the PiXL club
partners in excellence
Worked Solutions

Pre Public Examination
GCSE Mathematics (Edexcel style)

Foundation Tier
Paper 1F

Name   …………………………………………………………………

Class   …………………………………………………………………

TIME ALLOWED
1 hour 30 minutes
INSTRUCTIONS TO CANDIDATES
- Answer **all** the questions.
- Read each question carefully. Make sure you know what you have to do before starting your answer.
- You are **NOT** permitted to use a calculator in this paper.
- Do all rough work in this book.

INFORMATION FOR CANDIDATES
- The number of marks is given in brackets **[ ]** at the end of each question or part question on the Question Paper.
- **You are reminded of the need for clear presentation in your answers.**
- The total number of marks for this paper is **80**.

Question	Mark	out of
1		1
2		1
3		1
4		1
5		1
6		4
7		4
8		2
9		3
10		3
11		3
12		2
13		4
14		4
15		4
16		2
17		2
18		3
19		4
20		2
21		3
22		3
23		3
24		4
25		4
26		2
27		6
28		2
29		2
Total		80

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

Question 1.

Change 425 centimetres into metres.

425 ÷ 100 =

4.25 metres B1

(Total 1 mark)

Question 2.

How many minutes are there in $2\frac{1}{3}$ hours?

2 hours = 120 minutes

$\frac{1}{3}$ of 60 = 20

120 + 20 = 140

140 minutes B1

(Total 1 mark)

Question 3.

Write 7.2345 correct to 2 decimal places.

7.23 B1

(Total 1 mark)

Question 4.

Write 0.7 as a percentage.

0.7 × 100 =

70% B1

(Total 1 mark)

Question 5.

Work out $(-2)^5$

-2 × -2 × -2 × -2 × -2 =

-32 B1

(Total 1 mark)

Question 6.
Here are four cards.
There is a number on each card.

$$\boxed{6} \quad \boxed{4} \quad \boxed{3} \quad \boxed{5}$$

(*a*) Write down the largest 4-digit even number that can be made using each card only once.

(B1 for any 4-digit even number using 6,4,3,1 or 6543)

6534 B2

(2)

(*b*) Write down all the 2-digit numbers that can be made using these cards.

64, 63, 65, 43, 46, 45, 36, 34, 35, 56, 54, 53   P1, A1

(2)

