

Name _____

Candidate Number _____

Room Number _____

WITHINGTON GIRLS' SCHOOL

ENTRANCE EXAMINATION 2017

MATHEMATICS

PAPER 2

TIME: 40 MINUTES

- Some questions in this paper involve new ideas, but there are examples to guide you and help you understand these new ideas.
- Look at the examples carefully and try to answer all the questions.
- 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.

CALCULATORS MUST NOT BE USED

PAPER 2 TOTAL		
Marker's Initials		
Checker's Initials		

5. Hot dog sausages are sold in packs of 8.
 Hot dog buns (bread rolls) are sold in packs of 6.
 Charlotte wants to make complete hot dogs in a bun.
 What is the least number of packets of sausages and buns that she needs to buy, if she wants no waste.

Number of packs of sausages = _____

Number of packs of buns = _____

1
1

6. Complete the table

Hours	Minutes
$\frac{3}{4}$	45
	20
$\frac{1}{6}$	
	18
$\frac{1}{8}$	

1
1
1

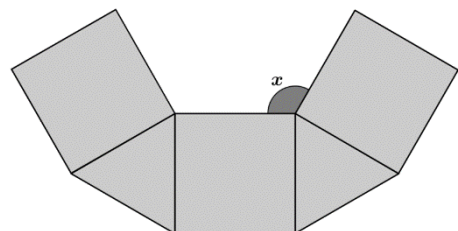
7. Anna wants to buy an iPod costing £109.
 She already has £55 saved.
 Each week she receives £10 pocket money, of which she saves 25%.
 How many weeks will it take before she has enough money saved to buy the iPod?



Number of weeks = _____

1
1
1

8. The diagram is made of squares and equilateral triangles.
 What is the size of angle x ?



_____ °

1
1

PLEASE TURN OVER

9. Pound coins are 5 mm thick and fifty pence coins 3 mm.
Pound coins and fifty pence coins are stacked on top of each other.

(a) How tall would a stack be of four £1 coins and three 50p coins? Give your answer in cm.

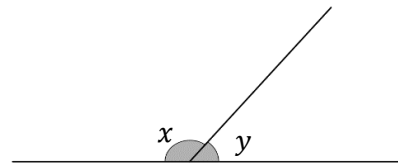
_____ cm

(b) A stack reaches 30mm tall and contains both £1 and 50p coins.
How many £1 coins and 50p coins are in the stack?

Number of £1 coins = _____

Number of 50p coins = _____

10. AB is a straight line.
Angles x and y are in the ratio 7:3.
Find the size of angle x .



$x =$ _____^o

11. The digits in the following sums are all correct but they are in the wrong places.
Move the digits so that each of the sums is correct.

(a)

$$\begin{array}{r} 32 \\ + 6 \\ \hline 32 \\ \hline \end{array}$$

$$\begin{array}{r} \square \quad \square \\ + \quad \square \\ \hline \square \quad \square \\ \hline \end{array}$$

(b)

$$\begin{array}{r} 22 \\ \times 6 \\ \hline 37 \\ \hline \end{array}$$

$$\begin{array}{r} \square \quad \square \\ \times \quad \square \\ \hline \square \quad \square \\ \hline \end{array}$$

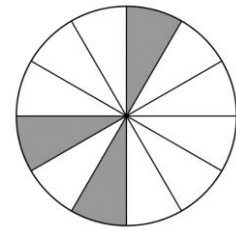
12. Katie and Mariam share £600 in the ratio 1:4.
 Katie gave $\frac{1}{3}$ of her share to Violet.
 Mariam gave 25% of her share to Violet.
 What fraction of the £600 did Violet receive? Give your answer as a fraction in its lowest form.

1

1

1

13. The sectors on the spinner are all equal in size.
 Jasmine is playing a game at the Withington Spring Fair.
 The game costs 20 pence to play and a 50 pence prize is given when the spinner lands on a grey sector.
Jasmine plays the game 32 times.



- (a) How many times does she expect to win?

1

1

- (b) Jasmine actually wins 14 times. How much profit does she make?

1

_____ pence

1

14. Sacks P, Q and R contain potatoes.



- There are twice as many potatoes in Q than P.
 There are 3 more potatoes in R than P.
 If there are 27 potatoes in total, how many are in each sack?

1

P = _____

1

Q = _____

1

R = _____

15. Ayesha's watch has hands which move backwards and at twice the normal speed.

- (a) Ayesha starts watching 'X Factor' when her watch reads 7 o'clock. She watches the programme for 50 minutes. What time does her watch show when she stops watching?

Time = _____

1

- (b) The following week Ayesha watches 'Strictly Come Dancing'. She starts watching when her watch reads 7:20 and finishes when it reads 4:50. For how long does she watch the programme?

1

_____ minutes

1

16. Work out the value of \diamond , \blacksquare and \blacktriangle

$$3\blacksquare + \blacktriangle = 22$$

$$\blacktriangle + \blacksquare + \diamond = 20$$

$$2\blacktriangle + 3 = 17$$

$$\blacksquare = \underline{\hspace{2cm}}$$

1

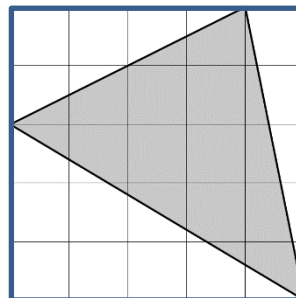
$$\diamond = \underline{\hspace{2cm}}$$

1

$$\blacktriangle = \underline{\hspace{2cm}}$$

1

17. (a) Find the area of the grey triangle.



$$\square = 1 \text{ cm}^2$$

1

1

_____ cm^2

1

(b) What percentage of the grid is shaded?

