

GCSE Mathematics

Practice Tests: Set 23

Paper 2F/3F (Calculator)

Time: 1 hour 30 minutes

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

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 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
- Questions are in order of mean difficulty as found by students achieving Grade 4.
- 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 NINETEEN questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1** Sandeep sells 600 tickets for an event.
He receives a total of £7200 from selling the tickets.

$\frac{1}{4}$ of the tickets sold are child tickets.

The rest of the tickets sold are adult tickets.

The cost of an adult ticket is £13.60

Work out the cost of a child ticket.

£

(Total for Question 1 is 4 marks)

2 Orange squash is made from orange juice and water.

Sean has two different cartons of orange squash, carton **P** and carton **Q**.

The table gives information about the two cartons.

Carton P	Carton Q
Total volume of orange squash is 250 millilitres 30% of the total volume is orange juice and the remainder is water	Total volume of orange squash is 250 millilitres 160 millilitres of the total volume is water and the remainder is orange juice

Work out the difference in the volume of orange juice in carton **P** and the volume of orange juice in carton **Q**.

..... millilitres

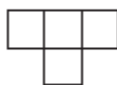
(Total for Question 2 is 3 marks)

3 A sequence of patterns is made from squares.

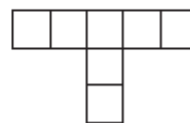
Pattern number 1



Pattern number 2



Pattern number 3



(a) In the space below, draw Pattern number 4

Pattern number 4

(1)

(b) Complete the table.

Pattern number	1	2	3	4	5
Number of squares	1	4	7		

(1)

(c) Work out the number of squares in Pattern number 8

.....
(1)

Angus says

“there are 42 squares in Pattern number 15”

Angus is incorrect.

(d) Explain why.

.....
.....
.....

(1)

(Total for Question 3 is 4 marks)

4 The table gives information about the costs of sending parcels of different weights.

Weight (w kg)	Cost of sending a parcel
$0 < w \leq 1$	£6.00
$1 < w \leq 2$	£9.02
$2 < w \leq 5$	£15.85
$5 < w \leq 10$	£21.90

Peony has one parcel of weight 1.3 kg and another parcel of weight 8 kg to send to two different places.

(a) Work out the total cost of sending these two parcels.

£.....
(2)

Gryffyn sends 3 parcels each to a different place.

One of the parcels has a weight of 1.5 kg and another of the parcels has a weight of 2.8 kg

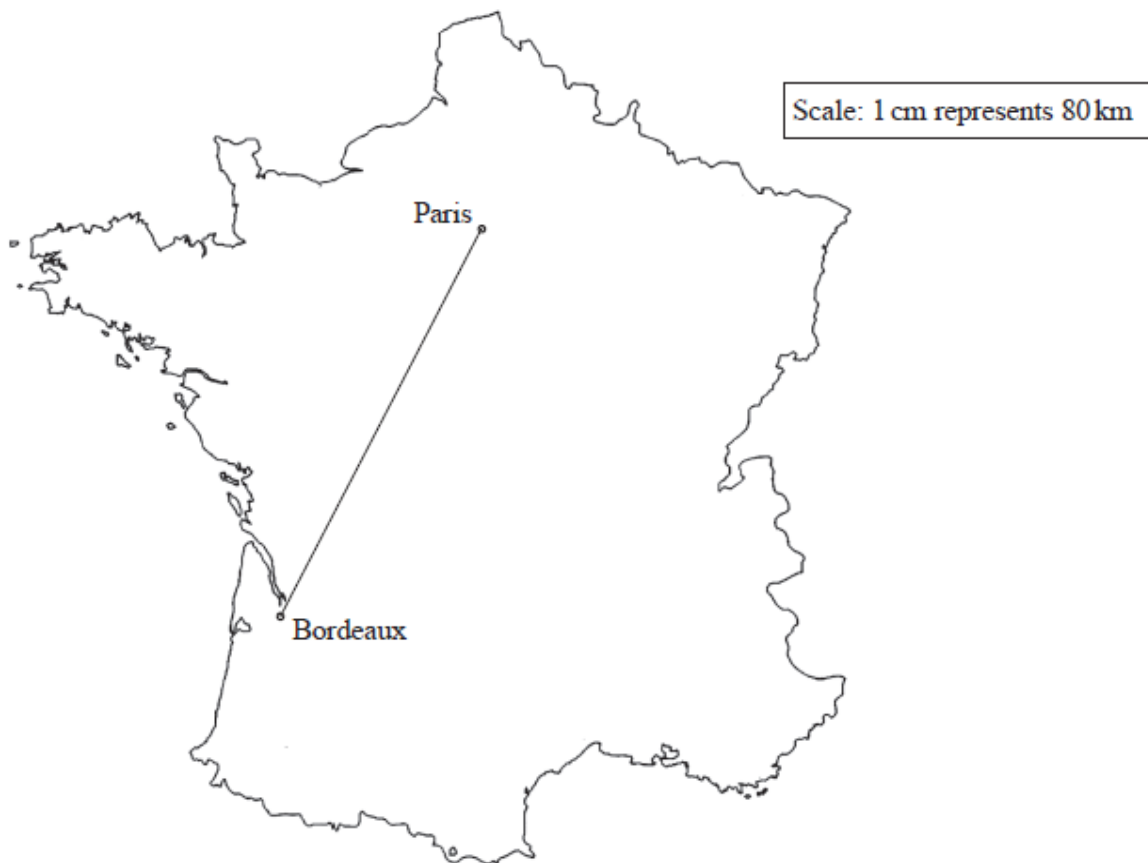
The total cost of sending the 3 parcels is £33.89

