Name:_____

Age:_____Yrs_____Mths

Group Number:_____

ST PAUL'S
GIRLS' SCHOOL

FIRST YEAR ENTRANCE EXAMINATION

EXAMPLE

MATHEMATICS

Section A

25 minutes

PLEASE READ THESE INSTRUCTIONS VERY CAREFULLY

Use a pencil. No calculators or protractors or rulers are allowed.

There are 16 questions. Answer all of them if you can.

Show all your working in the spaces provided and write your answers on the lines provided. Use the back pages if necessary.

Please do not rub out your working.

If you cannot do a question, leave it and go on to the next one.
Try again later.

Do not ask a teacher to explain a question to you.

If you finish before the end of 25 minutes go back and check your answers and try to fill in any answers you have left out.

If you do not finish, or if you cannot understand all the questions, do not worry. People work at different speeds.

1. Fill in the blanks so that the calculation on the left is equal to the calculation on the right:

a. $6 \times 8 = 4 \times$ .....

b. $12 \times 75 = 10 \times$ .....

2. What number is 40% of 75?

Answer .....

3. Calculate $(2.3 + 3.7) \div 9$. Leave your answer as a simplified fraction.

Answer .....

4. Write the following in order of size (**smallest first**):

4.321, 4.32, 4.132, 4.3, 4.123

Answer .....,.....,.....,.....,.....

5. Find the missing numerator and denominator of the equivalent fractions below:

$$\frac{\quad}{12} = \frac{12}{18} = \frac{18}{\quad}$$

6. Calculate 391 divided by seventeen.

Answer .....

7. Write **one** number which fits all three of these statements:

It is a multiple of 3.
It is a multiple of 7.
It ends in a 2.

Answer.....

8. I think of a number n.
$5n$ is more than 60, but $n + 5$ is less than 20. What are the possible values of n?

Answer .....

9. Sarah won a large jar of sweets in a Christmas raffle. If there are 486 sweets in the jar and she shares them equally with her 17 classmates, how many do they each get?

Answer .....

10. On 1st December 2008 my grandmother was 80 years old. Her daughter was 40 years old on 1st December 1996. How old was my grandmother when her daughter was born?

Answer .....

11. John paid a total of £5.15 for a jar of coffee, a carton of milk and a bag of sugar. The jar of coffee cost £3.69 and the carton of milk cost 89p. How much did the bag of sugar cost?

Answer .....**p**...

12. How many bags of crisps at 16p each can I buy for £2?

Answer .....

13. A shop sells bananas and pears.
Max buys 1 banana and 2 pears. He paid 94p.
Emily buys 1 banana and 1 pear. She paid 62p.
How much does 1 banana cost?

Answer .....**p**...

14. Put a circle around **each** the amounts that can be made with **four** coins.
State which coins you would use

24p 38p 57p £1.18 £1.26

15. Benjamin walks dogs to earn some money. The formula below can be used to work out his pay.

Pay = £12 per day + £1.50 for each dog walked

Benjamin worked all day on Monday. He walked 13 dogs before lunch and 15 dogs afterwards.

Work out Benjamin's pay on Monday.

Answer …£……

16. The table shows the distances in miles between some towns in the West country.

Barnstaple					
100	Bristol				
55	84	Exeter			
108	194	110	Penzance		
67	125	44	77	Plymouth	
50	51	34	144	75	Taunton

a. One of the towns is 194km from Penzance. Which town is this?

Answer .....

b. Approximately how many times further is Exeter from Penzance than it is from Taunton?

Answer .....

END OF SECTION A. NOW GO BACK AND CHECK YOUR ANSWERS.

Name:_____

Age:_____Yrs_____Mths

Group Number:_____

ST PAUL'S
GIRLS' SCHOOL

FIRST YEAR ENTRANCE EXAMINATION

EXAMPLE

MATHEMATICS
Section B

25 minutes

PLEASE READ THESE INSTRUCTIONS VERY CAREFULLY

Use pencil. No calculators or protractors or rulers are allowed.

