edexcel

GCSE Mathematics Practice Tests: Set 2

MR. LEWIS

Paper 3F (Calculator)

Solutions

Time: 1 hour 30 minutes

You should have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator.

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.*
- **Calculators may be be used.**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**

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.

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1. Write down the value of the 5 in 7.052

5 hundredths

5/100

(Total 1 mark)

2. Simplify $4y - y + 2y$

5y

(Total 1 mark)

3. Write 678 980 correct to the nearest ten thousand.

680,000

(Total 1 mark)

4. Find all the factors of 40

1 × 40
2 × 20
4 × 10
5 × 8

1, 2, 4, 5, 8, 10, 20, 40

(Total 2 marks)

5. Lynn is planning a Christmas party for her badminton club.
Here are her costs.

Food	£176
Drink	£103
Hire of room	£36 per hour

Lynn wants to hire the room for 4 hours.

There will be 28 people at the party.
Lynn will charge these people £15 each.

Will Lynn get enough money to pay all her costs?

You must show your working.

28 × £15
= £420

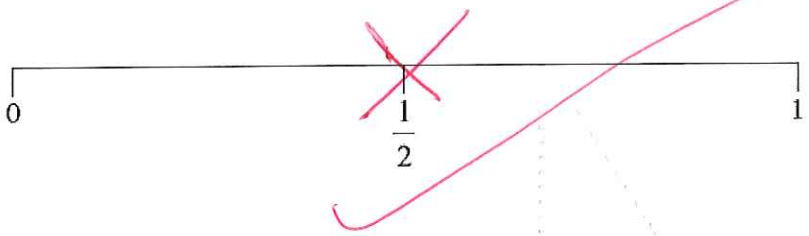
4 × £36 = £144
+ £176
+ £103
£423

£420 is less than £423

So No Lynn will not get enough money

(Total 4 marks)

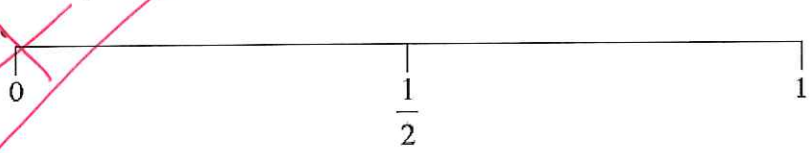
6. (a) Sabrina throws a fair coin.
On the probability scale, mark with a cross (×) the probability that the coin will land on tails.



(1)

(b) Suresh throws an ordinary 6-sided dice.
On the probability scale, mark with a cross (×) the probability that he will throw a 7

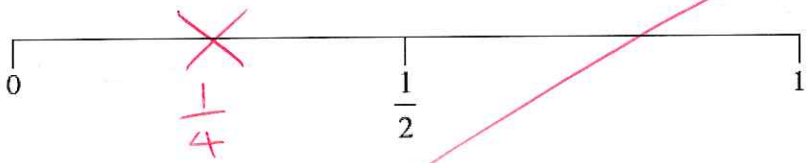
impossible.



(1)

(c) There are three yellow sweets and one blue sweet in a bag.
Graham takes at random a sweet from the bag.

On the probability scale, mark with a cross (×) the probability that he will take a blue sweet.