(b) Work out the greatest possible weight of the third parcel.

..... kg
(3)

(Total for Question 4 is 5 marks)

5 Here is a scale drawing showing the positions of Paris and Bordeaux.



Alain drives from Paris to Bordeaux.
The distance that he drives is 590 km.

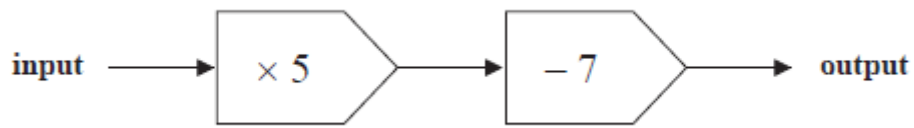
This distance is greater than the actual straight line distance between Paris and Bordeaux.

How much greater?
Show your working clearly.

..... km

(Total for Question 5 is 4 marks)

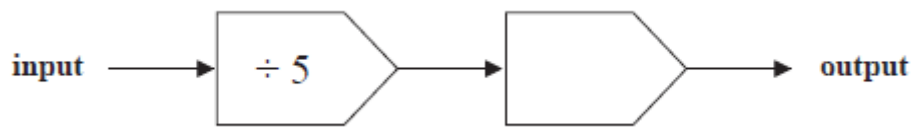
6 Here is a number machine.



(a) Work out the output when the input is 9

.....
(1)

Here is a different number machine.



When the input is 30 the output is 18

(b) Find a suitable way to complete the number machine.

(1)

The following rule is used to work out the total cost, in euros, of hiring a cement mixer.

Total cost = 8 euros per day plus 5 euros

James hires a cement mixer for 3 days.

(c) Work out the cost to James of hiring the cement mixer.

..... euros
(1)

The cost to Sophia of hiring a cement mixer is 61 euros.

(d) For how many days does Sophia hire the cement mixer?

..... days
(2)

(Total for Question 6 is 5 marks)

- 7 Luca has 5 kg of chopped tomatoes.
He also has some empty tins.

When full, each tin holds 350 g of chopped tomatoes.

Luca fills as many tins as possible with the chopped tomatoes.

Work out the weight of the chopped tomatoes remaining after Luca has filled as many tins as possible.

Give the units of your answer.

.....
(Total for Question 7 is 4 marks)

- 8 There are 120 cyclists in a cycling club.
 There are 67 professional cyclists and the rest are amateur cyclists.
 Each of these cyclists was asked to name their favourite type of bike.

The two-way table shows some information about their answers.

	Road bike	Mountain bike	Hybrid bike	Total
Professional	26			67
Amateur		32		
Total	39	54		120

(a) Complete the table.

(3)

(b) Work out the percentage of the cyclists who answered Mountain bike.

.....%

(2)

Jacob is going to draw a pie chart for the age groups of the 120 cyclists.
 There are 41 people in the ‘over 60’ age group.

(c) Work out the size of the angle for the sector representing the ‘over 60’ age group.

.....°

(2)

(Total for Question 8 is 7 marks)

- 9** Find the highest common factor (HCF) of 130 and 208
Show your working clearly.

.....
(Total for Question 9 is 2 marks)

10 (a) Write 6.25×10^{-4} as an ordinary number.

.....
(1)

(b) Work out $(2.4 \times 10^{12}) \div (9.6 \times 10^4)$
Give your answer in standard form.

.....
(2)

(Total for Question 10 is 3 marks)

- 11 Here is a floor plan of a stage.
The plan is formed from a triangle and a rectangle.

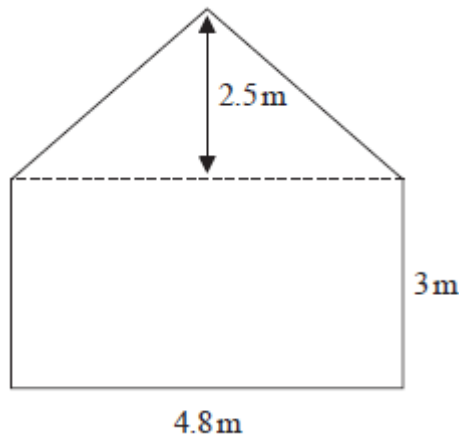


Diagram NOT
accurately drawn

The stage manager is going to paint the floor.

