GCSE Mathematics Practice Tests: Set 21

Paper 1F (Non-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 not be used.**
- Diagrams are NOT accurately drawn, unless otherwise indicated.
- You must **show all your working out.**
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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 31 questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Write $\dfrac{29}{100}$ as a decimal.

....

(Total for Question 1 is 1 mark)

2 Write these numbers in order of size.
Start with the smallest number.

$$-7 \qquad 8 \qquad -9 \qquad 16 \qquad -3$$

…………………………………………………………...

(Total for Question 2 is 1 mark)

3 Write $\dfrac{17}{20}$ as a decimal.

....

(Total for Question 3 is 1 mark)

4 Write 0.3 as a percentage.

.... %

(Total for Question 4 is 1 mark)

5 Simplify $8 \times 3b$

....

(Total for Question 5 is 1 mark)

6 The bar chart shows information about the weight, in millions of tonnes, of the potatoes produced by each of four countries in 2016
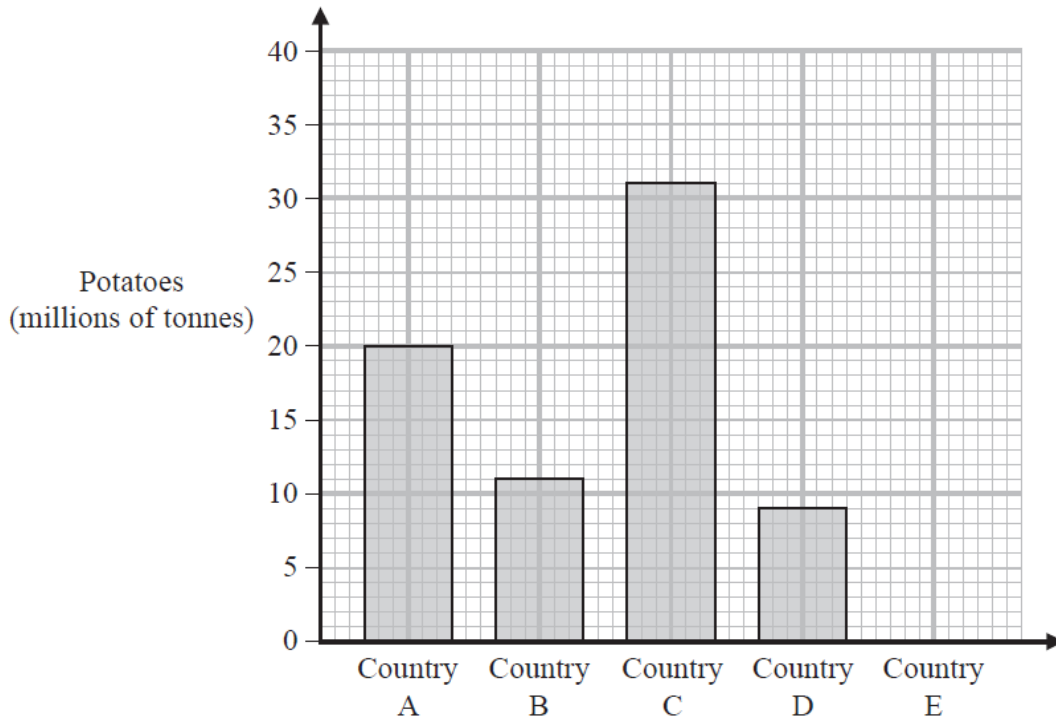
In 2016, one of these four countries produced 11 million tonnes of potatoes.

(*a*) Which country?

....

(1)

In 2016, Country E produced 7 million tonnes of potatoes.

(*b*) Draw a bar on the bar chart to show this information.

(1)

In 2016, the weight of potatoes produced by Country C was greater than the weight of potatoes produced by Country A.

(*c*) How many million tonnes greater?

.... million tonnes

(1)

(Total for Question 6 is 3 marks)

7 Hazel is buying a snack and a drink.
She can have a bar of chocolate (*B*) or some fruit (*F*) or a packet of crisps (*C*) as her snack.

She can have orange juice (*O*) or apple juice (*A*) or water (*W*) as her drink.

Write down all the possible combinations Hazel can have.

....

....

....

(Total for Question 7 is 2 marks)

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8 $A = 3b - 5c$

(*a*) Work out the value of *A* when $b = 12$ and $c = 4$

$A = $ ....