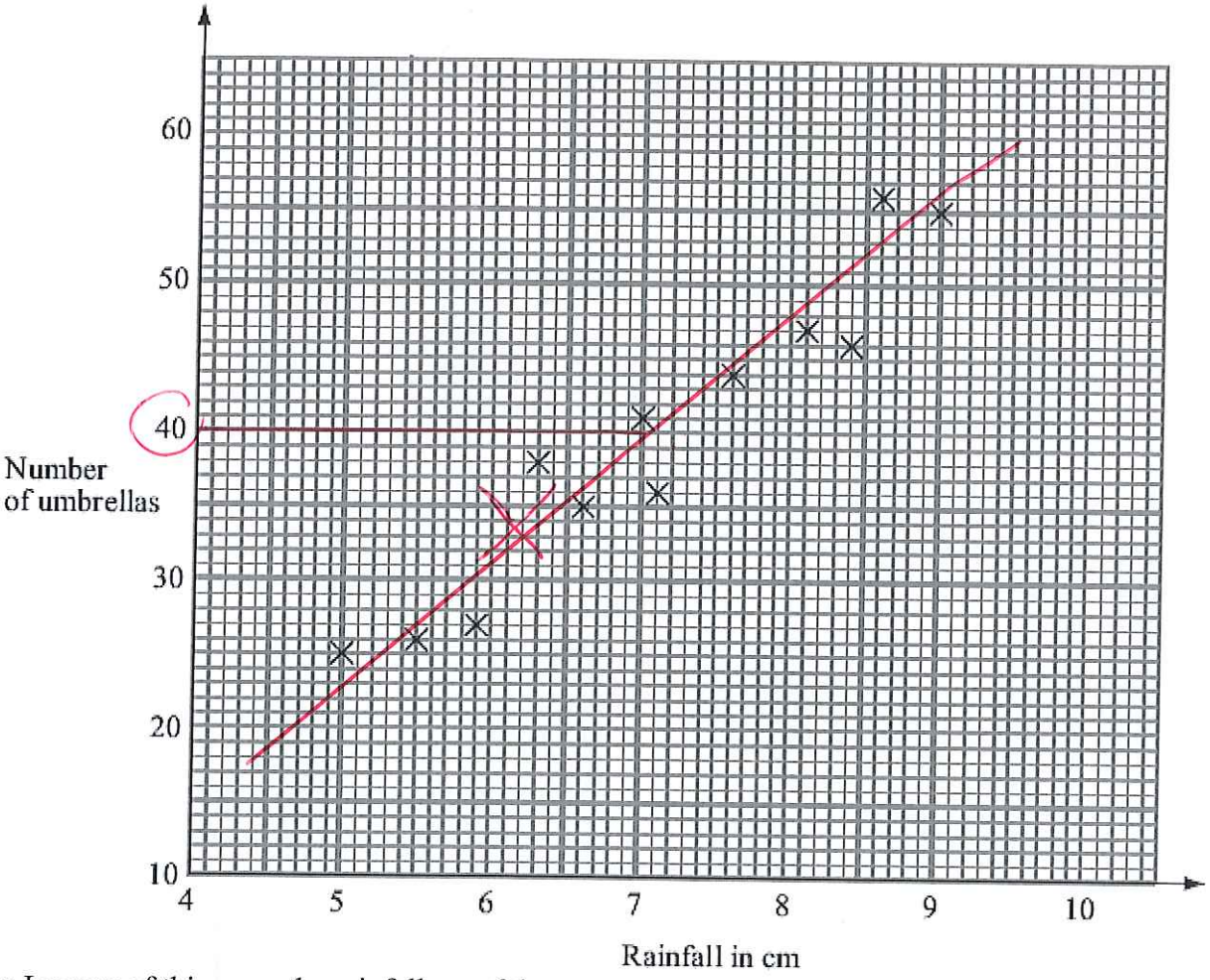
ONE OUT OF 4

(1)

(Total 3 marks)

7. Mr Wither sells umbrellas.

The scatter graph shows some information about the number of umbrellas he sold and the rainfall, in cm, each month last year.



In January of this year, the rainfall was 6.1 cm.
During January, Mr Wither sold 32 umbrellas.

(a) Show this information on the scatter graph.

(1)

(b) What type of correlation does this scatter graph show?

POSITIVE

(1)

In February of this year, Mr Wither sold 40 umbrellas.

(c) Estimate the rainfall for February.

