**GCSE Mathematics**

**Practice Tests: Set 17**

**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.**

**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 TWENTY TWO questions.**

**Write your answers in the spaces provided.**

**You must write down all the stages in your working.**

**1** Here is a shape made of squares.



Shade  of the shape.

**(Total for Question 1 is 1 mark)**

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**2** Simplify 6*d* + 2*e* + *d* – 5*e*

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

**(Total for Question 2 is 2 marks)**

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**3** Write  as a fraction in its simplest form.

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

**(Total for Question 3 is 1 mark)**

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**4**Simplify *a* × *a* × *a* × *a*

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

**(Total for Question 4 is 1 mark)**

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**5** Simplify 4*b* ×5*c*

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

**(Total for Question 5 is 1 mark)**

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**6** The pictogram shows information about the number of emails Sophie received on each

of four days.

|  |  |  |  |
| --- | --- | --- | --- |
| **Monday** |  |  | **Key:**  represents: 4 emails |
| **Tuesday** |  |  |
| **Wednesday** |  |  |
| **Thursday** |  |  |
| **Friday** |  |  |

(*a*)On which of Monday, Tuesday, Wednesday or Thursday did Sophie receive the least

number of emails?

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

**(1)**

(*b*)Find the ratio of the number of emails Sophie received on Monday to the number of

emails Sophie received on Tuesday.

Give your ratio in its simplest form.

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

**(2)**

On Friday, Sophie received 14 emails.

(*c*)Show this information on the pictogram.

**(1)**

On Friday, 6 of the 14 emails Sophie received were from Kamil.

(*d*)Write 6 as a fraction of 14

Write your fraction in its simplest form.

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

**(2)**

On Friday, Sophie received 14 emails, on Saturday she received 11 emails and on

Sunday she received 6 emails.

(*e*)Draw a bar chart to show the number of emails Sophie received on each of Friday,

Saturday and Sunday.

Complete the frequency axis.



**(2)**

**(Total for Question 6 is 8 marks)**

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**7** Mikhal has 1200 grams of cake mixture.

He is going to make 3 cakes, cake *A*, cake *B* and cake *C*.

 of the weight of the cake mixture will be used to make cake *A*.

The rest of the cake mixture will be used to make cake *B* and cake *C*.

The weight of the cake mixture used to make cake *B* and the weight of the cake mixture

used to make cake *C* will be in the ratio 3 : 8

Work out the weight of the cake mixture used to make each of cake *A*, cake *B* and cake *C*.

Cake *A* ...................................................... grams

Cake *B* ...................................................... grams

Cake *C* ...................................................... grams

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

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**8** Caroline has a bag containing 10 counters.

In the bag there are

7 red counters

2 blue counters

1 green counter

Caroline is going to choose at random a counter from the bag.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| impossible | unlikely | evens | likely | certain |

(*a*)Write down the word from the box that best describes the likelihood that Caroline

will take

(i) a red counter,

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

(ii) a yellow counter.

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

**(2)**

Jamil is going to roll a fair six‑sided dice.

(*b*)On the probability scale, mark with a cross (X) the probability that the dice will

land on an odd number.



**(1)**

(*c*)On the probability scale, mark with a cross (X) the probability that the dice will

land on 2



**(1)**

**(Total for Question 8 is 4 marks)**

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**9** The diagram shows the point *A* and the line *CD* on a grid.



(*a*)Write down the coordinates of point *A*.

(........................... , ...........................)

**(1)**

The point *B* has coordinates (4, –2)

(*b*)On the grid, mark with a cross (✕) the point *B*.

Label the point *B*.

**(1)**

(*c*)Write down an equation of the line *CD*.

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

**(1)**

**(Total for Question 9 is 3 marks)**

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**10** E= {1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12}

*A* = {2, 4, 6, 8, 10, 12}

*B* = {3, 6, 9, 12}

(*a*)Complete the Venn diagram below for the sets E, *A* and *B*.

|  |  |
| --- | --- |
| E |  |

**(3)**

One of the numbers in Eis to be chosen at random.

(*b*)Find the probability that this number is not in set *A* **and** not in set *B*.