There are 10 questions. Answer all of them if you can.

Show all your working in the spaces provided and write your answers on the lines provided. Use the back pages if necessary.

Please do not rub out your working.

If you cannot do a question, leave it and go on to the next one. Try again later.

Do not ask a teacher to explain a question to you.

If you finish before the end of 25 minutes go back and check your answers and try to fill in any answers you have left out.

If you do not finish, or if you cannot understand all the questions, do not worry. People work at different speeds.

1
There are a number of coins on a table.
One quarter of the coins show heads.

If I turn over two coins, then one third show heads. How many coins are there altogether?

Answer ……**coins**

2
There are twenty gifts stacked up into four piles.
The first pile has 3 less than the second pile.
The second pile has two more than the third pile.
The fourth pile has twice as many as the second pile.
How many gifts are in each pile?

Answer ……, ……, …… **and** ……**gifts**

3

In *Mathsland* currency is arranged in alphas, betas and gammas where **1 Alpha=20 Betas** and **1 Beta=5 Gammas**.

a) How many Gammas in 5 Alphas, 6 Betas and 3 Gammas?

Answer ……**gammas**

b) Using as many alphas as you can, and then betas, then gammas, how would you pay for something that costs 789 Gammas?

Answer ……**alphas** ……**betas** ……**gammas**

4

If 5 mugs cost £3.50 and 8 pens cost £6.80 how much change do I get from £10 if I buy 7 mugs and 5 pens? You MUST show your working.

Answer £……

5

If the following statements are true, how many Σs are there in a $\oplus$?

- $\Sigma + \Sigma = \Psi$
- $\Psi + \Psi + \Sigma = \Theta$
- $\Theta + \Psi = \oplus$

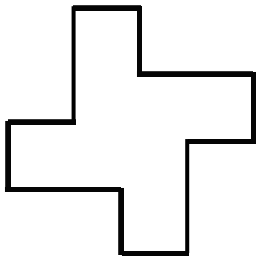
Answer ..... Σ

6

A box of biscuits contains 36 biscuits. 20 biscuits have foil wrappers. 15 are chocolate biscuits with foil wrappers. If 9 are not chocolate and do not have a foil wrapper, then how many chocolate biscuits are there?

Answer .....

7

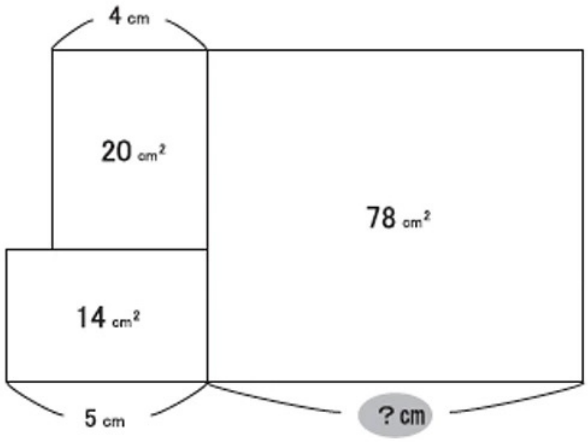


All the long edges of the shape above have the same length and each long edge is twice as long as each short edge. All angles are 90° or 270°. If the area of the figure is 200cm^2, what is the perimeter?

