the PiXL club
partners in excellence

Pre Public Examination

GCSE Mathematics (Edexcel style)
May 2018
Foundation Tier
Paper 2F WORKED SOLUTIONS

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 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		4
6		2
7		3
8		4
9		2
10		2
11		4
12		6
13		3
14		5
15		4
16		3
17		3
18		4
19		8
20		4
21		5
22		3
23		3
24		4
Total		80

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Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

Question 1.

Use your calculator to work out 3.65^2

13·3225 B1

.....

(Total 1 mark)

Question 2.

34% of the cats do not have blue eyes.

Work out the percentage of the cats that **do** have blue eyes.

100 - 34

66 % B1

.....

(Total 1 mark)

Question 3.

Write 50 out of 88 as a fraction.

Give your fraction in its simplest form.

$\frac{50}{88}$

$\frac{25}{44}$ B1

.....

(Total 1 mark)

Question 4.

The probability of an event occurring is 0.7.

What is the probability of the event **not** occurring?

1 − 0·7

0·3 B1

.....

(Total 1 mark)

Question 5.

Here is a list of numbers.

13 21 39 27 26 60 33

From the numbers in the list,

(a) Write down all the odd numbers

13, 21, 39, 27, 33 B1

(1)

(b) Write down a multiple of 11

33 B1

(1)

(c) Write down a factor of 39

39 B1

(1)

(d) Write down a cube number

27 B1

(1)

(Total 4 marks)

Question 6.

Sam throws a dice 9 times.

Her father gives her £1 if the median score is more than 3.

The dice scores are

6 1 2 6 4 1 5 3 6.

Does Sam win the £1?

Explain your answer.

1 1 2 3 4 5 6 6 6

↑ MEDIAN P1

Write numbers in order from smallest to largest.

Median is the middle number, which is 4. C1

This is larger than 3, therefore Sam's father will give her £1.

(Total 2 marks)

Question 7.

The Harrison family sets off on a 52.4km journey to visit their relatives.

They have driven 22,500m so far.

How much further do they have to drive?

$52.4 \times 1000 = 52400$ P1

$52400 - 22500 = 29900$ P1

$29900 \div 1000 = 29.9$

..... 29.9 km A1

(Total 3 marks)

Question 8.

Here are the first five terms of a number sequence.

$-25 \quad -21 \quad -17 \quad -13 \quad -9$

$+4 \quad +4 \quad +4 \quad +4$

(a) Write down the next two terms of the sequence.

$-9 + 4 = -5$

$-5 + 4 = -1$

..... -5 B1 , ... -1 B1

(2)

(b) Explain how you found your terms.

Add 4 to the previous term B1

(1)

(c) Explain why -50 is not a term of this sequence.

$4n - 29$ is the nth term $4n - 29 = -50$

$4n = -21$ nth term cannot be a decimal number. C1

$n = \frac{-21}{4}$

$n = -5.25$

(1)

(Total 4 marks)

Question 9.

Kate thinks of a number.

She subtracts 4 from the number and then divides the answer by 2.

Kate thinks of the number 24.

She writes down

$$24 - 4 \div 2 = 22$$

What should Kate have written down?

(24 - 4) ÷ 2 B1 = 10 B1

(Total 2 marks)

Question 10.

Compared to 2017, the number of schools in England in 2018 increased by 4%.

There were 1095 more schools in 2018.

How many schools were there in 2017?

1095 ÷ 4 = 273·75 M1

273·75 x100 = 27375

27375 A1

(Total 2 marks)

Question 11.

Bob the builder has a rule to work out how long it will take him to tile a wall.

50 minutes preparation time and then 9 minutes for each tile.

(a) How long will he need to lay 33 tiles?

Give your answer in hours and minutes.

50 + (33 x 9) = 347 minutes M1

$\frac{347}{60} = 5\frac{47}{60}$

5 hours 47 minutes A1

(2)

(b) Bob spent 9 hours and 14 minutes tiling a bathroom.

How many tiles did he lay?