LINE OF BEST FIT

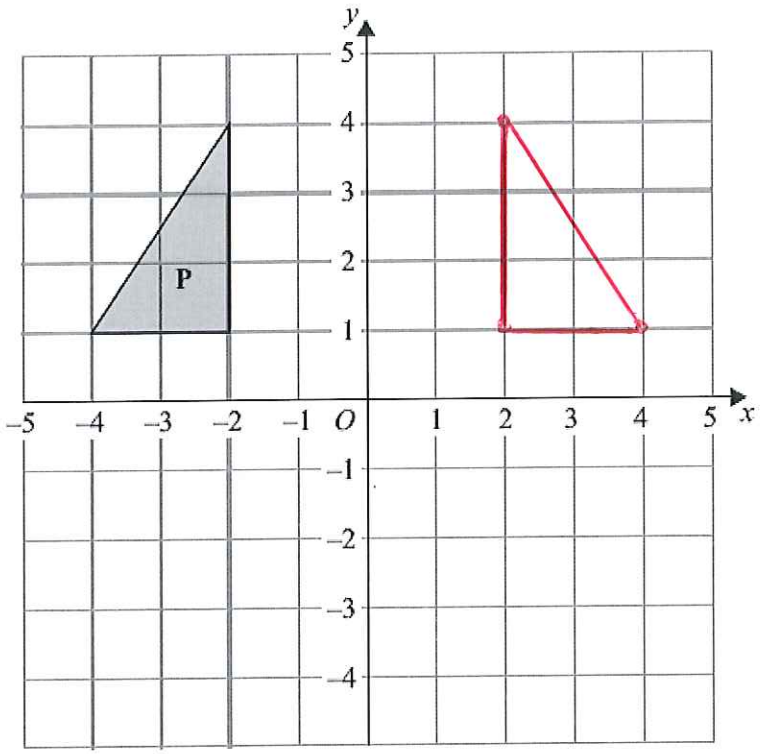
7 cm

(2)

(Total 4 marks)

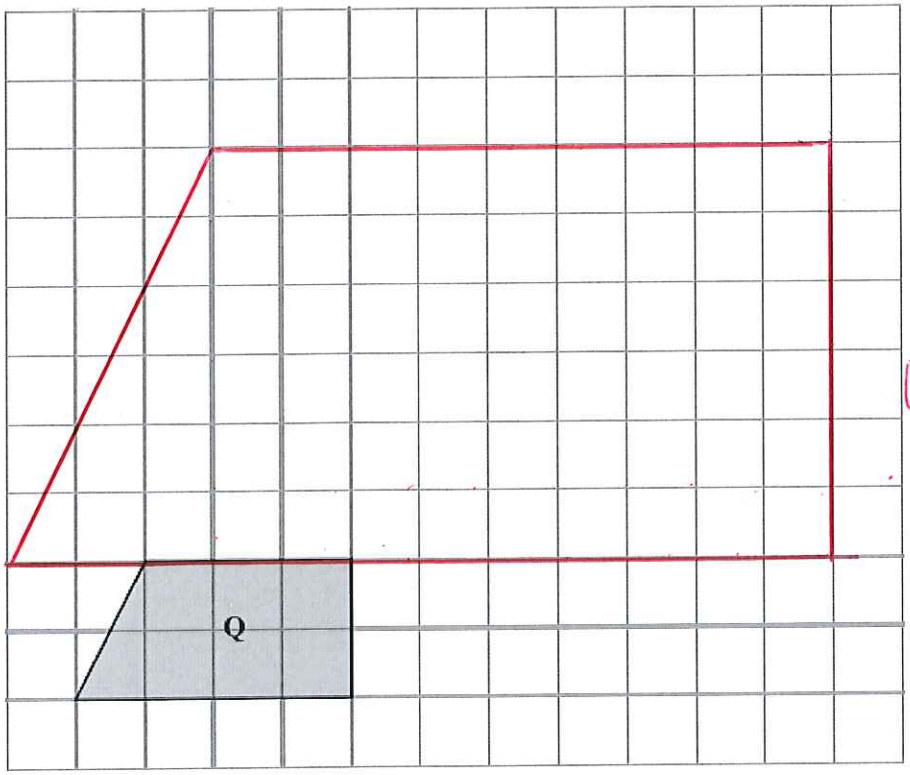
ANSWERS MIGHT SLIGHTLY VARY.

8.



(a) Reflect triangle **P** in the y-axis.

(2)



(b) Draw an enlargement of shape **Q** scale factor 3

(2)

(Total 4 marks)

A pile of sand has a weight of 65 kg.

Some of the sand is put into a small sack.
The rest of the sand is put into a large sack.

The sand in the large sack weighs 15 kg more than the sand in the small sack.

What is the weight of the sand in the small sack?

65 − 15 = 50

50 ÷ 2 = 25 (25)

25 + 15 (40)

25

..... kg

(Total 2 marks)

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10. Laura is asked to solve the equation $6x + 4 = 10$

Here is her working.

DIFFERENT EQUATION!

$6x + 3 = 9$

$6x = 12$ ← MISTAKE ADDED 3 INSTEAD OF −3.