(Total 4 marks)
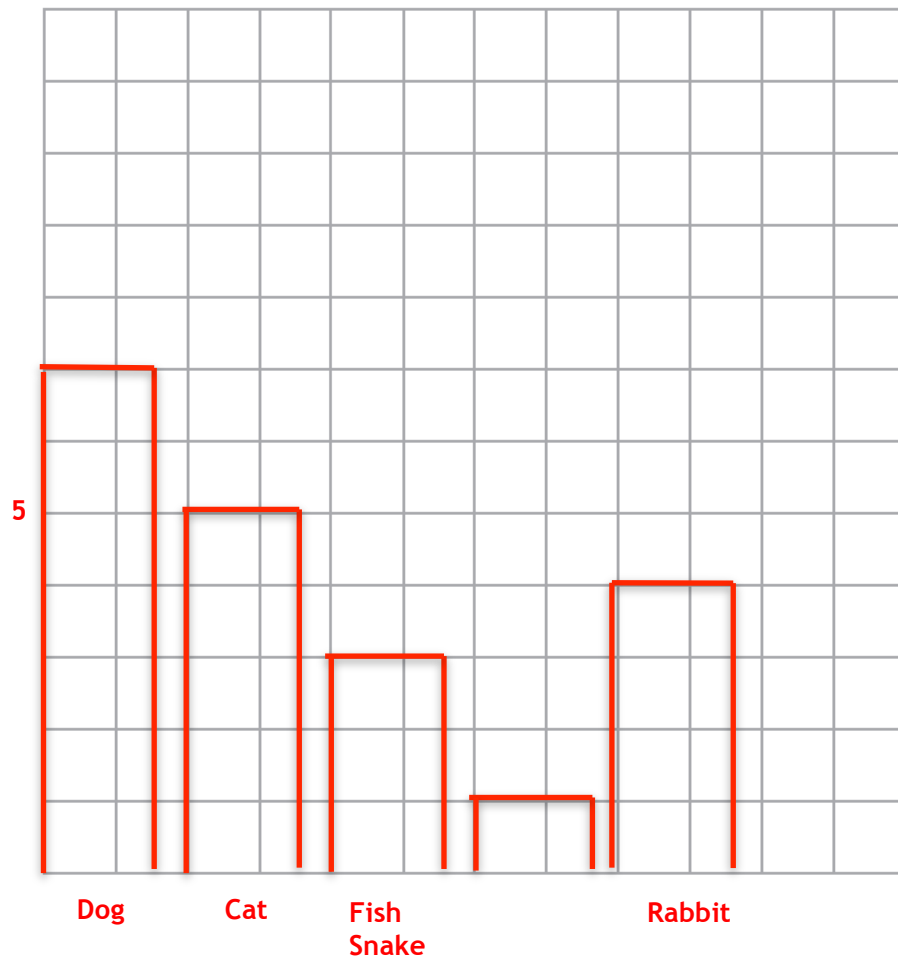
3

Question 7.

Karen carried out a survey to find out the type of pet her friends most wanted to own.

Here are her results.

dog	dog	cat	dog	fish
cat	rabbit	dog	rabbit	rabbit
fish	cat	dog	dog	dog
snake	fish	rabbit	cat	cat

Draw a suitable chart or diagram to represent Karen's results.

bar chart or other suitable chart with sections for at least 2 pets   M1
sections for each pet and vertical axis correctly scaled / 2 correct frequencies   M1
fully correct chart or diagram, including correct frequencies and all labels   C2

5

Dog   Cat   Fish   Rabbit
Snake

(Total 4 marks)

x

Question 8.

Harry says,

> "When you halve a whole number that ends in 6, you always get a number that ends in 3"

(*a*) Write down an example to show that Bernard is wrong.

156 ÷ 2 = 78 C1   Therefore Harry is not right.

(1)

Sam says,

> "Because 19 and 29 are both prime numbers, all whole numbers that end in 9 are prime numbers."

(*b*) Is Sam correct?
You must give a reason with your answer.

99 ends in 9 but is not a prime number. It has factors of 1, 3, 33 & 99 C1

....

....

(1)

(Total 2 marks)

Question 9.

Work out 324×56

324
×56
1944 M1
16200 M1
18144 A1

18144 A1

....

(Total 3 marks)

Question 10.
The diagram shows the maximum dimensions of Linda's cup-board.

10 inches
8 inches
12 inches

Linda wants to store her jewellery box in the top compartment.
It has
    height 15 cm
    width 25 cm
    depth 20 cm

    1 inch = 2.5 cm

Will Linda's jewellery bag fit in the compartment?
You must show your working.

15 ÷ 2.5 = 6inches C1
25 ÷ 2.5 = 10inches
20 ÷ 2.5 = 8inches A1
Yes, Linda's jewellery box will fit into her cupboard. C1

Or: inches to cm
8 x 2.5 = 20cm
12 x 2.5 = 30cm
10 x 2.5 = 25cm

(Total 3 marks)

Question 11.
Complete the two-way table.

	Black hair	Brown hair	Blonde hair	Total
Boys	11	**10**	6	27
Girls	**7**	13	**9**	**29**
Total	**18**	**23**	15	56

C1 for 2 correct entries
C1 for 4 correct entries
C1 for completed table

(Total 3 marks)

Question 12.
There are 44 red beads and 92 black beads in a bag.

Write down the ratio of the number of red beads to the number of black beads.
Give your ratio in its simplest form.
44 : 92

22 : 46 M1

11 : 23 A1

(Total 2 marks)

Question 13.
Here are the first four terms of a number sequence.

$$3 \qquad 7 \qquad 11 \qquad 15$$

(*a*) (i) Write down the next term in the sequence.

19 B1

....

(ii) Explain how you got your answer.

Add 4 each time B1

....

....

(2)

(*b*) Work out the 11th term in the sequence.

(11 × 4) – 1 =

43 B1

....

(1)

(*c*) Is 79 a term in this sequence?
Explain how you got your answer.