$(9 \times 60) + 14 = 554$ Minutes M1

$554 - 50 = 504$

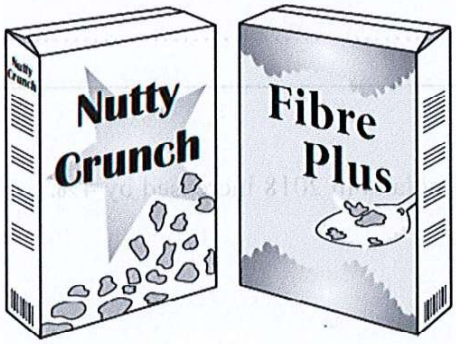
$504 \div 9 = 56$

.....56.....tiles A1

(2)

(Total 4 marks)

Question 12.



The table below shows some nutritional information for 150g of each of these cereals.

		Nutty Crunch	Fibre Plus
Energy	kj	1638	1452
Sugar	g	35	21
Salt	g	1	1.5
Fibre	g	3	5
Fats	g	2.5	1.5

(a) In a 150g serving,

(i) which cereal supplies more energy?

NUTTY CRUNCH B1

(1)

(ii) how many more kilojoules (kj) of energy does it supply?

$1638 - 1452$

186 kj B1

(1)

(b) Nutty crunch is supplied in 510g packets and Fibre Plus in 600g packets.

(i) How much sugar (in grams) does a 510g Nutty Crunch packet contain?

510 ÷ 150 = 3·4 M1

3·4 × 35 = 119g

119g A1

(2)

(ii) How much more fibre does a 600g packet of Fibre Plus contain than a 510g packet of Nutty Crunch?

510 ÷ 150 = 3·4 600 ÷ 150 = 4 M1

3·4 × 3 = 10·2g 4 × 5 = 20g

20 − 10·2 = 9·8

9·8g A1

(2)

(Total 6 marks)

Question 13.

(a) Write £6.40 : £4.80 : £8 in its simplest form.

640 : 480 : 800

80 : 60 : 100

8 : 6 : 10 M1

4 : 3 : 5

4 : 3 : 5 A1

(2)