(2)

(*b*) Solve $4p + 9 = 24$

$p = $ ....

(2)

(Total for Question 8 is 4 marks)

9 Here is a list of numbers.

$$3 \quad 6 \quad 7 \quad 8 \quad 11 \quad 25 \quad 27$$

From the numbers in the list, write down

(*a*) an even number

....
(1)

(*b*) a multiple of 9

....
(1)

(*c*) a square number

....
(1)

(*d*) a prime number

....
(1)

(Total for Question 9 is 4 marks)

10 Anjali wants to go on a boat at the seaside.

At the seaside there are 20 boats.

Of these boats
    2 are white
    5 are blue
    7 are green
    6 are yellow

Anjali selects at random one of these boats.

Write down the probability that she selects

(i) a green boat,

....
(1)

(ii) a white boat or a yellow boat.

....
(2)

(Total for Question 10 is 3 marks)

11 $\mathcal{E}$ = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10}

A = {2, 3, 7, 8, 9}
B = {1, 2, 4, 5, 7, 8, 10}

Complete the Venn diagram for this information.
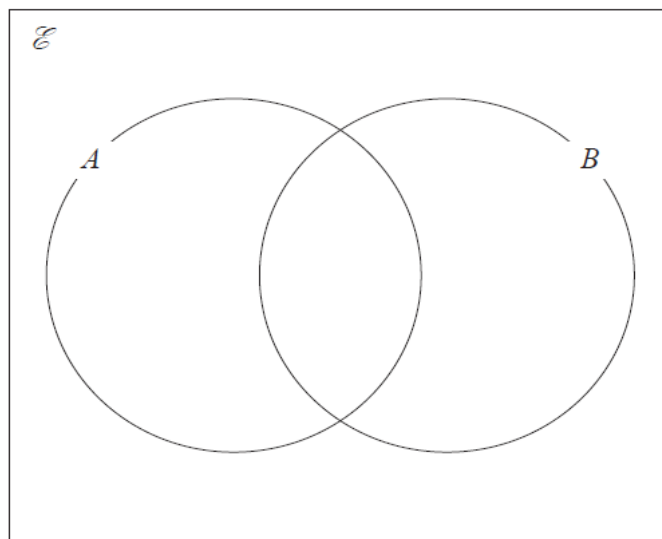
(Total for Question 11 is 3 marks)

12 Here are the first five terms of a number sequence.

$$7 \qquad 13 \qquad 19 \qquad 25 \qquad 31$$

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

....

(1)

(ii) Explain how you found your answer to part (a)(i)

………………………………………………………...

(1)

The 30th term of the sequence is 181

(*b*) Work out the 28th term of the sequence.

....

(1)

Brian says that 96 is a number in the sequence.
Brian is wrong.

(*c*) Explain why.

………………………………………………………...

………………………………………………………...

(1)

(Total for Question 12 is 4 marks)

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13 (*a*) Solve $\dfrac{c}{3} = 9$

$c = $ ....

(1)

(*b*) Expand $x(x + 5)$

....

(1)

(Total for Question 13 is 2 marks)

14 There are 400 cars in a car park.

$\dfrac{3}{10}$ of the cars are grey.

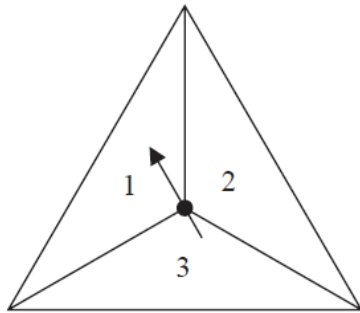Work out how many of the cars in the car park are **not** grey.

....
(Total for Question 14 is 2 marks)

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15 (*a*) Simplify $12a + 3a - 7a$

....
(1)

(*b*) Simplify $12g - 8e - 5g + 6e$

....
(2)
(Total for Question 15 is 3 marks)

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16 Jian has two fair spinners.
Spinner **A** is 3-sided and can land on 1, 2 or 3
Spinner **B** is 5-sided and can land on 2, 4, 6, 8 or 10
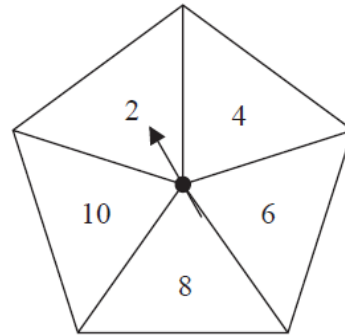
Spinner **A**   Spinner **B**

Jian spins each spinner once.