79 = 4n – 1   80 = 4n   80 ÷ 4 = n   n = 20   B1
Alt method to continue sequence up to 79 by adding 4
Yes 79 is in the sequence as it follows the pattern of add 4.

(1)

(Total 4 marks)

Question 14.

A unit of gas costs 5.3 pence.

On average Tom uses 42.2 units of gas a week.
She pays for the gas she uses in 11 weeks.

(*a*) Work out an estimate for the amount Tom pays.

Unit of gas cost 5p

42.2 rounds to 40   P1 (accept rounding to 42)

11 weeks rounds to 10 weeks

40 × 5 = 200   P1

200 × 10 = 2000p

£20.00 or 2000p   A1

....
(3)

(*b*) Is your estimate to part (*a*) an underestimate or an overestimate?
Give a reason for your answer.

Underestimate as values have been rounded down   C1

(1)

(4 marks)

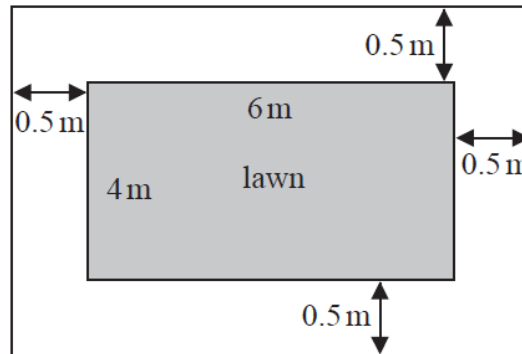**Question 15.**

Here is a diagram of a garden.

Diagram **NOT** accurately drawn

0.5 m

0.5 m

6 m

lawn

4 m

0.5 m

0.5 m

The lawn is a 6 m by 4 m rectangle.
Sabia is going to put a path all the way around the lawn.
The path will be 0.5 m wide.

Sabia is going to use paving stones to make the path.
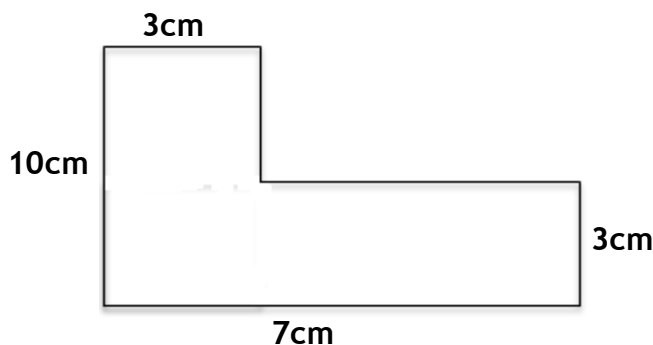Each paving stone is a 0.5 m by 0.5 m square.
She has 35 paving stones.

Has Sabia got enough paving stones?
You must show all your working.

14 tiles across   M1
8 tiles down (or 10 tiles down with 2 repeated) M1
14 + 14 + 8 + 8 = 44 tiles A1
No Sabia does not have enough paving stones, she is 9 tiles short   C1