Answer .....**cm**

8

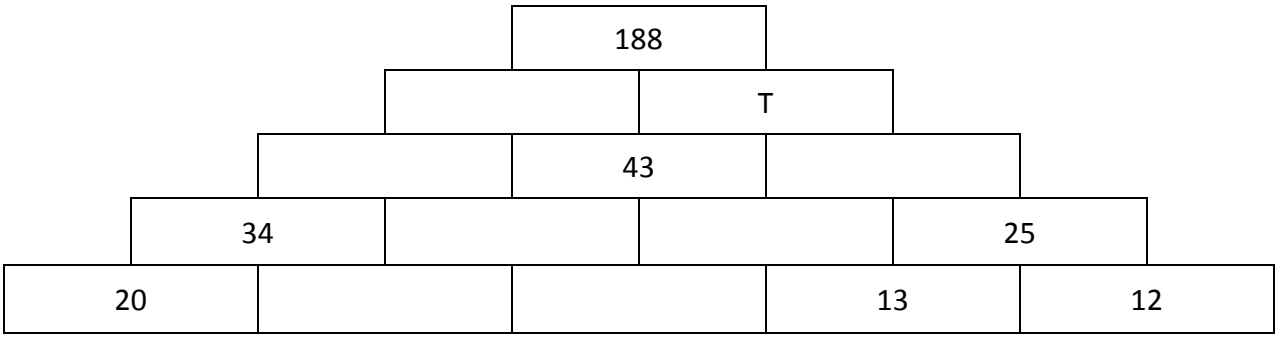
Work out the missing length.



Answer ……**cm**

9

In this number tower the value in each block is the sum of the two below it. What is the value of block T?



Answer ……

10

Jenny passes 40 electricity poles along the straight road from school to her home.

The distance between every 2 poles is 30 metres.

If her school is exactly half way between 2 poles and her home is also exactly halfway between 2 poles, then

(a) Find the distance from her school to her home in km.

Answer ……..……**km**

(b) If she walks at a speed of 8 km/h, how long does it take her to get to school from home?

Answer ……

END OF SECTION B.
NOW GO BACK AND CHECK YOUR ANSWERS

Name:_____

Age:_____Yrs_____Mths

Group Number:_____

ST PAUL'S
GIRLS' SCHOOL

FIRST YEAR ENTRANCE EXAMINATION
EXAMPLE

MATHEMATICS
Section C

25 minutes

PLEASE READ THESE INSTRUCTIONS VERY CAREFULLY

Use pencil. No calculators or protractors or rulers are allowed.

There are 5 questions. Answer all of them if you can.

Show all your working in the spaces provided and write your answers on the lines provided. Use the back pages if necessary.

Please do not rub out your working.

If you cannot do a question, leave it and go on to the next one.
Try again later.

Do not ask a teacher to explain a question to you.

If you finish before the end of 25 minutes go back and check your answers and try to fill in any answers you have left out.

If you do not finish, or if you cannot understand all the questions, do not worry. People work at different speeds.

1.

a. Mila adds odd numbers together and writes down her results as follows:

$$1 = 1 = 1^2$$

$$1 + 3 = 4 = 2^2$$

$$1 + 3 + 5 = 9 = 3^2$$

i. Write down the next three lines of this pattern:

Answer .....

.....

.....

ii. Using this pattern, write down the line which contains 169 at the centre.

Answer .....

.....

..... = 169 = ...

b. Mila then adds different odd numbers and puts her results in a table again:

$$1 = 1 = 1^3$$

$$3 + 5 = 8 = 2^3$$

$$7 + 9 + 11 = 27 = 3^3$$

i. Write down the next three lines of this pattern:

Answer .....

.....

.....

ii. Using this pattern, **how many** numbers do you need to add together to get:

$$\ldots = 1000 = \ldots$$

Answer ……

c. Using your answers from parts a. and b. find three numbers A, B and C such that

$$A - B = C$$

and

$$A^2 - B^2 = C^3$$

Answer: $\boldsymbol{A}$ = ……$\boldsymbol{B}$ =……$\boldsymbol{C}$ =……

2. The symbol ϕ represents a mathematical rule.

The rule for ϕ is “add the two numbers and then multiply their sum by the second number”.

For example, $2 \phi 3 = (2 + 3) \times 3 = 5 \times 3 = 15$

Work out:

a. $2 \phi 6 =$

Answer .....

b. $\frac{1}{2} \phi 3 =$

Answer .....

c. $\frac{1}{4} \phi \frac{1}{2} =$

Answer .....

d. If $6 \phi m = 91$, what positive number must m be? Show all your working.

