Name ……

Present School ……

The London Independent Girls' Schools Consortium

Group 1

Mathematics Entrance Examination

18th January 2008

Time allowed: **1 hour 15 minutes**

Write in pencil.

Do all your rough working in the space near the question. Do not rub it out.

If you cannot answer a question go on to the next one.

CALCULATORS AND RULERS ARE NOT ALLOWED.

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1. Add these two numbers together:

Ten thousand and thirty four
Three thousand nine hundred and sixty eight

Answer: ……

2.

$$\begin{array}{r} 7004 \\ -\ 358 \\ \hline \\ \hline \end{array}$$

3. Multiply 34 by 17.

Answer: ……

4. Divide 1908 by 6.

Answer: ……

5. If two numbers multiply to give 36 and their sum is 15, what are the two numbers?

Answer: ……

6. What is $\frac{2}{7}$ of 315?

Answer: ……

7. Put the following numbers in order of size, starting with the smallest first:

$3\frac{1}{4}$ 3·34 $3\frac{3}{4}$ 3·025

Answer: ……

8. What is the difference, in cm, between 3.2 metres and 30 cm?

Answer: ……

9. Put the correct number in the empty box.

$\square - 8 = 4 \times 3$

10. Write down the next two numbers in the sequence.

5, $6\frac{1}{2}$, 8, $9\frac{1}{2}$, …… , ……

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11. Fill in the gaps

addition	subtraction	multiplication
5 □ 4 + □ 7 □ 9 3 4	□ 7 □ − 5 □ 8 4 3 3	□ 3 □ × 7 9 □ 3

12. Shakira has five cards with numbers on them, as shown below:

8	7	1	5	3

a) Write down the **largest even** number that Shakira can make using exactly **four** cards.

Answer: .....

b) Write down the **smallest odd** number that Shakira can make using all **five** cards.

Answer: .....

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13. A recipe for making 12 large chocolate chunk cookies includes the following ingredients:

300g plain chocolate

100g sugar

85g butter

1 large egg

$\frac{1}{2}$ teaspoon vanilla extract

100g self-raising flour



a) If Jamie makes 30 cookies, how much plain chocolate will he need?

Answer: .....g

b) Jamie calculates that the cost of making 30 cookies is £5.10. If he sells all 30 cookies at 26p each, how much profit will he make?

Answer: .....

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14. Nikita pays £9.50 a month for her mobile phone and an extra 17p for each call that she makes. How much does she pay in a month when she makes 50 calls?

Answer: £ .....

15. Eleanor is 11 years and 4 months old. Her sister Mary is 3 years and 10 months younger than Eleanor.

How old is Mary? Give your answer in years and months.

Answer: .....

16. In the last year a library bought 237 new books and removed 67 books.
There were 5745 books in the library at the end of the year.
How many books were in the library at the **start** of the year?

Answer: .....

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17. Here is part of a train timetable for trains running between Hereford and Shrewsbury.

Hereford	depart	0820
Ludlow	arrive	0843
Ludlow	depart	0845
Shrewsbury	arrive	0930

a) How long does the journey from Ludlow to Shrewsbury take?

Answer: .....

b) The return journey starts at 1950 from Shrewsbury. If each part of the journey (including the wait at Ludlow) takes the same time as in the morning, complete the timetable for the return journey.

Shrewsbury	depart	1950
Ludlow	arrive	
Ludlow	depart	
Hereford	arrive	

18. Kristina bought a bag of sweets and ate $\frac{3}{5}$ of them.

If she ate 18 sweets, how many sweets were left over?

Answer: .....

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19. In a money-bag there are an equal number of 2 pence and 5 pence pieces and no other coins. How many coins are in the bag altogether if the total amount of money is £1.26?

Answer: .....

20. Suki buys 500g of sugar at £1.10 per kilogram and 750g of plain flour at £1.12 per kilogram. How much change did she receive from a £5 note?

Answer: .....

21. In a bag of eleven marbles five of them are green, two are yellow and the rest are purple.

a) What fraction of the marbles are purple?

Answer: .....

b) If the two yellow marbles are both removed, what fraction of the remaining marbles are green?

Answer: .....