(b) Write a number on the dotted line to complete the statement

A1

10 : 4 = ..2.5.. : 1

$\frac{10}{4} : \frac{4}{4}$

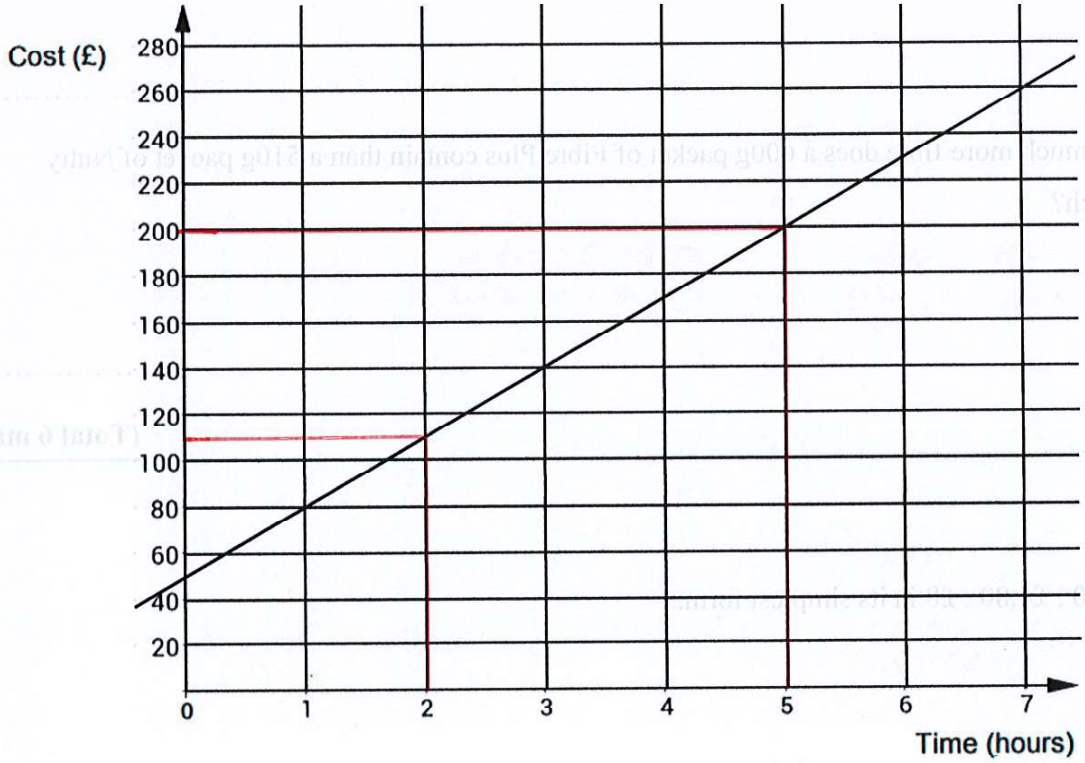
$\frac{5}{2} : 1$

(1)

(Total 3 marks)

Question 14.

Thomas, the builder, calculates a bill as £H per hour worked plus a £C fixed call out charge.



(a) What is Thomas' fixed call out charge?

£ 50 B1

(1)

(b) Find the cost of,

(i) 5 hours of work

£ 200 B1

(1)

(ii) 2 hours of work

£ 110 B1

(1)

(c) How many hours of work did Thomas do, if he charged £420?

£80 charge for 1hr

80 - 50 = £30

£30 for 1hr

420 - 50 = 370 M1

370 ÷ 30 = 12.3

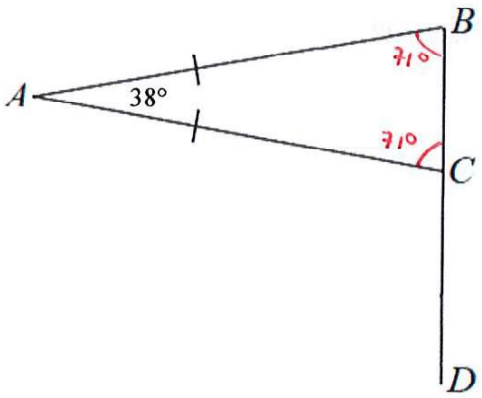
A1

12 1/3 hours or 12hrs 30min hours

(2)

(Total 5 marks)

Question 15.



BCD is a straight line.

$AB = AC$

Angle $BAC = 38°$

Show that $ACD = 109°$

Give a reason for each stage of your working.

180 - 38 = 142°

Isoceles Δ base angles are equal C1

142 ÷ 2 = 71° M1

Angles on a straight line add to 180° C1

180 - 71 = 109° M1

∴ ACD = 109°

(Total 4 marks)

Question 16.

When cold, an iron rod is 350cm long. After it is heated, the length of the rod increases to 375.5 cm.

What is the percentage increase in the length of the rod?

Give your answer to one decimal place.

$375.5 - 350 = 25.5$ M1

$\frac{25.5}{350} \times 100 = 7.\dot{2}85714\dot{}$ M1

7.3 % A1

.....

(Total 3 marks)

Question 17.

A P O

On a market stall the ratio of apples to pears to oranges is 3 : 4 : 5.

(a) What fraction of the total fruit are pears?

$3+4+5 = 12$

$\frac{4}{12}$ or $\frac{1}{3}$ A1

.....

(1)

(b) There are 63 apples.

Work out how many oranges there are.

$63 \div 3 = 21$ is 1 part

$21 \times 5 = 105$ oranges

105

.....

(2)

(Total 3 marks)

Question 18.

Sammy notices that in the US, service charge in restaurants is usually 20% of the price of the bill.

In the UK it is usually 16%.

A pizza in a chain restaurant in the US, costs $13 and in the UK it costs £8.

After the service charge has been added, where is it cheaper to eat?