$x = 2$

Laura's answer is wrong.
What mistake did she make?

.....

.....

(Total 1 mark)

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11. In August 2008, Eddie hired a car in Italy.

The cost of hiring the car was £620
The exchange rate was £1 = €1.25

(a) Work out the cost of hiring the car in euros (€).

620 × 1.25 =

€ 775

(2)

Eddie bought some perfume in Italy.

The cost of the perfume in Italy was €50
The cost of the same perfume in London was £42

The exchange rate was still £1 = €1.25

(b) Work out the difference between the cost of the perfume in Italy and the cost of the perfume in London.
Give your answer in pounds (£).

ITALY

€50 ÷ 1.25

= £40

LONDON

£42

£42 − £40 =

£ 2

(3)

(Total 5 marks)

12. An internet bookshop uses this advert.

Each day every 3rd customer gets a mystery prize.
Each day every 20th customer gets free postage and packaging.

On Tuesday the internet bookshop had 150 customers.

(a) How many of the 150 customers got a mystery prize?

150 ÷ 3 =

50

.....

(2)

(b) How many of the 150 customers got free postage and packaging?

20 40 60 80 100 120 140 160

150

7

.....

(2)

(c) How many of the 150 customers got both a mystery prize **and** free postage and packaging?

20
40
60 = 3 × 20
80
100
120 = 3 × 40
140

2

.....

(2)

(Total 6 marks)

13. Mrs Phillips needs to decide when to have the school sports day.

The table shows the number of students who will be at the sports day on each of 4 days.
It also shows the number of teachers who can help on each of the 4 days.

	Tuesday	**Wednesday**	**Thursday**	**Friday**
Number of students	179	162	170	143
Number of teachers	15	13	14	12

For every 12 students at the sports day there must be at least 1 teacher to help.

On which of these days will there be enough teachers to help at the sports day?
You must show all your working.

TUES
179 ÷ 12
= 14.9 needed
HAVE 15
✓

WED
162 ÷ 12
= 13.5
ONLY 13
×

THU
170 ÷ 12
= 14.2
ONLY 14
×

FRI
143 ÷ 12
= 11.9
HAVE 12
✓

TUESDAY + FRIDAY.
✓

(Total for Question 24 is 3 marks)

14. 30% of a number is 120
Work out the number.

30% = 120 ✓
÷3 ÷3
10% = 40 ✓
×10 ×10
100% = 400

✓

400

.....

(Total 3 marks)

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15. Show that $7\frac{1}{2} - 4\frac{2}{3} = 2\frac{5}{6}$

$7\frac{1}{2} - 4\frac{2}{3}$.

$\frac{15}{2} - \frac{14}{3}$. ✓

×3 ($\frac{45}{6} - \frac{28}{6}$) ×2 ✓

$\frac{17}{6} = 2\frac{5}{6}$. ✓ ✓

(Total 3 marks)

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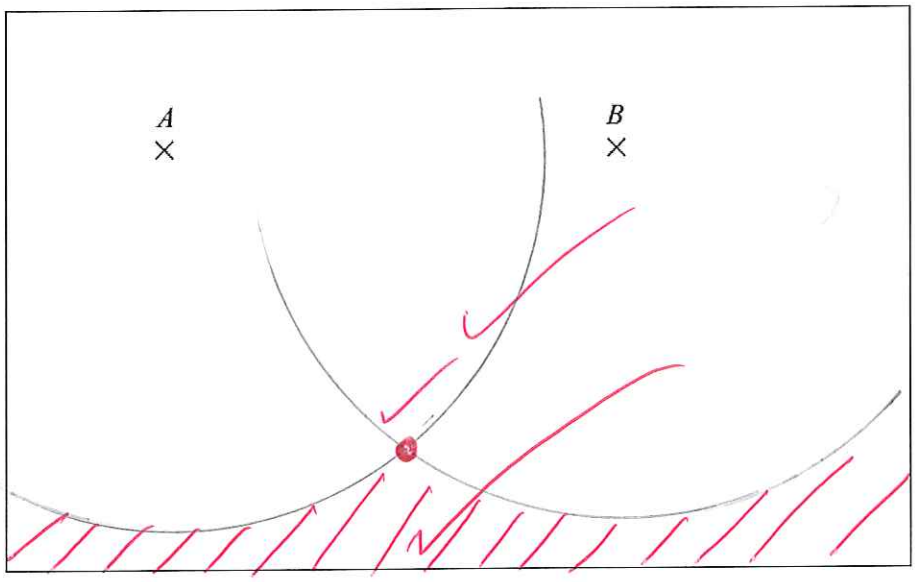
16. The diagram shows a map of a field.
The scale of the map is 1 cm represents 20 m.