22. List the letters in the word

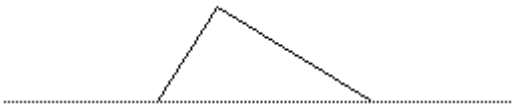
HEXAGON

which have **exactly one** line of symmetry?

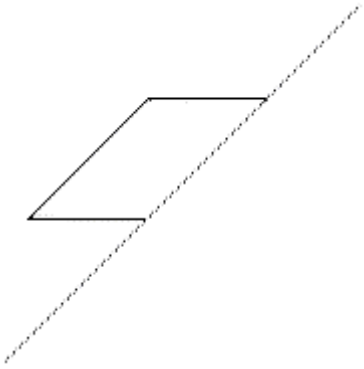
Answer: ……

23. Draw the reflection of each shape in the given line.

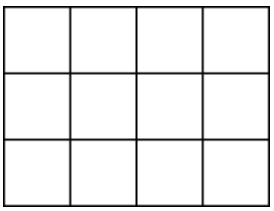
a)



b)



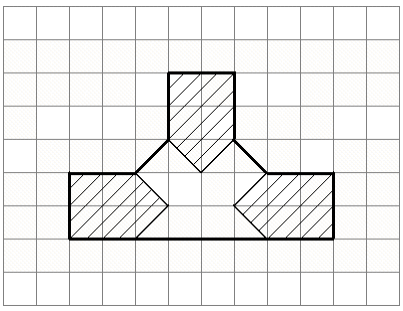
24. How many squares are there in this diagram?



Answer: ……

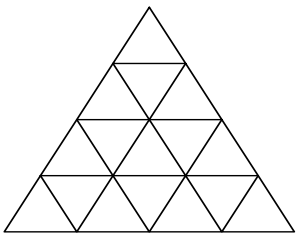
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25. a) What fraction of the shape in this diagram is shaded?

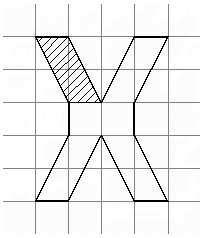


Answer: ……

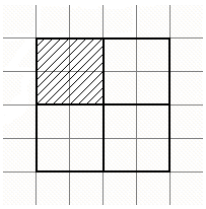
b) Shade in three quarters of this diagram.



(c) Look at the diagrams below and tick the correct statement.



A



B

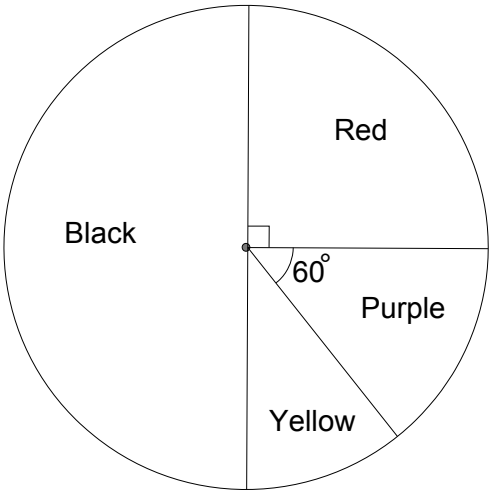
(i) Shape A has a greater fraction shaded than B. ☐

(ii) Shape B has a greater fraction shaded than A. ☐

(iii) Both A and B have the same fraction shaded. ☐

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26. The pie chart shows the favourite colour of 180 pupils in Highfield School.



a) What angle has been used to show yellow?

Answer: ……

b) What percentage of pupils have red as their favourite colour?

Answer: ……

c) How many pupils have black as their favourite colour?

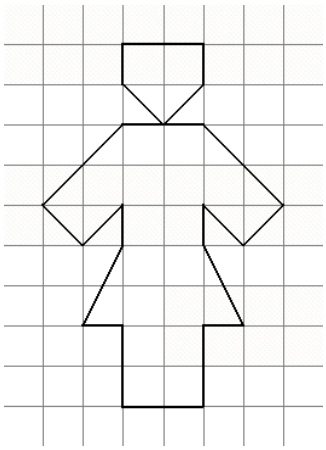
Answer: ……

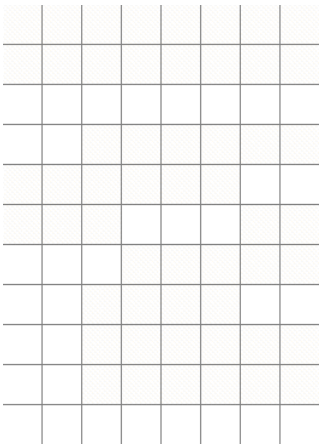
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27. Each cross is a corner of a shape. Join the correct corners to make a square and an equilateral triangle.

