and then divides by 5.
Her answer is 20.

What number is she thinking of?

She thinks of $x \rightarrow \frac{\sqrt{x}}{5} = 20$

$\sqrt{x} = 100 \rightarrow x = (100)^2 = 10000 = x$

10 000 [2]

6 **(a)** A train is travelling with a velocity of 15 m/s.
It then accelerates at 0.5 m/s^2 for 6 seconds.

Use the formula $v = u + at$ to calculate the velocity of the train after the 6 seconds.

$u = 15$
$a = 0.5$
$t = 6$

$v = u + at$
$v = 15 + 6(0.5)$
$v = 15 + 3$
$v = 18 ms^{-1}$

(a) ..... 18 ..... m/s **[2]**

(b) Rearrange the formula $v = u + at$ to make a the subject.

$v = u + at \rightarrow v - u = at \rightarrow \frac{(v-u)}{t} = a$

(b) $a = \frac{(v-u)}{t}$ ..... **[2]**

7 The table below shows the number of barrels of oil produced per day by some countries.

Country	Barrels of oil produced per day
USA	1.17×10^7
China	3.98×10^6
UK	9.39×10^5
Cameroon	9.32×10^4
Japan	3.92×10^3

(a) Write the number of barrels of oil produced per day by Cameroon as an ordinary number.

(a) 93200 **[1]**

(b) How many more barrels of oil per day did China produce than the UK?
Give your answer in standard form, correct to 3 significant figures.

$(3.98 \times 10^6) - (9.39 \times 10^5) = 3041000$

$= 3.041 \times 10^6$

$= 3.04 \times 10^6$

(b) 3.04×10^6 **[4]**

(c) Jamal says the USA produced approximately three times more barrels of oil than Japan.

Is he correct?
Show how you decide.

$\frac{(1.17 \times 10^7)}{(3.92 \times 10^3)} = 2984.693878$

Jamal is wrong because USA produced 2984.693878 times more oil which is much more than 3. **[2]**

8 James is taking three examination papers in Spanish.
Here are his first two results.

Paper 1: $\frac{43}{80}$ Paper 2: $\frac{38}{65}$

Paper 3 is out of 95.
The marks in each of the three papers are added together.

Find the lowest mark that James needs in Paper 3 to achieve 60% of the total marks.

80 + 65 + 95 = 240 total marks.

$\frac{60}{100} \times 240 = 144$ marks for 60% of total.

144 − (43 + 38) = 63 marks needed in 3rd paper

63 ..... [4]

9 Three people take $2\frac{1}{2}$ hours to deliver leaflets to 270 houses.

Assuming all people deliver leaflets at the same rate, how long will it take five people to deliver leaflets to 405 houses?
Give your answer in hours and minutes.

2.5 hours for 3 people to do 270 houses

$\frac{405}{270} = 1.5$ $1.5 \times 2.5 = 3.75$ hours for 3 to do 405 houses.

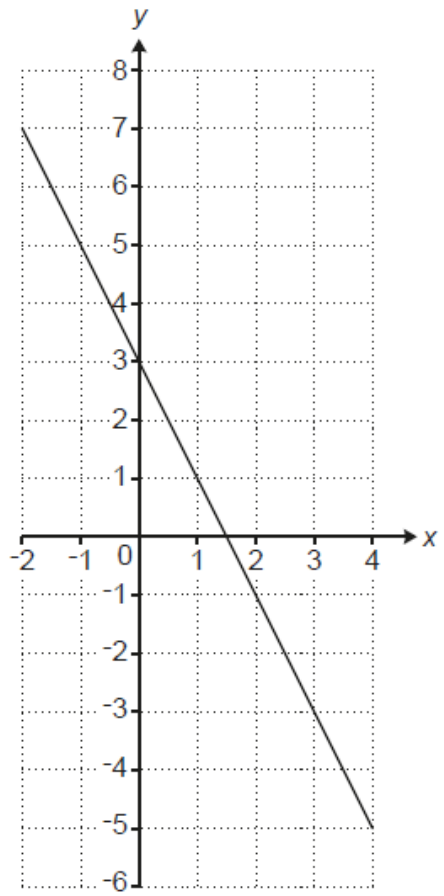
3.75 × 3 = 11.25 hours for 1 person to do 405 houses.

$\frac{11.25}{5} = 2.25$ hours for 5 people to do 405 houses.

2.25 hours = 2 hours 15 minutes

2 ..... hours 15 ..... mins [4]

10 This graph shows part of a straight line.



(a) Write down the *y*-intercept.

$y = 3$

(a) 3 [1]

(b) Show that the gradient of the line is -2. [1]

take two points and do $\frac{y_2 - y_1}{x_2 - x_1}$

$(0,3)$ and $(1,1)$ → $\frac{1-3}{1-0} = \frac{-2}{1} = -2$

$x_1\ y_1$ $x_2\ y_2$

(c) Write down the equation of the line.

$y = -2x + c$ → $3 = -2(0) + c$ → $c = 3$

Sub in (0,3)

(c) $y = -2x + 3$ [1]

(d) The line continues to the right.