One tin of paint covers an area of 1.8 m^2

One tin of paint costs £16.40

Paint can only be bought in full tins.

The stage manager has £190 to spend.

Does the stage manager have enough money to buy enough tins to paint all of the floor?

Show your working clearly.

(Total for Question 11 is 5 marks)

12 The diagram shows two parallel lines AB and DEF

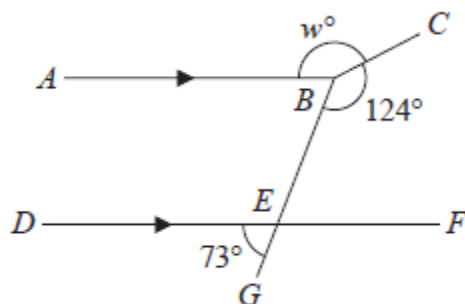


Diagram NOT accurately drawn

BEG is a straight line.

$$\text{angle } DEG = 73^\circ \quad \text{angle } EBC = 124^\circ \quad \text{angle } ABC = w^\circ$$

Work out the value of w

Give reasons for each stage of your working.

$$w = \dots\dots\dots$$

(Total for Question 12 is 4 marks)

- 13 The frequency table shows information about the number of cookies made by each of the 21 people in a cookery class.

Number of cookies made	Frequency
10	1
11	7
12	2
13	5
14	4
15	2

- (a) Write down the mode of the number of cookies made.

.....
(1)

- (b) Find the median number of cookies made.

.....
(2)

- (c) Find the total number of cookies made by the 21 people in the cookery class.

.....
(2)

(Total for Question 13 is 5 marks)

- 14** There are 380 students in a Sixth Form.
The students are either in the Upper Sixth or in the Lower Sixth.

The number of students in the Upper Sixth is 20 fewer than the number of students in the Lower Sixth.

$\frac{2}{5}$ of the Upper Sixth students study mathematics.

32% of the Lower Sixth students study mathematics.

Work out the total number of students in the Sixth Form who study mathematics.

.....
(Total for Question 14 is 4 marks)

15 The diagram shows a pentagon.

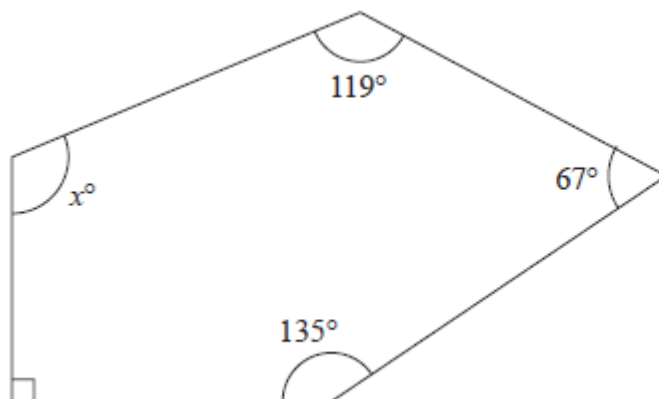


Diagram NOT accurately drawn

Work out the value of x

$x = \dots\dots\dots$

(Total for Question 15 is 3 marks)

16 Last season, Alisha and Jaya scored goals for their team in the ratio 4 : 7
Jaya scored 39 more goals than Alisha.

Work out the number of goals Alisha scored.

$\dots\dots\dots$
(Total for Question 16 is 3 marks)

17 80 students entered a dancing competition.

The table gives information about the length of time, in minutes, for which each student spent dancing.

Time (m)	Frequency
$0 < m \leq 12$	11
$12 < m \leq 24$	25
$24 < m \leq 36$	23
$36 < m \leq 48$	15
$48 < m \leq 60$	6

Work out an estimate for the mean length of time the students spent dancing.

..... minutes

(Total for Question 17 is 4 marks)

18 Shane bought a car.

The amount Shane paid for the car was £32 000

Theresa also bought a car. To pay for this car, Theresa paid a deposit of £18 000 together with 14 monthly payments of £1160

Theresa paid more for her car than Shane paid for his car.

(a) Work out how much more Theresa paid as a percentage of the amount Shane paid.

.....%
(4)

Kylie bought a van.

After 1 year, the value of the van was £39 865

During this year, the value of the van decreased by 15%

(b) Work out the value of the van when Kylie bought it.

£.....
(3)

(Total for Question 18 is 7 marks)

- 19** Matteo is going to invest £5000 for two years.
He can invest his money in Bank **G** or in Bank **H**.

<p style="text-align: center;">Bank G 1.6% per year compound interest</p>
--

<p style="text-align: center;">Bank H 2.9% interest added after two years</p>
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The total amount of interest Matteo would receive at the end of two years from Bank **G** is more than the amount of interest Matteo would receive at the end of two years from Bank **H**.

How much more?

£.....

(Total for Question 19 is 4 marks)

TOTAL FOR PAPER IS 80 MARKS

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