Name _____

Candidate Number _____

Room Number _____

WITHINGTON GIRLS' SCHOOL

JANUARY 2023

MATHEMATICS

TIME: 45 MINUTES

- Try to answer all the questions.
- Write your working and your answer in the space provided after each question.
- Answers should be written in their simplest form. For example, $\frac{1}{4}$ is simpler than $\frac{2}{8}$ and the mixed number $1\frac{1}{4}$ is simpler than $\frac{5}{4}$.
- If you cannot answer a question, leave it and go on to the next one.
- Use any time you have left to check your answers and go back to any questions you have left out.

Q1-18	/18
Q19-22	/13
Q23-27	/17
Q28-31	/12
Q32	/6
PAPER TOTAL	/66
Checker's Initials	

CALCULATORS MUST NOT BE USED

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1.	Work out $427 + 596$ _____	2.	Work out 62×72 _____	1 1
3.	Work out $3\frac{1}{3} + 2\frac{5}{8}$ _____	4.	Work out $\frac{4}{9}$ of 36 _____	1 1
5.	Work out $0{\cdot}27 \times 300$ _____	6.	What is 24% of 200? _____	1 1
7.	How many thirds are there in $3\frac{2}{3}$? _____	8.	What is 30% of $\frac{1}{4}$ of 240? _____	1 1
9.	What number goes in the box? $\frac{5}{\square}$ of $30 = 25$	10.	Round 252 to the nearest 100 _____	1 1

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11.	Write the numbers in order from smallest to largest. 6·531 6·6 6·54 6·513 _____	1
12.	Find the total weight of 6 bags, each weighing 1·6 kg. _____kg	1
13.	What is the next term in the sequence 1, 2, 4, 8, 16, …… _____	1
14.	A stick of length 92 cm is cut into 40 equal pieces. How long is each piece? _____cm	1
15.	The area of a square is 49 cm^2. Find its perimeter _____cm	1
16.	$\boldsymbol{n}$ is the number of minutes between 10:15 and 11:07 $n =$_____	1
17.	$\boldsymbol{n}$ is the largest multiple of 8 which is less than 100 $n =$_____	1
18.	$\boldsymbol{n}$ is the number where $n: 6 = 10: 15$ $n =$_____	1

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19. Here are 6 numbers

5 8 13 15 16 21

From the numbers in the list, write down

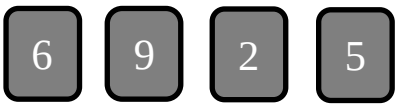
(a) a square number _____ 1

(b) a multiple of 7 _____ 1

(c) a factor of 39 _____ 1

(d) One less than a multiple of 4 _____ 1

20. Here are four cards



(a) Arrange the cards to make the smallest possible even number

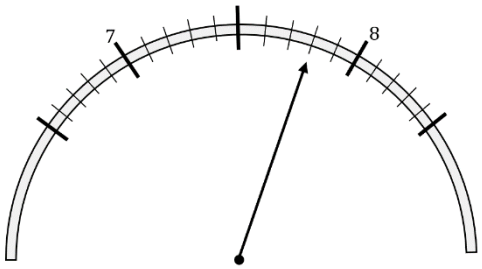
1

(b) Natasha arranges the cards to make another number.
The difference between Natasha's number and 6000 is as small as possible.
What is Natasha's number?

2

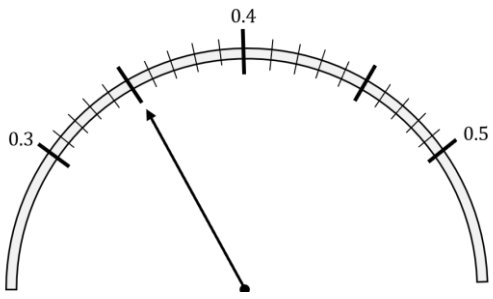
21. Write down the number marked with the arrow on the scales below

(a)



_____ 1

(b)



