City of London School for Girls

YEAR 7 ENTRANCE EXAMINATION

MATHEMATICS

SAMPLE Paper

Time Allowed: 1 hour 15 minutes

First Name: ……

Surname: ……

Instructions:

- Do write in pencil
- Do try as many questions as you can
- If you cannot answer a question, go on to the next one
- Do write your working out in the space near each question
- Do not erase your working out as you may get marks for it
- Calculators and rulers are NOT allowed

- You will be given 35 minutes to complete section A.
  You will hand in section A before being given section B.
  You will then have 40 minutes to complete section B.

SECTION A
35 minutes

1) 3078 + 256

Answer: .....

2) 3078 – 256

Answer: .....

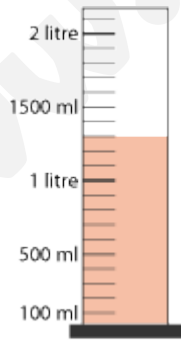
3) 158 x 23

Answer: .....

4) 3072 ÷ 12

Answer: .....

5) What is the reading on the measuring cylinder

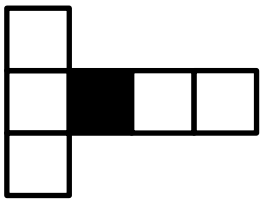


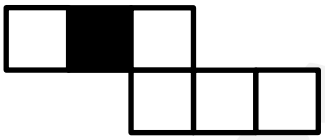
Answer: ..... ml

6) What number is twelve less than eight thousand two hundred and seven?

Answer: .....

7) Both of these nets fold to make a cube.
Shade the square that will be opposite the black square when the net is folded into a cube.





8) Work out the value of:

a. $3 \times 7 + 4$

Answer: .....

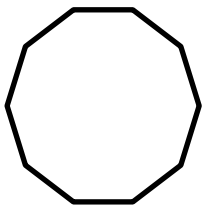
b. $12 \div 6 \div 2$

Answer: .....

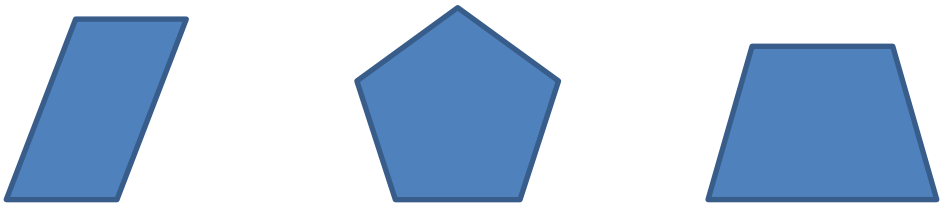
c. $15 - 4 \times 2$

Answer: .....

9) Shade in $\frac{3}{5}$ of this shape



10) Write down the mathematical name for each of these 2D shapes:



Answers: …….. …….. …….. .

11) Here is a table showing how many minutes four children took to get to school last week

	Maxine	Ava	Ellie	Sara
Monday	23	14	12	19
Tuesday	24	17	15	25
Wednesday	31	11	18	41
Thursday	26	16	12	22
Friday	19	16	16	23

a. Who took over 40 minutes to get to school?

Answer: ……..

b. Which person has the shortest journey to school on any day?

Answer: ……..

c. On Thursday, what is the range of the times?

Answer: ……..

12) Round 12.05 to:

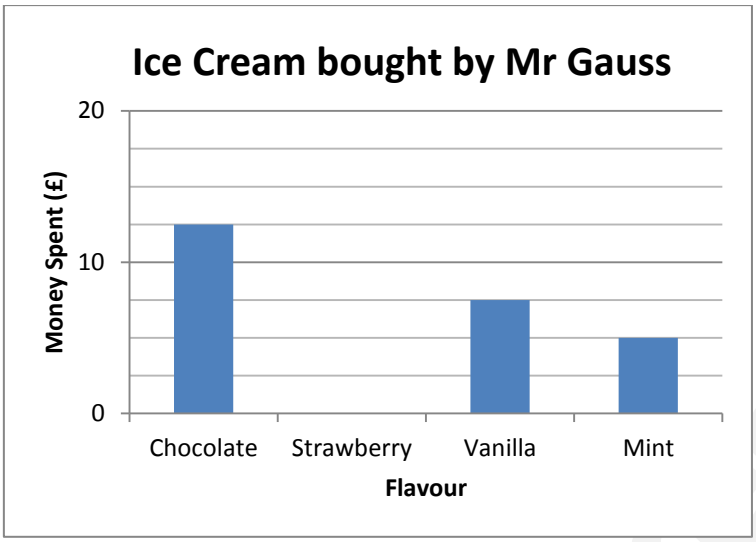
a. The nearest whole number

Answer: ……..

b. To 1 decimal place

Answer: ……..