$1 = £0.60

13 x 0·6 = £7·8 M1

20% service charge

7·8 x 1·2 = £9·36 M1

8 x 1·16 = £9·28 A1 9·36 − 9·28 = 0·08

It is cheaper to eat in the UK by 8p. C1

.....

(Total 4 marks)

Question 19.

The table below shows the percentages obtained by 10 students on Paper 1 and Paper 2 of an examination.

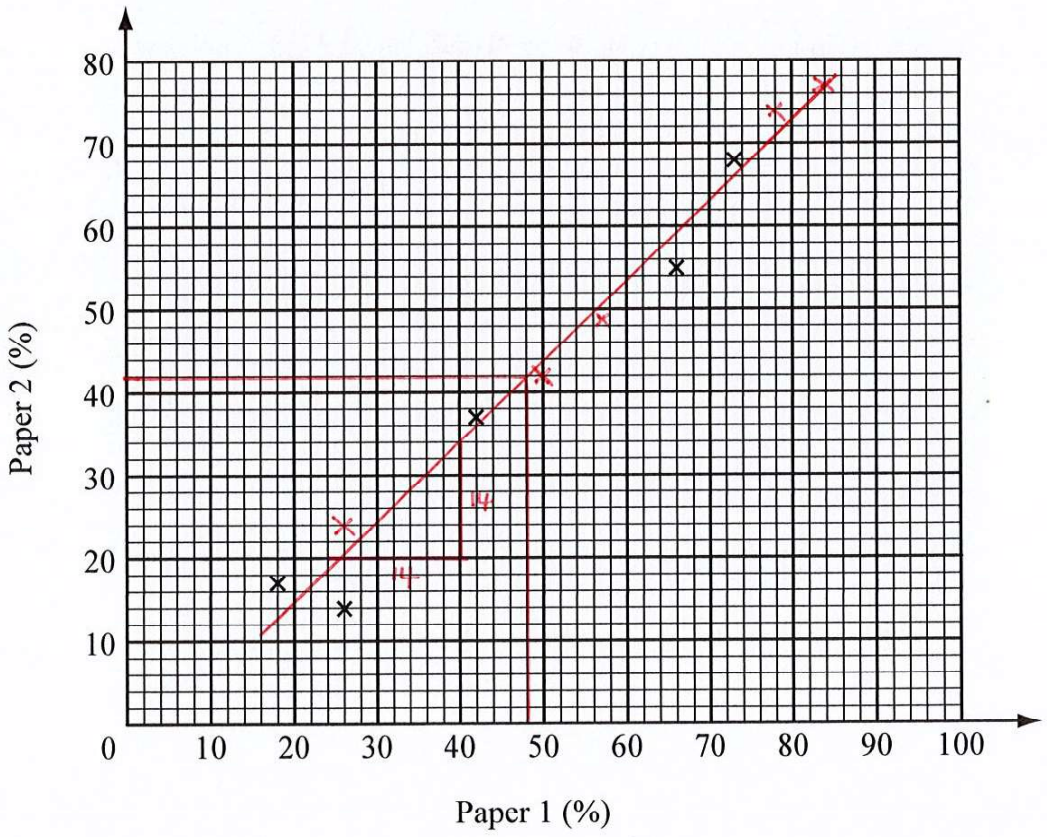
Student	A	B	C	D	E	F	G	H	I	J
Paper 1	73	26	66	42	18	50	78	84	26	57
Paper 2	68	14	55	37	17	42	74	77	24	49

(a) Complete the scatter diagram on the grid below.

The first 5 students' percentages have been plotted.

B1 for at least 2 points correctly plotted
B1 for all points plotted correctly

(2)



(b) Tariq scored 48% on Paper 1, but was absent for Paper 2.

By drawing a line of best fit, estimate his percentage score on Paper 2.

B1 for line of best fit drawn

42% B1

(2)

(c) Why is your answer to part (b) only an estimate?

The line of best fit can vary C1

(1)

(d) Calculate the gradient of your line of best fit.

$\frac{\text{change in } y}{\text{change in } x} = \frac{14}{14} = 1$

M1

1 A1

.....