Wind turbines

A and *B* are two wind turbines in the field.
A third wind turbine is to be put in this field.

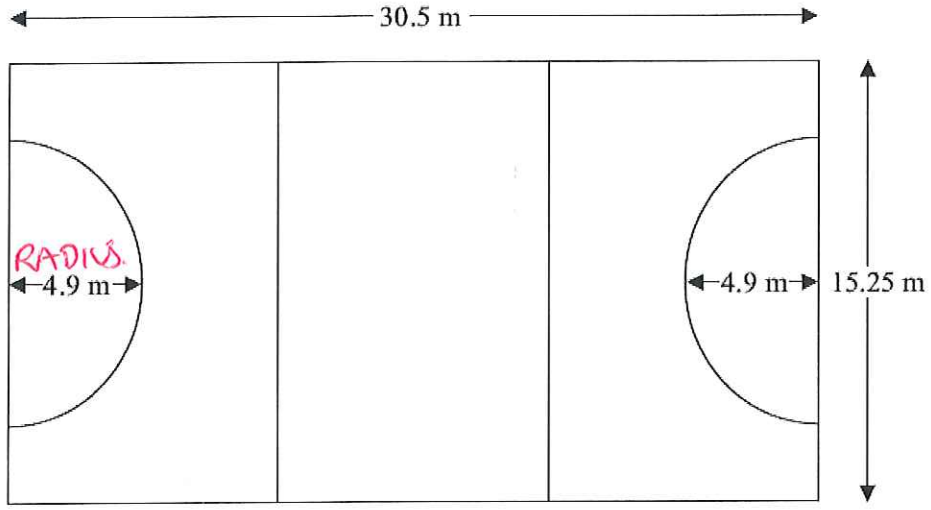
20 m = 1 cm
100 m = 5 cm.

There must be at least 100 m between wind turbines.

Show, by shading, where the third wind turbine can be put.

(Total 3 marks)

17. The diagram shows the lines of a netball court.



The court is made from three rectangles and two semi-circles.
All the corners are right angles.

Mr Handy is painting the lines for the netball court on the floor of a school sports hall.

Work out the total length of the lines of the netball court.
Give your answer correct to the nearest metre.