13) Here is a bar chart.



The bar for strawberry is missing! Mr Gauss spent £15 on Strawberry ice cream.

a. Draw a bar to show how much Mr Gauss spent on Strawberry ice cream.

b. How much did Mr Gauss spend on Vanilla Ice Cream?

Answer: .....

14) Fill in the next two values in this sequence:

$1\frac{3}{4}$, $2\frac{1}{2}$, $3\frac{1}{4}$, _____, _____, ...

15) Draw a net of a triangular prism

16) How many edges does a cube have?

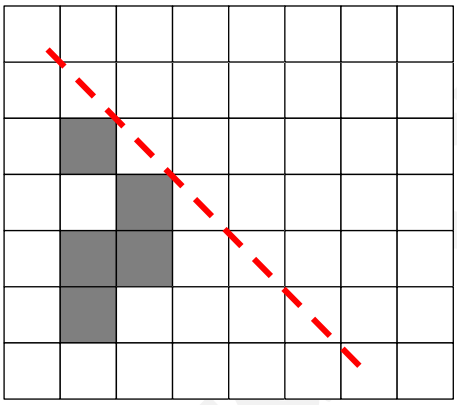
Answer: .....

17) Which of the following is the best estimate for the length of a bus?

0.2km 2m 20cm 20 000mm

Answer: .....

18) Reflect the grey shape in the dashed mirror line.

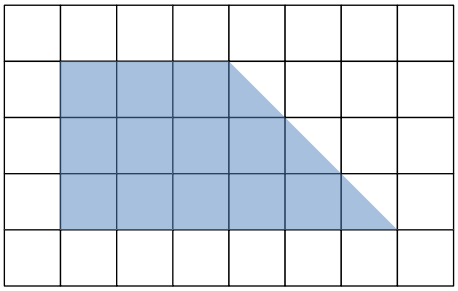


19) The temperature in Inverness is 12 degrees lower than the temperature in London.
The temperature in London is 5 degrees.

What is the temperature in Inverness?

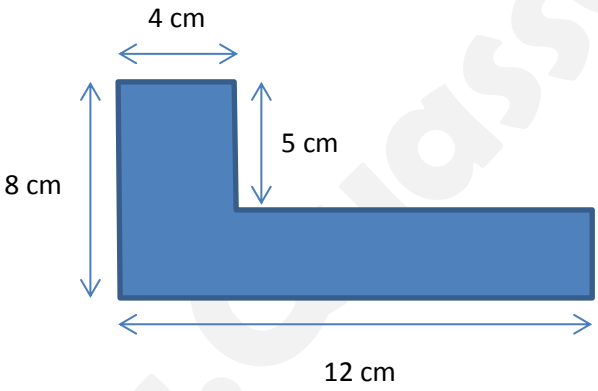
Answer: .....

20) Find the areas of the following shapes:



1 square = 1 cm^2

Answer: .....cm^2



Not drawn to scale

Answer: .....cm^2

21) Max has more than 4 apples but fewer than 7 apples. Alex has more than 5 apples and fewer than eight apples.

How many apples do Max and Alex have *altogether*? Circle all the possible values

4 5 6 7 8 9 10 11 12 13 14 15

Answer: .....

22) Suki saves £12 in January, £18 in February and £5 in March.
What is her mean (average) monthly saving?

Answer: .....

23) What is $\frac{1}{2}$ of $\frac{4}{5}$ of 35?

Answer: .....

24) Put the following numbers in order from smallest to largest:

$\frac{3}{5}$ 0.58 $\frac{5}{8}$ 62% 0.508

Answer: .....

25) You are told that $82 \times 107 = 8774$

Use this to work out the value of the following:

a. 8200×107

Answer: .....

b. $8774 \div 107$

Answer: .....

c. $8774 \div 41$

Answer: .....

d. A bus can seat 82 people.
8770 people travel to a football match by bus.
How many buses are needed?