Answer .....

e. If $p \phi p = 72$, what number must p be? Show all your working.

Answer .....

f. Explain why $x \phi y$ is not the same as $y \phi x$.

Answer.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

3. The diagram below shows a road network connecting the villages A to H. The numbers between the letters show how far apart the villages are in miles. A route connects two villages by travelling along the straight lines.

An example of a route from E to D is EF – FC – CD.

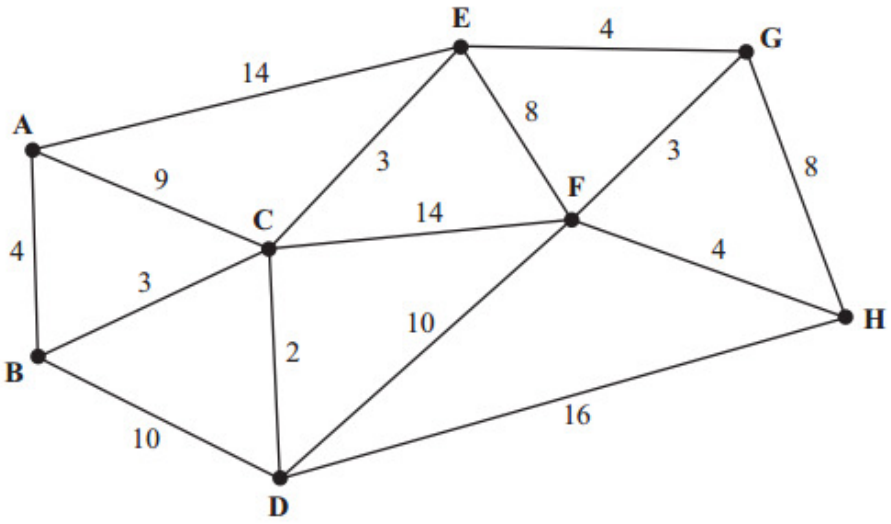


Diagram not to scale

a) What is the shortest route between A and E, and how long is it?

Answer: route.....

.....**miles**...

b) What is the shortest route between H and C, and how long is it?

Answer: route.....

.....**miles**...

c) What is the shortest route between A and H, and how long is it?

Answer: route……

……**miles**…

4. Eliza is calculating 32×37.

She has constructed this number pattern:

32×37

16×74

8×148

……× 296

……× ……

……× ……

Fill in the missing numbers.

a. Explain how the pattern is made.

Answer ……

……

b. Using a similar method, work out 27×37.

27×37

……× ……

……× ……

……× ……

c. Adapt this method to work out 972 ÷ 36.

.....× .....

.....× .....

.....× .....

.....× .....

.....× .....

5. Tilly decides to count using a clock.

She starts counting from 1 in the normal way, so:

1, 2, 3, 4...



But when she gets to 12, the count goes back to 1, so she counts:

...8, 9, 10, 11, 12, 1, 2, 3...

So, for example, using this method of counting, $4 + 9 = 1$ and $10 + 5 = 3$. Similarly, $3 \times 5 = 3$ and $2 \times 13 = 2$.

a. Using this counting method, complete the following:

i. $3 + 4 =$

Answer .....

ii. $7 + 8 =$

Answer .....

iii. $9 + 11 =$

Answer .....

iv. $7 \times 8 =$

Answer .....

v. $9 \times 11 =$

Answer .....

b. Using this counting method, can you find two different positive numbers n and m such that $n^2 = m^2$

Answer: $\boldsymbol{n}$ = ……$\boldsymbol{m}$ =……

c. Using this method, can you find two different numbers p and q such that $p^3 = q^3$?

Answer: $\boldsymbol{p}$ = ……$\boldsymbol{q}$ =……

END OF SECTION C.

NOW GO BACK AND CHECK YOUR ANSWERS