(4 marks)
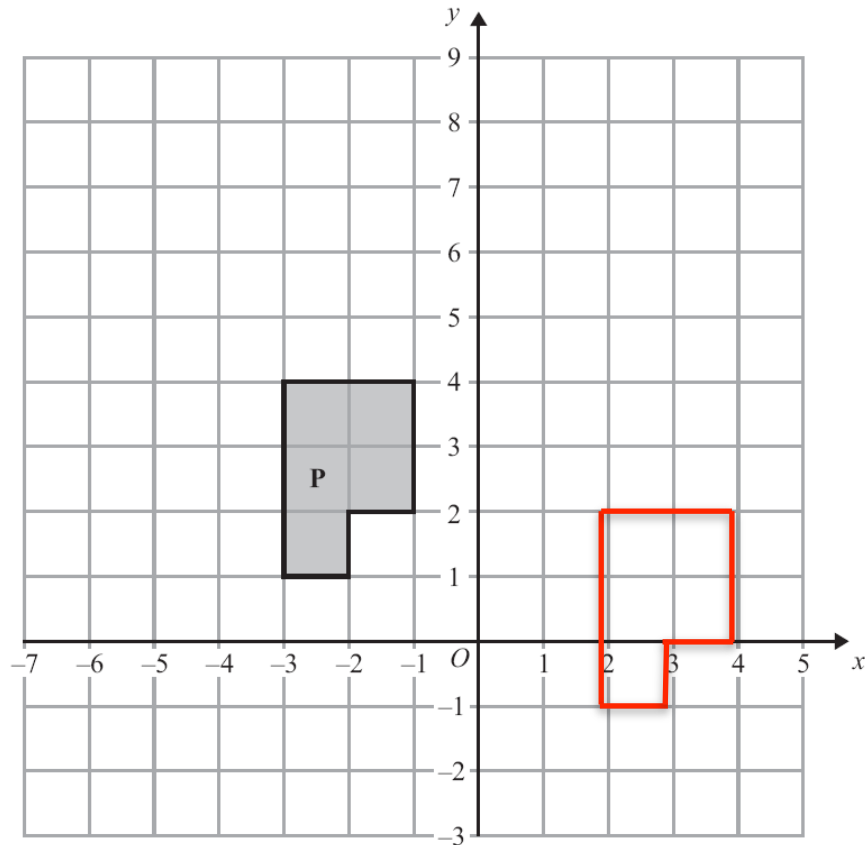

Question 16.

Work out the area of the shape.

3cm

10cm

3cm

7cm

(3 × 10 = 30cm^2) + (4 × 3 = 12cm^2) M1

42cm^2 A1

(Total 2 marks)

Question 17.

Translate shape P by the vector $\begin{pmatrix} 5 \\ -2 \end{pmatrix}$.

(Total 2 marks)

Question 18.
Debbie, Salma and Wendy did a Maths test.
The total for the test was 40 marks.

Debbie got 16 out of 40

Salma got 35% of the 40 marks.

Wendy got $\dfrac{3}{8}$ of the 40 marks.

Who got the highest mark?
You must show all your working.

Salma (35 ÷ 100) × 40 = 14 M1
Wendy (40 ÷ 8) × 3 = 15 M1
Debbie has the highest marks   A1

(Total 3 marks)

Question 19.
A shop sells milk in 1 pint bottles and in 2 pint bottles.

Each 1 pint bottle of milk costs 63p.
Each 2 pint bottle of milk costs 89p.

Martin has **no** milk.

He assumes that he uses, on average, $\frac{1}{2}$ of a pint of milk each day.

Martin wants to buy enough milk to last for 10 days.

(*a*) Work out the smallest amount of money Martin needs to spend on milk.
You must show all your working.

10 × 0.5 = 5 P1
89 + 89 + 63 = 241p   P1
(63 × 5 = 315p)

£2.41 A1
(3)

Martin actually uses more than $\frac{1}{2}$ of a pint of milk each day.

(*b*) Explain how this might affect the amount of money he needs to spend on milk.

Deduces he may have to pay more (if he uses more than 0.5 pints a day) C1

....

....

....

(1)

(Total 4 marks)

Question 20.

Make *t* the subject of the formula $w = 3t + 11$

$3t + 11 = w$

➔ Work backwards

$$t = \frac{w - 11}{3}$$

....

(Total 2 marks)

Question 21.

Ashten chooses three different whole numbers between 1 and 50

The first number is a prime number. x
The second number is 4 times the first number. 4x
The third number is 6 less than the second number. 4x - 6

The sum of the three numbers is greater than 57

Find the three numbers.

$x + 4x + 4x - 6 > 57$
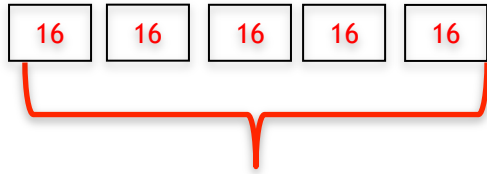
$9x - 6 > 57$

$x > 7$

Next prime number above 7 is 11.

So 3 numbers are 11, 44 and 38

....

(Total 3 marks)

Question 22.

Liam, Sarah and Emily shared some money in the ratio 2 : 3 : 7
Emily got £80 more than Liam.

How much money did Sarah get?

16	16	16	16	16

£80 "more" is 5 sections of the ratio.

So Sarah gets 3 x 16 = £48

....

(Total 3 marks)

Question 23.