Answer: .....

SECTION B

40 minutes

Remember to show your working out!

1) Work out the number from the following clues:
    a. It is a whole number
    b. It is less than 100
    c. It is a square number
    d. It is one less than a multiple of 5.
    e. 16 is a factor of this number.

Answer: .....

2) B + A + T = 17

    C + A + T = 25

    C + O + A + T = 29

    What is the value of B + O + A + T?

Answer: .....

3) A rectangle is 6cm longer than it is wide. Its perimeter is 32cm. Find its area.

Answer: .....

4) On Planet Pythagoras, the people use a different money system to us.

One pog is worth four pings
Three pings are worth five paz

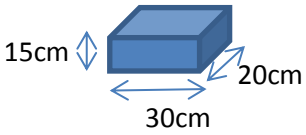
Convert the following:

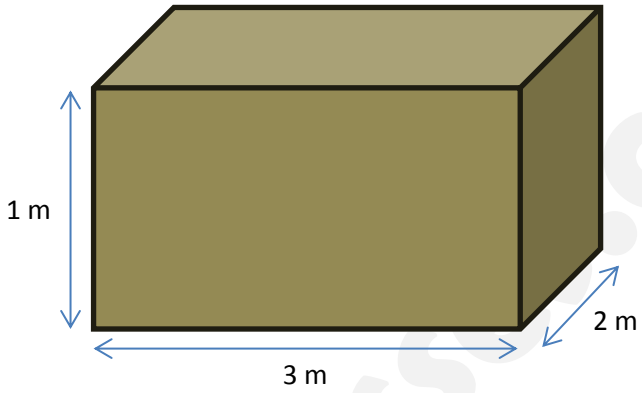
A. 3 pog = _____ pings

B. 40 paz = _____ pog

C. 3 paz = _____ pog

5) What is the largest number of 15cm by 30cm by 20 cm shoe boxes that can fit in a 1m x 3m x 2m crate?
Be careful – you can't chop up the shoe boxes!





Answer: .....

6) Miss Lovelace writes the following pattern on the whiteboard:

$$6 \times 6 = 36$$
$$5 \times 7 = 35 = 36 - 1$$
$$4 \times 8 = 32 = 36 - 4$$
$$3 \times 9 = 27 = 36 - 9$$

a. Write down the next line of the pattern

…… x ……. = …… = 36 – …….

Miss Lovelace says this works for other starting numbers as well and writes a second pattern

$$15 \times 15 = 225$$

$$14 \times 16 = 224 = 225 - 1$$

$$13 \times 17 = 221 = 225 - 4$$

b. Complete the following line of the pattern

9 x …… = …… = 225 – …….

c. You are told that $137^2 = 18769$
Use this fact and the idea above to work out the value of 133 x 141.
(Note: Do not multiply 133 by 141)

Answer: ……

7) Amy, Bella and Cara have twenty sweets altogether.

Amy says she has ten of the sweets.
Bella says that Cara has one more sweet than Amy.
Cara says that she has the most sweets

Exactly one of them is lying.

Who is lying? Explain briefly how you know.

Answer: .....

.....

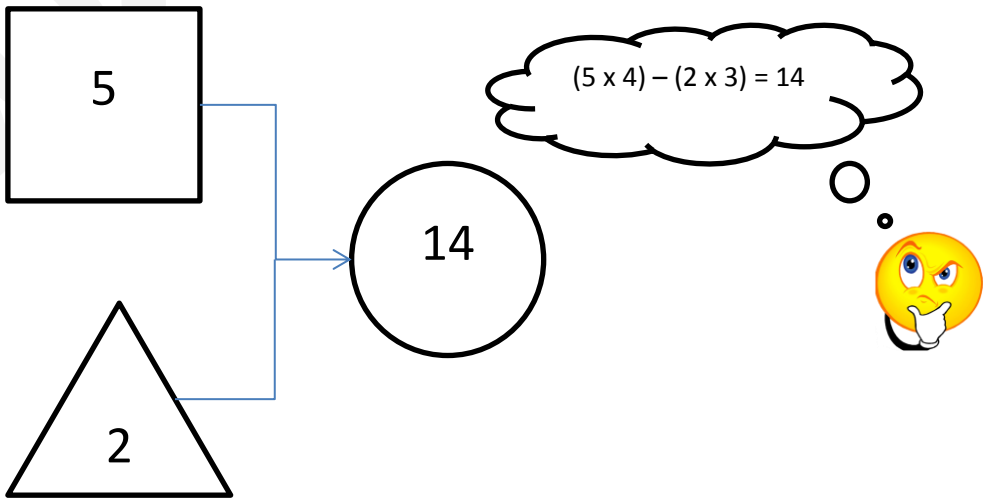
.....