He adds together the number that spinner **A** lands on and the number that spinner **B** lands on to get his total score.

(*a*) Complete the table to show all possible total scores.
      Five of the total scores have been done for you.

Spinner A

		1	2	3
	2	3		
	4			7
Spinner B	**6**	7		
	8		10	
	10		12	

(2)

(*b*) Find the probability that

(i) Jian's total score is an odd number

....

(1)

(ii) Jian's total score is less than 9

....

(1)

(Total for Question 16 is 4 marks)

17 Here is a probability scale.
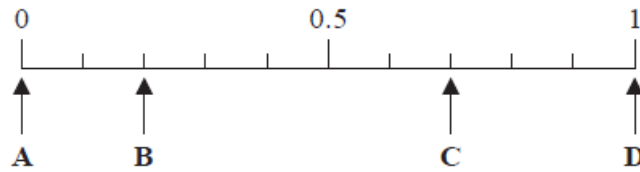
In a fruit bowl, there are only

3 bananas
7 pears

Shimon is going to take at random one of the fruits from the bowl.

(*a*) Write down the letter of the arrow that points to the probability that Shimon takes

    (i) a pear,

....
                                      (1)

    (ii) a grape.

....
                                      (1)

Emma has some carrots, some potatoes and some onions in a bag.
She says that the probability of taking at random a carrot from the bag is 1.4

Emma is not correct.

(*b*) Explain why.

....

....
                                      (1)

(Total for Question 17 is 3 marks)

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18 Write these numbers in order of size.
Start with the smallest number.

         0.044   0.104   0.04   0.009   0.2

(Total for Question 18 is 1 mark)

19 (*a*) Write 0.000 089 in standard form.

....
(1)

(*b*) Write 8.34×10^4 as an ordinary number.

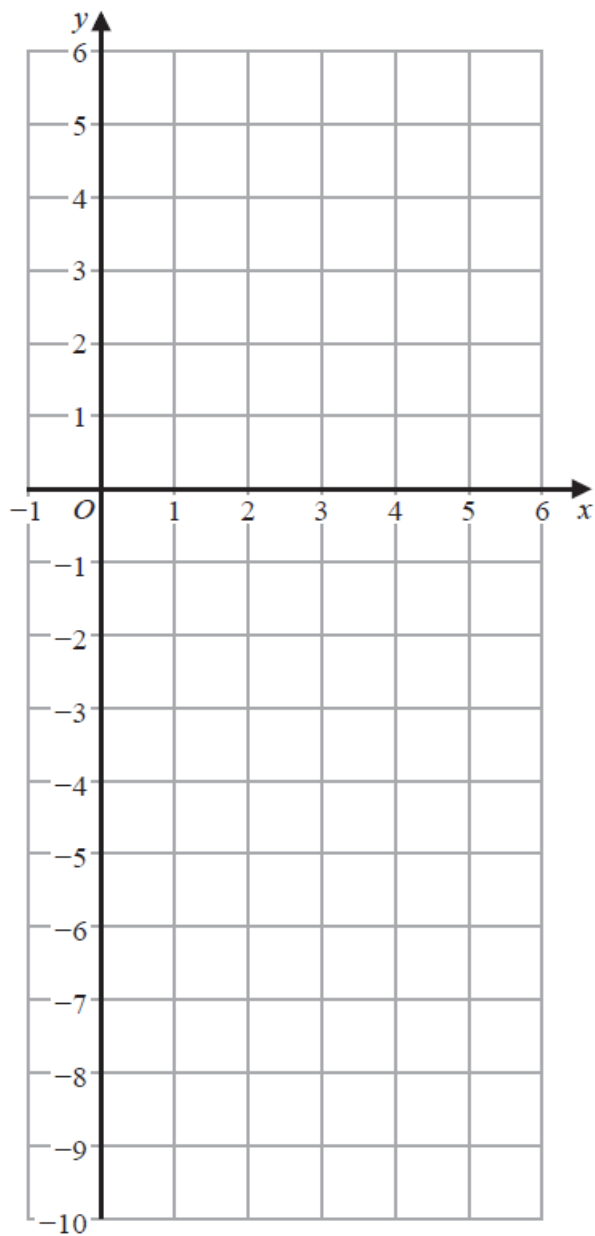...
(1)