_____ %

1

18. ∇ means multiply the first number by 4 then subtract the square of the second number. This can be written in letters

$$a \nabla b = a \times 4 - b^2$$

For example

$$5 \nabla 2 = 5 \times 4 - 2^2 = 20 - 4 = 16$$

Work out positive values for \blacklozenge , \blacksquare and \blackstar .

(a) $4 \nabla 3 = \blacklozenge$

$\blacklozenge = \underline{\hspace{2cm}}$ 1

(b) $5 \nabla \blacksquare = 4$

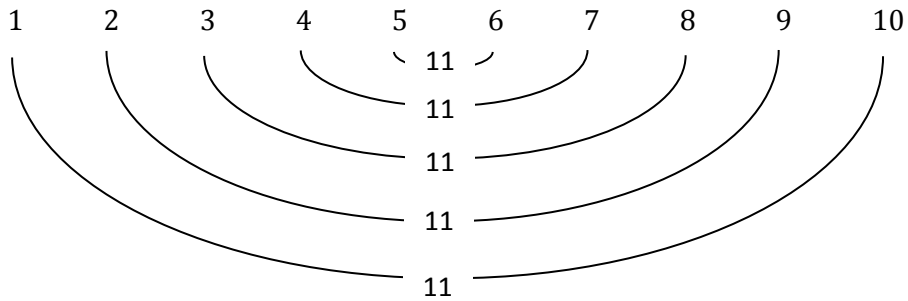
$\blacksquare = \underline{\hspace{2cm}}$ 1

(c) $\blackstar \nabla \blackstar = 0$

$\blackstar = \underline{\hspace{2cm}}$ 1

$\blackstar = \underline{\hspace{2cm}}$ 1

19. Here is a quick way to add up the numbers from 1 to 10



Total = 5×11

(a) **Use this method** to add up the numbers from 1 to 20.

$\underline{\hspace{2cm}}$ 1

(b) **Use this method** to add up the numbers from 1 to 100.

$\underline{\hspace{2cm}}$ 1

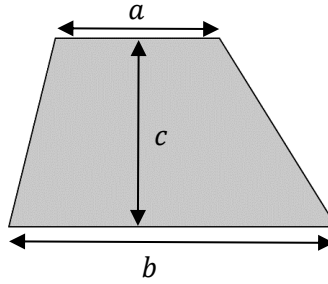
(c) **Use this method** to add up the numbers from 1 to n.

$\underline{\hspace{2cm}}$ 1

PLEASE TURN OVER

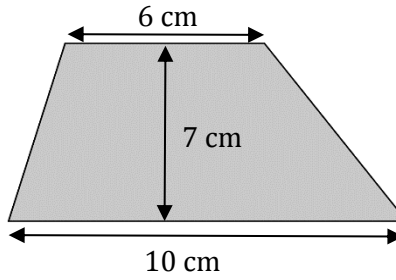
20. To work out the area of a trapezium you use the formula

$$\text{Area} = \frac{1}{2} \times (a + b) \times c$$

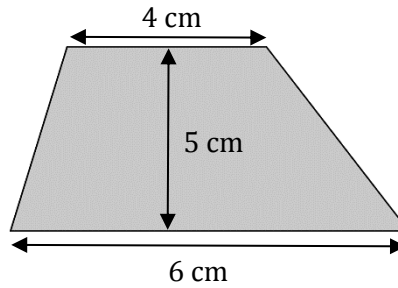


For example

$$\begin{aligned} \text{Area} &= \frac{1}{2} \times (6 + 10) \times 7 \\ &= \frac{1}{2} \times 16 \times 7 \\ &= 8 \times 7 \\ &= 56 \text{ cm}^2 \end{aligned}$$



(a) Work out the area of the trapezium.

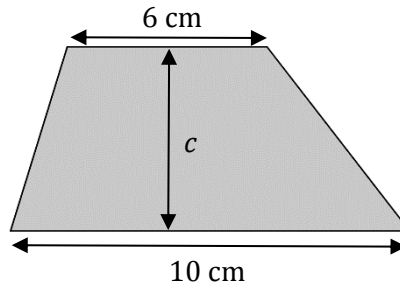


1

_____ cm²

1

(b) The area of this trapezium is 24 cm².
Work out the value of *c*.

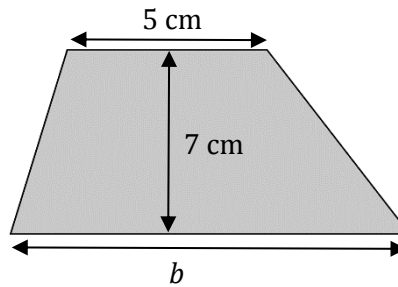


1

c = _____ cm

1

(c) The area of this trapezium is 49 cm².
Work out the value of *b*.



1

b = _____ cm

1

END OF TEST - NOW CHECK YOUR WORKING