(2)

(e) Give an interpretation of the gradient of your line of best fit.

As the score in paper 1 increases, the score in paper 2 increases C1

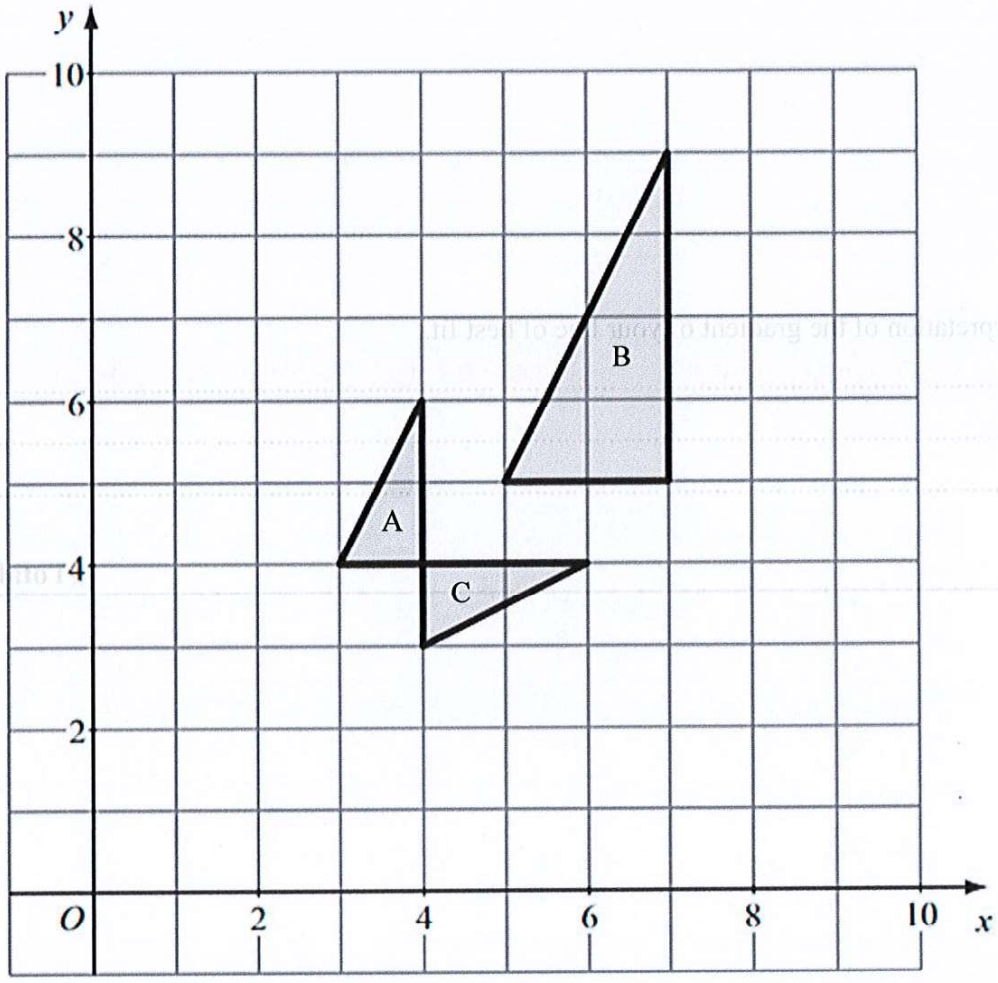
.....

.....

(1)

(Total 8 marks)

Question 20.



(a) Describe fully the single transformation that maps triangle A onto triangle B.

ENLARGEMENT , SCALE FACTOR 2 B1 CENTRE (1, 3) B1

(2)

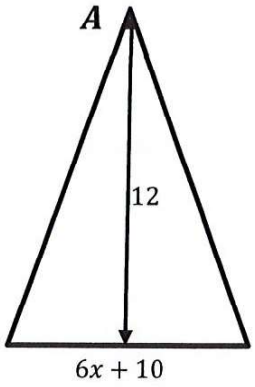
(b) Describe fully the single transformation that maps triangle A onto triangle C.