.....

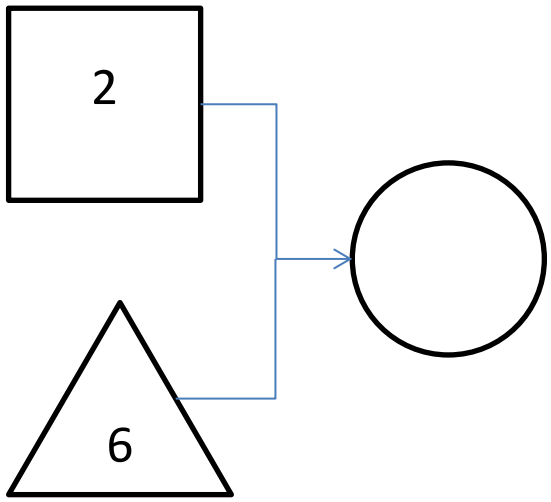
8) The numbers in the following shapes must follow the rule:

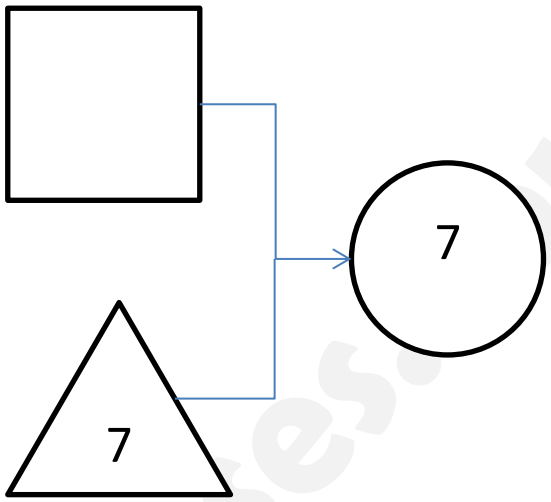
To find the number in the circle, multiply the number in the triangle by 3, multiply the number in the square by 4 and find the difference

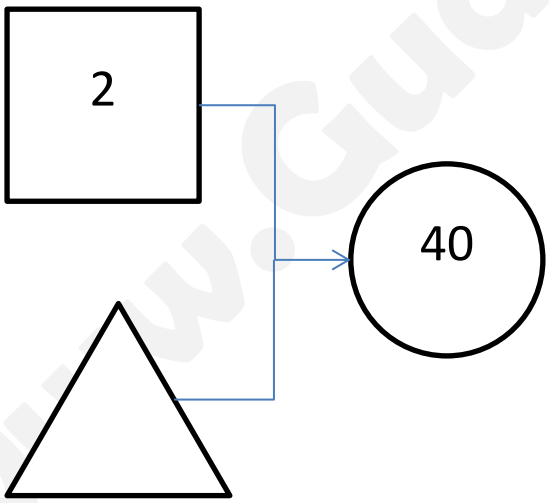
Example:

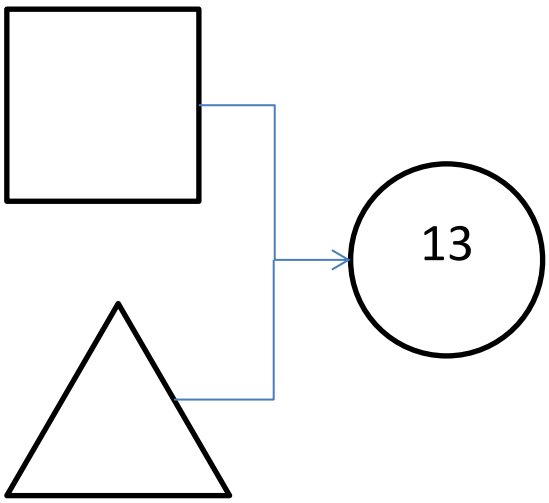


Work out the missing values:









9) A theme park wants to make more money. The director thinks that if she **reduces the ticket price** by **one-third**, the **number of people** who come to the theme park will **double**.