$d = 4.9 \times 2$
$= 9.8$

$C = \pi \times d$
$= \pi \times 9.8$
$= 30.787\ldots m$ ✓

$(30.5 \times 2) = 61\ m$ +
$(15.25 \times 4) = 61\ m$ ✓

$152.787\ldots m$ ✓

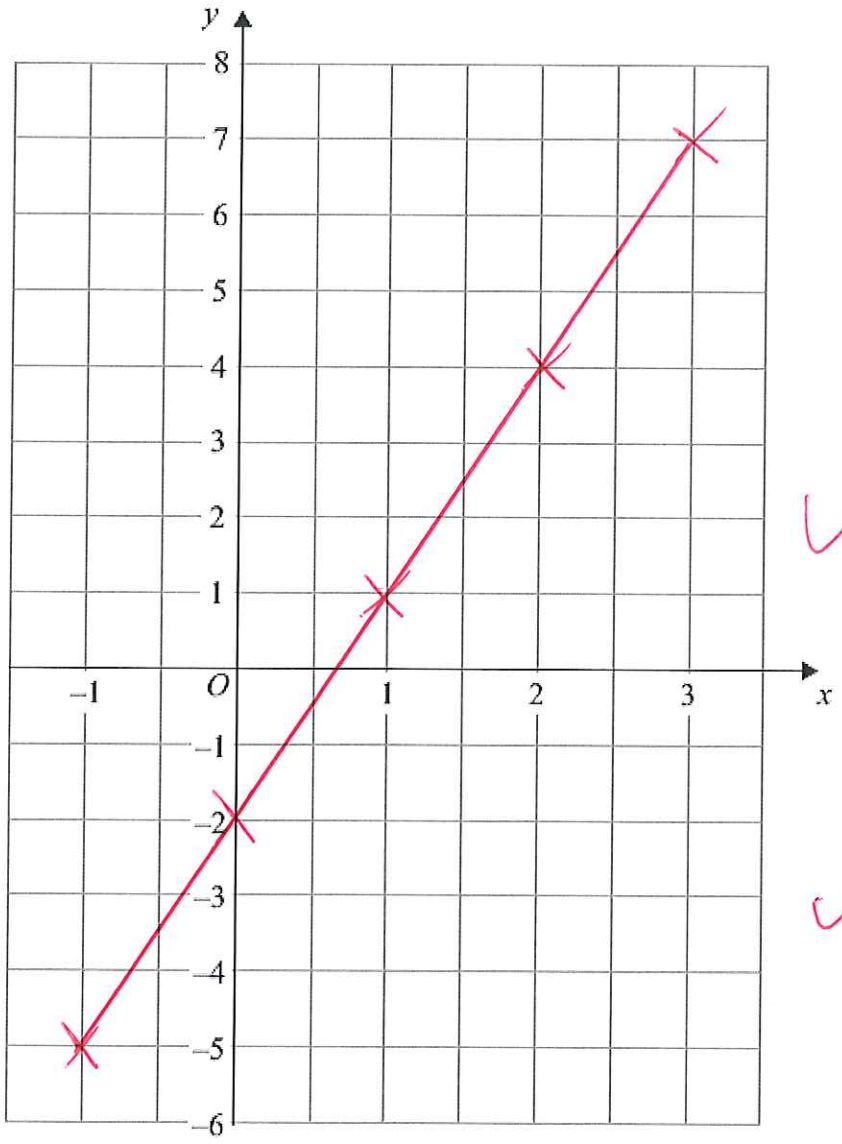
153 ✓

..... m

(Total 4 marks)

18. On the grid, draw the graph of $y = 3x - 2$ for values of x from -1 to 3

x	-1	0	1	2	3
y	-5	-2	1	4	7



(Total 3 marks)

19. Abbie is 5 years older than Cathy.
Bhavna is twice as old as Abbie.
The total of their ages is less than 30

What is Bhavna's greatest possible age?

Give your answer as a whole number of years.
You must show all your working.

Let Cathy = x
Abbie = $x+5$
Bhavna = $2(x+5) = 2x+10$.

$x + x+5 + 2x+10 < 30$

$4x + 15 < 30$

$4x < 15$

$x < \frac{15}{4}$

$x < 3\frac{3}{4}$. (Cathy = 3)

Bhavna $2\times3 + 10$

$6 + 16 =$ 16

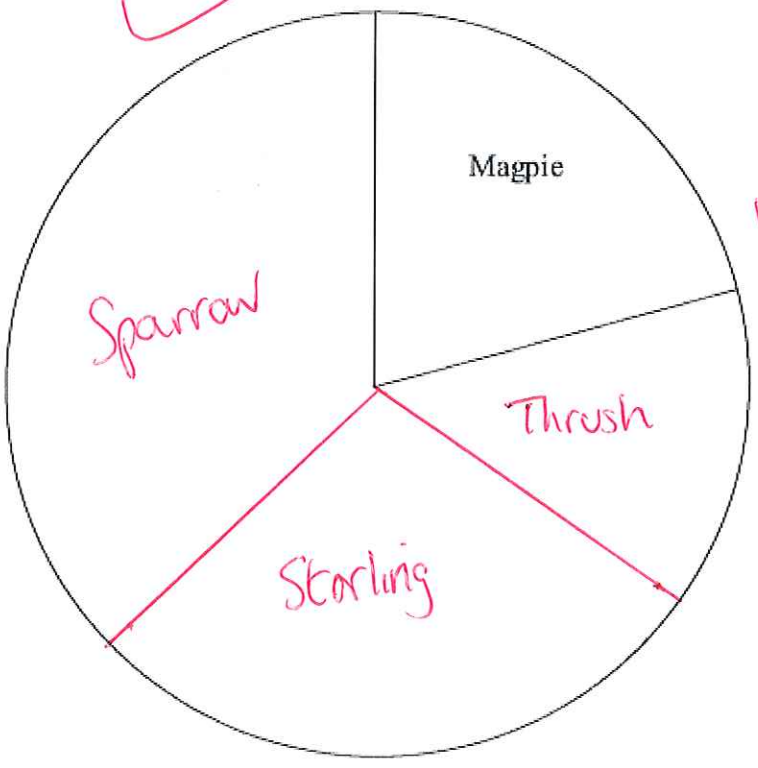
.....