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

**(2)**

**(Total for Question 10 is 5 marks)**

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**11** Solve 5(2*x* – 3) = 20

Show clear algebraic working.

*x* = ......................................................

**(Total for Question 11 is 3 marks)**

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**12** The table shows the temperature recorded in Amsterdam at 6 am on each of five days.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Day** | **Monday** | **Tuesday** | **Wednesday** | **Thursday** | **Friday** |
| **Temperature (°C)** | –5 | –1 | 4 | 3 | –6 |

(*a*)What is the range of the temperatures in the table?

......................................................°C

**(2)**

(*b*)What is the median of the temperatures in the table?

......................................................°C

**(2)**

(*c*)What percentage of the temperatures in the table are lower than 0 °C?

......................................................%

**(2)**

On Saturday of the same week, the temperature recorded in Amsterdam at 6 am was 8 °C

higher than the temperature recorded at 6 am on Friday.

(*d*)What was the temperature recorded in Amsterdam at 6 am on Saturday?

...................................................... °C

**(2)**

**(Total for Question 12 is 8 marks)**

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**13** Here is a quadrilateral.



(*a*)What is the mathematical name of this quadrilateral?

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

**(1)**

(*b*)Measure the size of the angle marked *x*.

......................................................°

**(1)**

(*c*)On the quadrilateral, mark with arrows (>>) a pair of parallel lines.

**(1)**

The quadrilateral has four angles.

(*d*)How many of these angles are right angles?

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

**(1)**

**(Total for Question 13 is 4 marks)**

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**14** Here are five discs.

Each disc has a number on it.



These five discs are arranged to make the number 41283

(*a*)Show how all five discs can be arranged to make the smallest number.



**(1)**

(*b*)Show how all five discs can be arranged to make the largest **even** number.



**(1)**

(*c*)Which of the five numbers on the discs are factors of 21?

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

**(2)**

(*d*)Which of the five numbers on the discs are prime numbers?

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

**(2)**

**(Total for Question 14 is 6 marks)**

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**15** Here are three 3D shapes, **A**, **B** and **C**.

(*a*)Write down the mathematical name for each of these 3D shapes.

|  |  |  |
| --- | --- | --- |
| **A** | **B** | **C** |
|  |  |  |
| (i) ...................................... | (ii) ......................................... | (iii) ......................................... |

**(3)**

(*b*)(i) How many faces does shape **C** have?

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

(ii) How many vertices does shape **C** have?

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

**(2)**

**(Total for Question 15 is 5 marks)**

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**16**(*a*)Expand 5(3*a* + 4)

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

**(1)**

(*b*)Factorise 4*c* – 14

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

**(1)**

(*c*)Solve 5*x* – 11 = *x* + 6

Show clear algebraic working.

*x* = ......................................................

**(3)**

**(Total for Question 16 is 5 marks)**

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**17**(*a*)Complete the following estimates by writing a suitable metric unit on each of the

dotted lines.

(i) The distance from Paris to Berlin is about 1000 ......................................................

(ii) A bucket holds about 5 ...................................................... of water.

(iii) The area of the screen of a mobile phone is about 90....................................................

**(3)**

(*b*)Write down an estimate for the height of a bedroom door in a house.



Use a suitable metric unit.

|  |  |
| --- | --- |
| ........................................ | ........................................ |

**(2)**

**(Total for Question 17 is 5 marks)**

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**18** On the grid, draw the graph of *y* = 3 – 2*x* for values of *x* from –2 to 3



**(Total for Question 18 is 3 marks)**

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**19**(*a*)Simplify (3*k*2)4

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

**(2)**

(*b*)Simplify (21*m*4*n*) ÷ (3*n*–5)

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

**(2)**

**(Total for Question 19 is 4 marks)**

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**20** Show that 

**(Total for Question 20 is 3 marks)**

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**21** Here is a solid prism made from bricks.

The bricks are identical triangular prisms.



The volume of the prism is 54 cm3

Work out the volume of each brick.

...................................................... cm3

**(Total for Question 21 is 2 marks)**

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**22**Make *c* the subject of **

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

**(Total for Question 22 is 2 marks)**

**TOTAL FOR PAPER IS 80 MARKS**

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