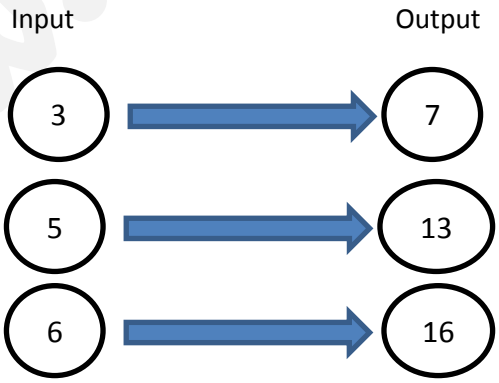
a. In 2016, the park made £360 from ticket sales. Tickets were £4.50.
How much money does the director think the theme park will make in 2017?

Answer: .....

b. In fact, the theme park makes £390. How many more people went to the theme park in 2017 compared to 2016?

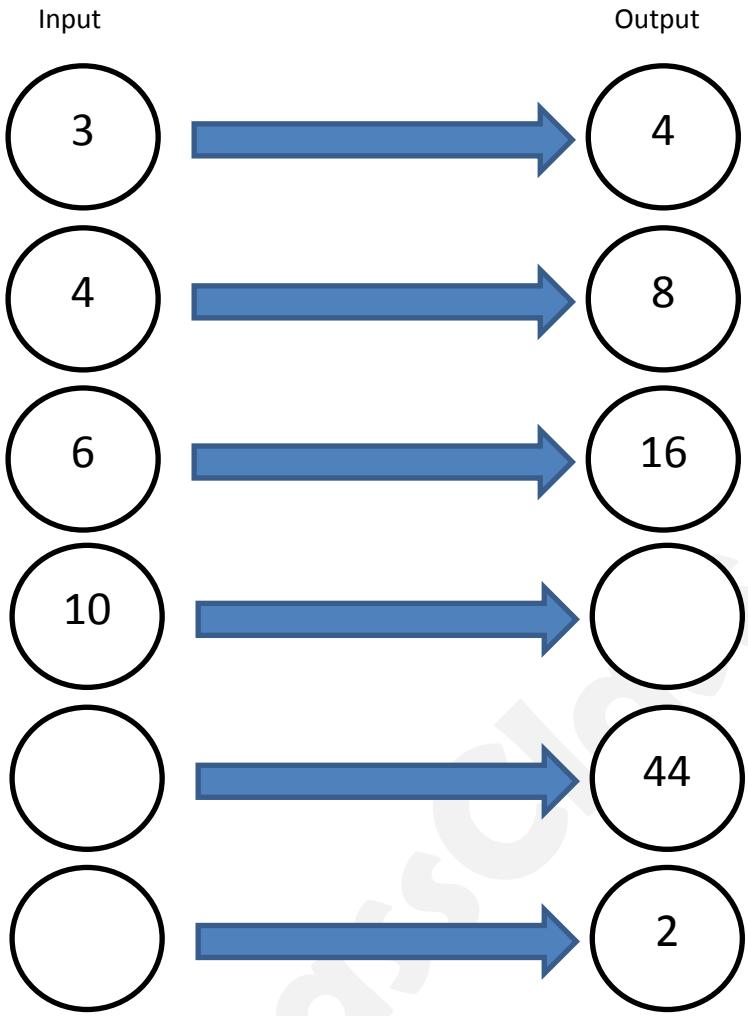
Answer: .....

10) Here is an example of a function machine:



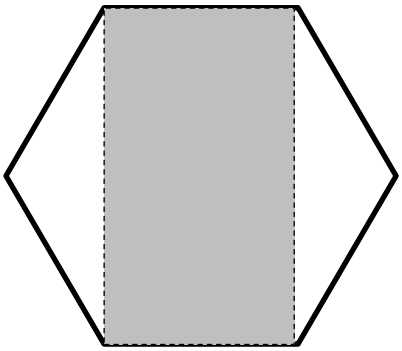
Rule: Multiply by three, then subtract 2.

Fill in the gaps in this new function machine:



Rule: ……

11) This diagram shows a regular hexagon.



What fraction of the hexagon is shaded?