(Total 4 marks)

20. The table gives some information about the birds Paula sees in her garden one day.

Bird	Frequency
Magpie	15
Thrush	10
Starling	20
Sparrow	27

Complete the accurate pie chart.



(Total 3 marks)

21. There are only red pens and blue pens in a box.
There are 12 red pens in the box.

The probability of taking at random a blue pen from the box is $\frac{2}{3}$

Work out the total number of pens in the box.

prob (red) = $\frac{1}{3}$.

$\frac{1}{3}$ = 12 pens

$\frac{2}{3}$ = 24

$\frac{3}{3}$ = 36 pens

36

.....

(Total 3 marks)

22. Henry is thinking about having a water meter.

These are the two ways he can pay for the water he uses.

Water Meter
A charge of £28.20 per year
plus
91.22p for every cubic metre of water used
1 cubic metre = 1000 litres

No Water Meter
A charge of £107 per year

Henry uses an average of 180 litres of water each day.

Henry wants to pay as little as possible for the water he uses.
Should Henry have a water meter?

180 × 365 = 65,700 litres a year.

÷ 1000

= 65.7 cubic metres

× 91.22 pence

= 5993.154 pence

= £59.93

+ £28.20

£88.13 per year. or £107 per year.

£88.13 is less than £107

So Henry should use a WATER METER

(Total for Question 15 is 5 marks)

23. Here are the first four terms of an arithmetic sequence.

3 $\xrightarrow{+7}$ 10 $\xrightarrow{+7}$ 17 $\xrightarrow{+7}$ 24

(*a*) Find, in terms of *n*, an expression for the *n*th term of this arithmetic sequence.

$7n$

$7\times1 = 7-4 = 3$

$7\times2 = 14-4 = 10$

$7n-4$

(2)

(*b*) Is 150 a term of this sequence?

You must explain how you get your answer.

$7n-4 = 150$

$7n = 154$

$n = \frac{154}{7} = 22$

YES, it is the 22nd term

(2)

(Total 4 marks)

24. Each year Wenford Hospital records how long patients wait to be treated in the Accident and Emergency department.

In 2015 patients waited 11% less time than in 2014.
In 2015 the average time patients waited was 68 minutes.

(*a*) Work out the average time patients waited in 2014.
Give your answer to the nearest minute.

100% − 11% = 89%

89% = 68 MINUTES

÷89 1% = 0.764 ÷89

×100 100% = 76.4 MINUTES ×100

76 ..... minutes

(3)

The hospital has a target to reduce the average time patients wait to be treated in the Accident and Emergency department to 60 minutes in 2016.

(*b*) Work out the percentage decrease from 68 minutes to 60 minutes.

Decrease = 8 MINUTES

$$\text{\%age decrease} = \frac{\text{decrease}}{\text{original}} \times 100$$

$$= \frac{8}{68} \times 100$$

$$= 11.764...\%$$

11.8 ..... %

(2)

(Total 5 marks)

25. Each length of the side of square B is twice the length of the side of square A.

John says that this means the area of square B is twice the area of square A.

Is John right?
Justify your answer.

A = x × x = x^2 B = 2x × 2x = $4x^2$

NO

AREA IS 4 TIMES BIGGER

(Total 1 mark)

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26. Solve $x^2 + 3x - 10 = 0$

$p = -10$
$s = +3$
$n = -2, +5$

$x^2 - 2x + 5x - 10 = 0$

$x(x-2) + 5(x-2) = 0$

$(x-2)(x+5) = 0$

$x - 2 = 0$ or $x + 5 = 0$

$x = 2$ $x = -5$

$x = 2$ or -5

$x =$.....

(Total 2 marks)

TOTAL FOR PAPER IS 80 MARKS

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