(Total for Question 19 is 2 marks)

20 Use brackets to make the statement correct.
You may use more than one pair of brackets in the statement.

$$2^2 + 5 \times 2 + 3^2 = 99$$

(Total for Question 20 is 1 mark)

21 On the grid, draw the graph of $y = -2x + 3$ for values of x from -1 to 5

(Total for Question 21 is 3 marks)

22 Here are some integers where $a < b < c < d$

$$a \qquad b \qquad c \qquad d \qquad d \qquad d$$

The mode of the integers is 9
The median of the integers is 8
The range of the integers is 4

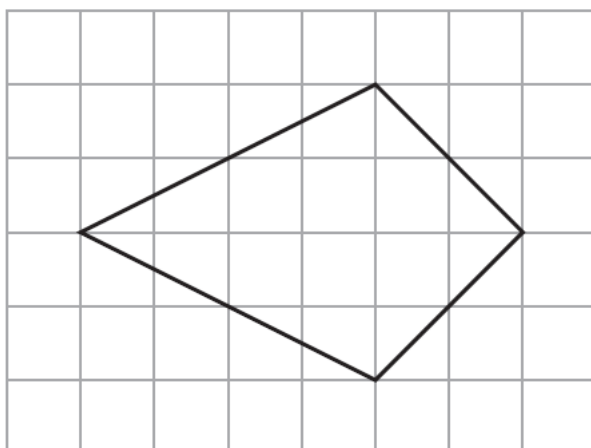Work out the value of a, the value of b, the value of c and the value of d

a = ...

b = ...

c = ...

d = ...

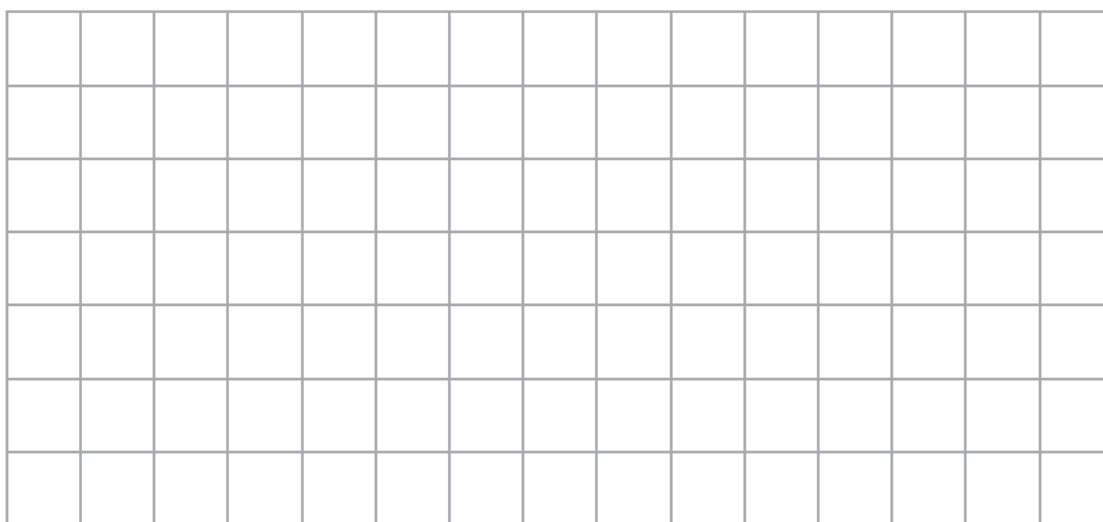**(Total for Question 22 is 3 marks)**

23   The diagram shows a kite drawn on a centimetre grid.

On the centimetre grid below, draw a rectangle that has the same area as the kite.

(Total for Question 23 is 3 marks)

24   Factorise $9y - 12$

....

(Total for Question 24 is 1 mark)

25 Rosanna sells m small bags of marbles and p large bags of marbles.

Each small bag contains 15 marbles.
Each large bag contains 40 marbles.

The total number of marbles that Rosanna sells is T

Write down a formula for T in terms of m and p

....