_____ 1

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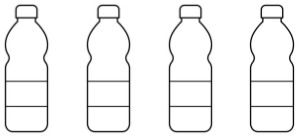
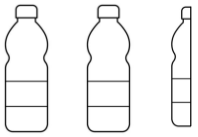
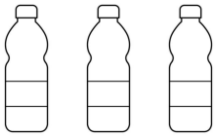
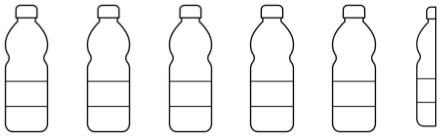
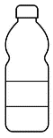
22. The pictogram shows the number of bottles of water sold in a shop each day from Monday to Thursday.

Monday	
Tuesday	
Wednesday	
Thursday	
Friday	

Key:  = 4 bottles of water

(a) How many bottles are sold on Tuesday?

1

_____

(b) The total number of bottles sold from Monday to Friday was 74.
Complete the pictogram to show the number of bottles of water sold on Friday.

3

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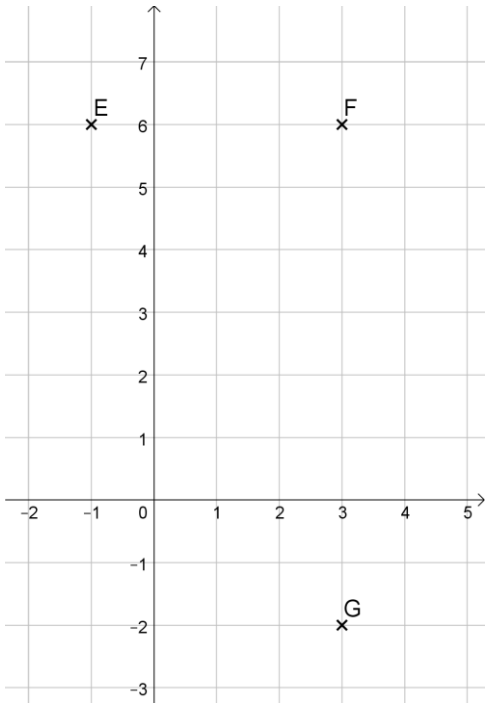
23. The three points E, F and G are marked on the grid



(a) Write down the coordinates of G. 1

(_____,_____)

(b) Find the coordinates of the midpoint of the line joining E and G 1

(_____,_____)

(c) Work out the area of triangle EFG

2

_____

(d) H is a point on the grid so that EFGH is a rectangle. 1
Mark on the grid the position of point H

24. Ananya spends £1.05 at the greengrocers.
She buys 500g of onions and 250g of broccoli.
Onions cost £1.20 a kilogram.
Find the cost of 1 kilogram of broccoli.

3

£_____

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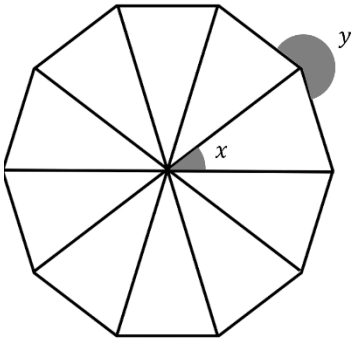
25. The diagram shows a regular decagon (10-sided) shape.
The decagon can be divided into 10 identical isosceles triangles.

Find the size of angle x and the size of angle y.



1

2

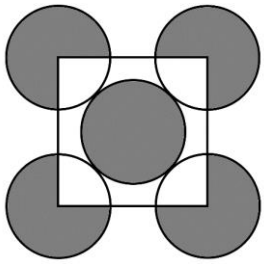
$x =$_____ $y =$ _____

26. Daisy wants to make some blueberry muffins.
The recipe says that she needs 300 g of plain flour to make 12 muffins.
Daisy has a 0.5 kg bag of plain flour and wants to use it all to make the muffins.
How many muffins can Daisy make?