Will this line pass through the point (50, -103)?
Show how you decide.

Sub $x = 50$ in $y = -2x + 3$

$y = -2(50) + 3$ → $y = -100 + 3 = -97$

So when $x = 50$ $y = -97$ and not -103.

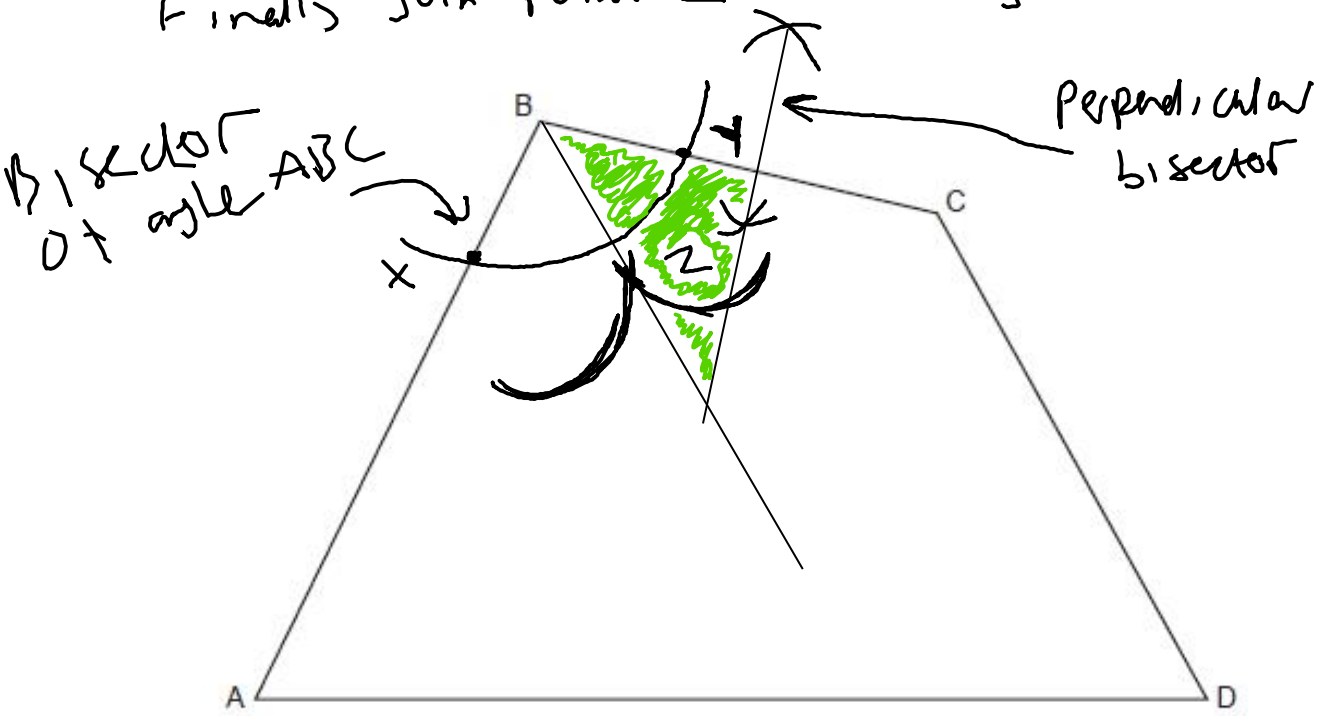
So it won't pass through $(50, -103)$.

No because it will pass through $(50, -97)$ and not $(50, -103)$ [2]

When $x = 50$ $y = -97$ and not -103.

11 ABCD is a quadrilateral.

a) Place compass at point B and draw arc like XY.
Then place compass at point X and draw arc in between AB and BC. Do same at Y keeping compass same.
Finally join point Z to B using ruler.



(a) Construct the bisector of angle ABC.
Show all your construction lines. **[2]**

(b) Construct the perpendicular bisector of BC.
Show all your construction lines. **[2]**

(c) Shade the region which is

- nearer to BC than to AB

and

- nearer to B than to C.

Shaded in green above

[1]

12 Lily buys and sells microwaves.

She buys each one for £32 and sells it for £60.
She also pays £7 for the delivery of each microwave she sells.

If she sells a microwave that is faulty then Lily must pay for its repair and redelivery. This costs her another £25 for each faulty microwave.

Last month, 6 out of the 80 microwaves Lily sold were faulty.

This month she has orders for 133 microwaves.

Calculate her expected percentage profit on this month's order.
Showing your working in the boxes below may help you present your work.

Expected number of faulty microwaves:	Expected costs:
$\frac{6}{80} \times 100 = 7.5\%$ $\frac{7.5}{100} \times 133 = 9.975$ $= 9$ faulty expected.	$(9 \times 25) + (32 \times 133)$ faulty buying $+ (7 \times 133) = 5412$ delivery
Income from sales:	**Expected percentage profit:**
$60 \times 133 = 7980$ income	Profit percentage $7980 - 5412 = 2568$ $\frac{2568}{5412} \times 100 = 47.45\%$

47.45 ..... % **[6]**

Total Marks for Question Set 5: 50