(Total for Question 25 is 3 marks)

26 *ABC* is a triangle.
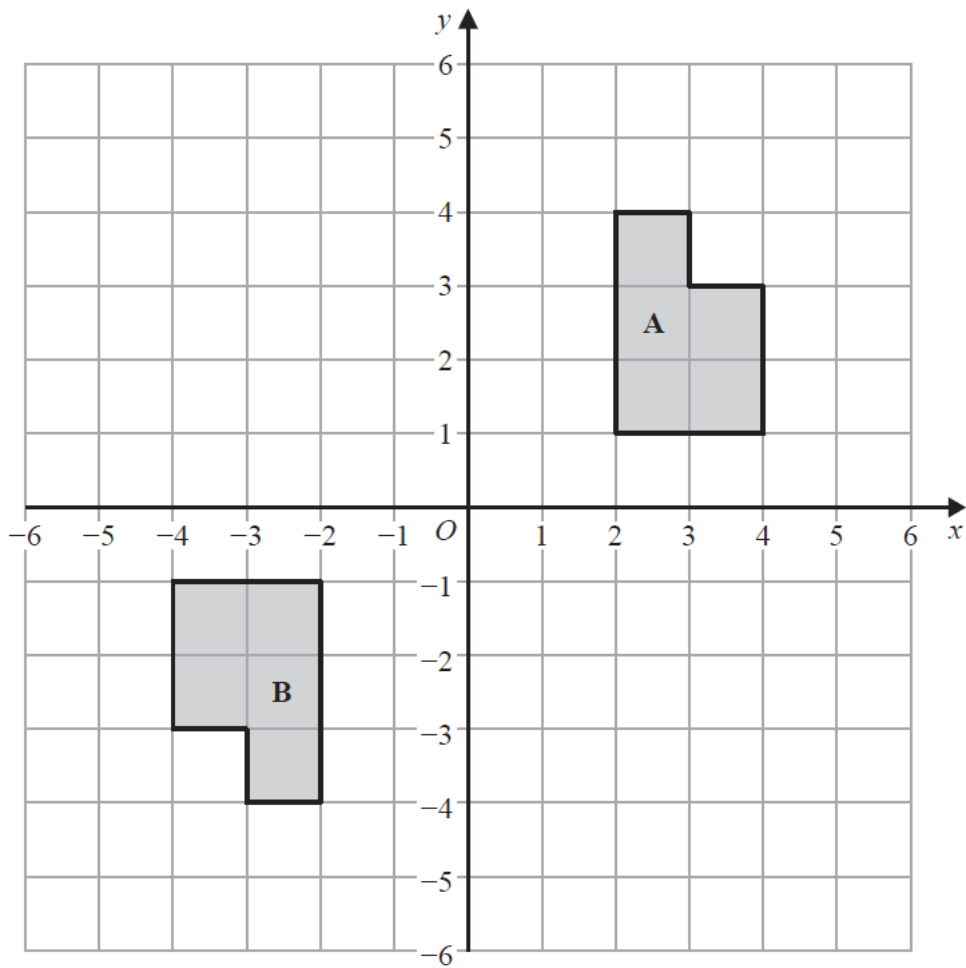 *AB* = 8 cm, *AC* = 6 cm and *BC* = 9 cm.

  Use a ruler and compasses to construct the triangle *ABC*.
  The side *AB* has been drawn for you.
  You must show all your construction lines.

  A ——————————————————— *B*
                 8 cm
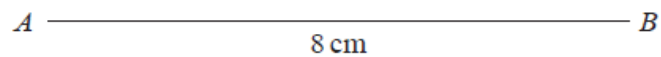
(Total for Question 26 is 2 marks)

27 Show that $5\dfrac{1}{3} - 2\dfrac{6}{7} = 2\dfrac{10}{21}$

(Total for Question 27 is 3 marks)

28

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

(2)

(b) On the grid, reflect shape **A** in the line with equation $x = -1$

....

....

(2)

(Total for Question 28 is 4 marks)

29 (*a*) Expand and simplify $(n - 6)(n + 4)$

....
(2)

(*b*) Solve $2x - 3 = \dfrac{3x - 5}{4}$

Show clear algebraic working.

$x =$ ....
(3)

(Total for Question 29 is 5 marks)

30 (*a*) Simplify $8 \times (4t)^0$

....
(1)

$x^6 \div x^{-5} = xp$

(*b*) Find the value of *p*

$p =$ ....
(1)

(*c*) Simplify fully $(2k^2m^4)^3$

....
(2)

(Total for Question 30 is 4 marks)

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31 (i) Factorise $x^2 + 5x - 24$

....
(2)

(ii) Hence, solve $x^2 + 5x - 24 = 0$

....
(1)

(Total for Question 31 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

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