3

_____

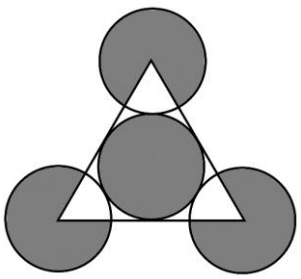
27. (a) The diagram shows 5 identical circles and a square.
The corners of the square are at the centres of 4 of the circles.
What fraction of the circles is shaded?



1

_____

(b) The diagram shows 4 identical circles and an equilateral triangle.
The corners of the triangle are at the centres of 3 of the circles.
What fraction of all the circles is shaded?



2

_____

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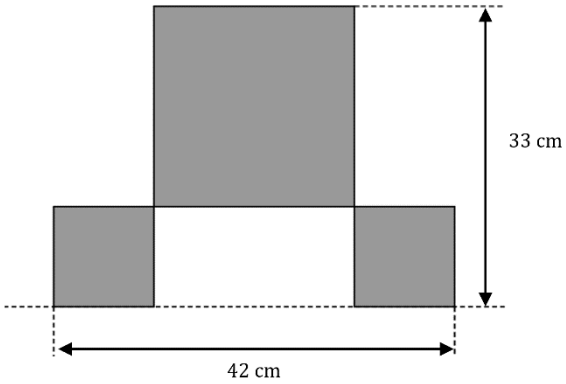
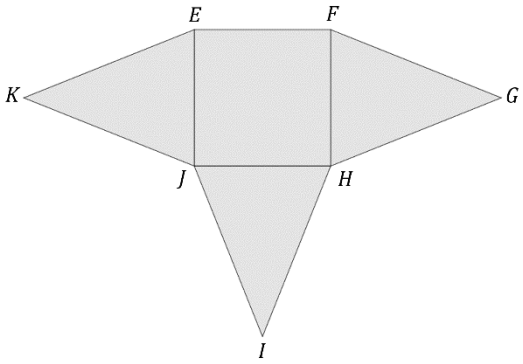
28. The diagram shows one large square and two identical small squares.
The design is 33 cm high and 42 cm wide.
Calculate the width of the **small** square.



_____cm

2

29. The diagram shows shape $EFGHIJK$.
$EFHJ$ is a square.
FGH, HIJ and JKE are identical isosceles triangles.
The area of the square is 36 cm^2.
The perimeter of each isosceles triangle is 22 cm.
Work out the perimeter of $EFGHIJK$.



_____cm

3

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30. 80 Year 7 pupils own either a cat, dog, rabbit, or guinea pig.
Each pupil only owns one pet.

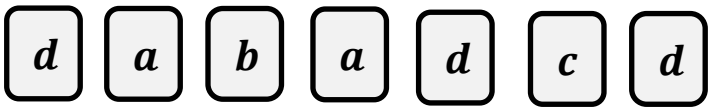
15% of the pupils own a rabbit.
$\frac{2}{5}$ of the pupils own a cat
3 pupils own a guinea pig

What fraction of the pupils own a dog?

_____

3

31. a, b, c and d are **different** whole numbers, written in size order ($a < b < c < d$).
Here are seven cards with the numbers written on them



The mode of the numbers on the cards is 7.
The median of the numbers on the cards is 5.
The range of the numbers on the cards is 4

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

$a =$ _____ $b =$ _____ $c =$ _____ $d =$ _____

4

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32. In this question all fractions will be left 'improper' or top heavy.

$\otimes$ means divide the first number by the second then add the second number divided by the first.

$$a \otimes b = \frac{a}{b} + \frac{b}{a}$$

For example $6 \otimes 5 = \frac{6}{5} + \frac{5}{6} = \frac{36}{30} + \frac{25}{30} = \frac{61}{30}$

Find the values of ■, ✸, ◆, ⊙ and ⬟.

(a) $3 \otimes 5 =$ ■

2

■ = _____

(b) ✸ $\otimes$ ◆ $= \frac{74}{35}$

1

✸ = _____ ◆ = _____

(c) ⊙ $\otimes$ ⬟ $= \frac{265}{48}$

3

⊙ = _____ ⬟ = _____

END OF TEST – NOW CHECK YOUR ANSWERS