Work out an estimate for $\sqrt{4.98 + 2.16 \times 7.35}$

$\sqrt{5 + 2 \times 7}$

$\sqrt{19}$

So about 4.5

....

(Total 3 marks)

Question 24.

Denzil has a 4-sided spinner.
The sides of the spinner are numbered 1, 2, 3 and 4
The spinner is biased.

The table shows each of the probabilities that the spinner will land on 1, on 3 and on 4
The probability that the spinner will land on 3 is x.

Number	1	2	3	4
Probability	0.3		x	0.1

(a) Find an expression, in terms of x, for the probability that the spinner will land on 2.
Give your answer in its simplest form.

P all of them adds to 1.

So P(2) = 1 –0.3 - 0.1 - x) = 0.6 – x

....
(2)

(b) Write down the probability that the spinner will land on either 1 or 4

0.1 + 0.3 = 0.4

....
(1)

Denzil spins the spinner 300 times.

(c) Write down an expression, in terms of x, for the number of times the spinner is likely to land on 3

300 × x = 300x

....
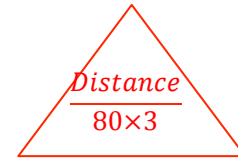(1)

(Total 4 marks)

14

Question 25.

Gary drove from London to Sheffield.
It took him 3 hours at an average speed of 80km/h.
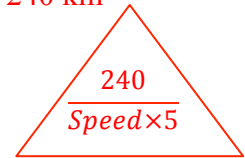
Lyn drove from London to Sheffield.
She took 5 hours.

Assuming that Lyn
    drove along the same roads as Gary
  and did not take a break,

(a) work out Lyn's average speed from London to Sheffield.

$$\frac{Distance}{80\times 3}$$

Distance is 240 km

Lynn takes longer

$$\frac{240}{Speed\times 5}$$

48 km/h

....

..... km/h

(3)

(b) If Lyn did **not** drive along the same roads as Gary, explain how this could affect your answer to part (a).

 She might drive a different distance so her speed could be
different..

....

(1)

(Total 4 marks)

Question 26.

Mr Brown gives his class a test.
The 10 girls in the class get a mean mark of 70%
The 15 boys in the class get a mean mark of 80%

Nick says that because the mean of 70 and 80 is 75 then the mean mark for the whole class in the test is 75%

Nick is not correct.
Is the correct mean mark less than or greater than 75%?
You must justify your answer.

More than because
  → There are more boys than girls
  → Real mean is $\frac{10\times 70+15\times 80}{25}$= 76

(Total 2 marks)

Question 27.

There are 80 students at a language school.

All 80 students speak at least one language from French, German and Spanish.

9 of the students speak French, German and Spanish.
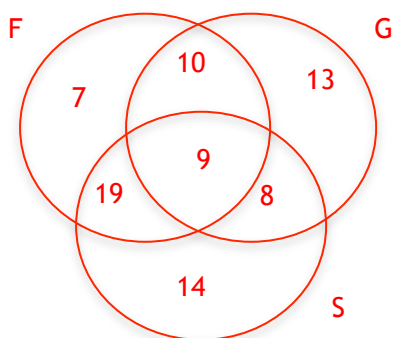19 of the students speak French and German.
28 of the students speak French and Spanish.
17 of the students speak Spanish and German.
45 students speak French.
50 students speak Spanish.

(a) Draw a Venn diagram to show this information.

(3)

One of the 80 students is selected at random.

(b) Find the probability that this student speaks German but not Spanish.

$$\frac{23}{80}$$

(1)

Given that the student speaks German,

(c) find the probability that this student also speaks French.

40 students speak German.

So answer is $\frac{19}{40}$

(2)

....
(Total 6 marks)

16

Question 28

Expand and simplify $(x - 4)(x - 7)$

$x^2 - 4x - 7x + 28$ **M1**
$x^2 - 11x + 28$ **A1**

$x^2 - 11x + 28$

....

(Total 2 marks)

Question 29

Factorise completely $x^3 - x$

$x(x^2 - 1)$ **M1**
$x(x + 1)(x - 1)$ **A1**

$x(x + 1)(x - 1)$

....

(Total 2 marks)

TOTAL FOR PAPER IS 80 MARKS