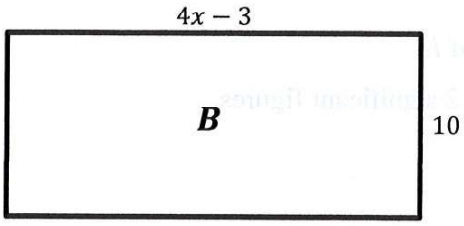
REFLECTION B1 MIRROR LINE $y = x$ B1

(2)
(Total 4 marks)

Question 21.

Here is a triangle and a rectangle.





All measurements are in centimetres.

The area of triangle A is the same as the area of rectangle B.

Work out the perimeter of rectangle B.

$\frac{12(6x+10)}{2} = 10(4x-3)$ P1, P1

$\frac{72x+120}{2} = 40x - 30$

$36x + 60 = 40x - 30$

$60 + 30 = 40x - 36x$

$90 = 4x$

$x = \frac{90}{4}$

$x = 22.5$ P1

Length of rectangle:

$(4 \times 22.5) - 3 = 87$ P1

$87 + 87 + 10 + 10 = 194\text{cm}$

194 cm A1

(Total 5 marks)

Question 22.

$$H = \frac{y^2 - w^2}{2\pi^2}$$

$y = 5, w = 11$

Calculate the value of H.

Give your answer to 2 significant figures.

$H = \frac{5^2 - 11^2}{2\pi^2}$ M1 $H = -4.863416815$

$H = \frac{25 - 121}{2\pi^2}$

$H = \frac{-96}{2\pi^2}$ M1

$H = \frac{-48}{\pi^2}$

$H = -4.9$ A1

.....

(Total 3 marks)

Question 23.

The table shows the number of letters delivered to the 30 houses in a street.

Number of Letters Delivered	Number of Houses (Frequency)	MIDPOINT
$0 < L \leq 2$	10	1
$2 < L \leq 4$	8	3
$4 < L \leq 7$	5	5.5
$7 < L \leq 10$	3	8.5
$10 < L \leq 14$	4	12

Calculate an estimate for the mean number of letters delivered per house.

Give your answer to the nearest integer.

$(1 \times 10) + (3 \times 8) + (5.5 \times 5) + (8.5 \times 3) + (12 \times 4) = 135$ M1

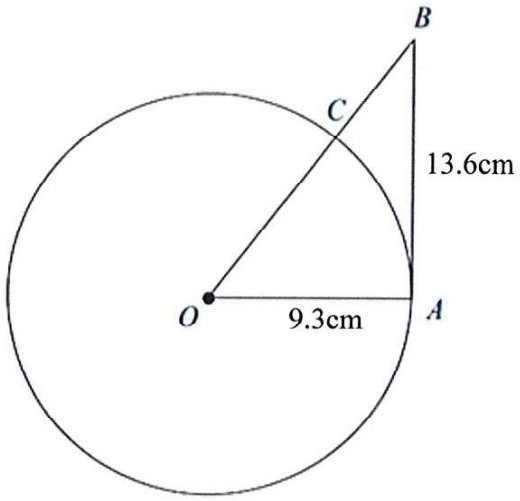
$\frac{135}{30} = 4.5$ M1

5 A1

.....

(Total 3 marks)

Question 24.



A is a point on a circle with centre O and radius 9.3cm.

AB is the tangent to the circle at A.

AB = 13.6cm.

OB intersects the circle at C.

Calculate the length of BC.

Give your answer to 3 significant figures.

$13.6^2 + 9.3^2 = OB^2$ P1

$184.96 + 86.49 = OB^2$

$271.45 = OB^2$ P1

$OB = \sqrt{271.45}$

$OB = 16.47573974$

$16.47573974 - 9.3 = 7.175739741$ P1

7.18cm A1

(Total 4 marks)

TOTAL FOR PAPER IS 80 MARKS