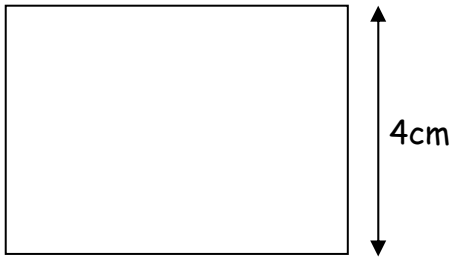


28. Work out the area of the shape below and in the empty grid draw a **square** with the same area.





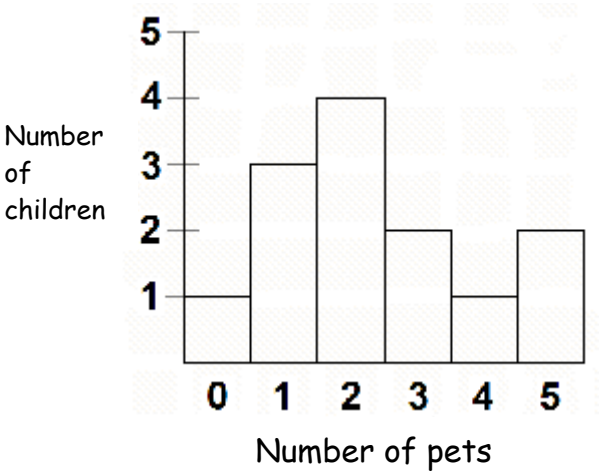
29. The area of this rectangle is 24cm^2. What is its perimeter in cm ?



Answer: .....cm

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30. This bar chart shows the number of pets owned by children in the Animal Club.



a) What is the most common number of pets?

Answer: .....

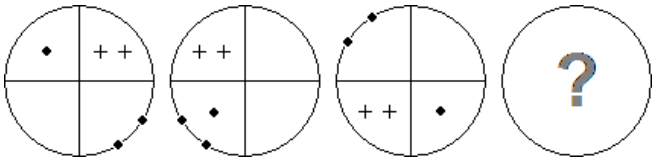
b) How many children owned exactly 4 pets?

Answer: .....

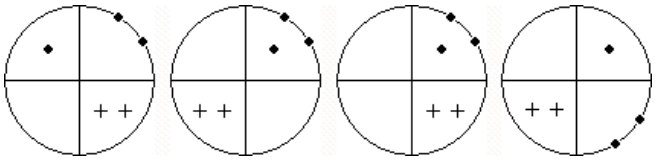
c) How many children are in the club?

Answer: .....

31. In these diagrams, the positions of the dots and crosses are changing:

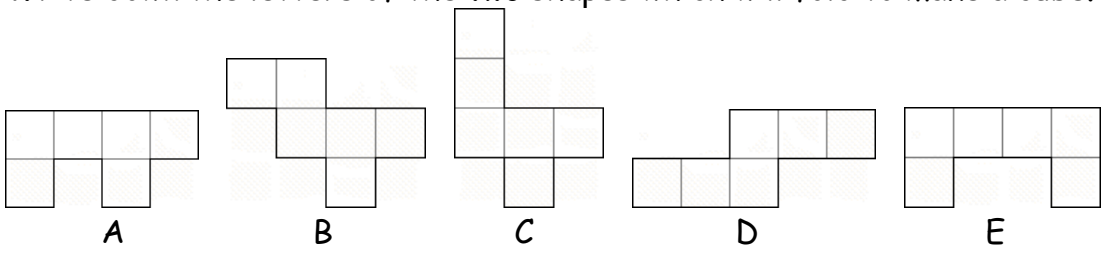


Which of the diagrams below is the next in the sequence?



Answer: .....

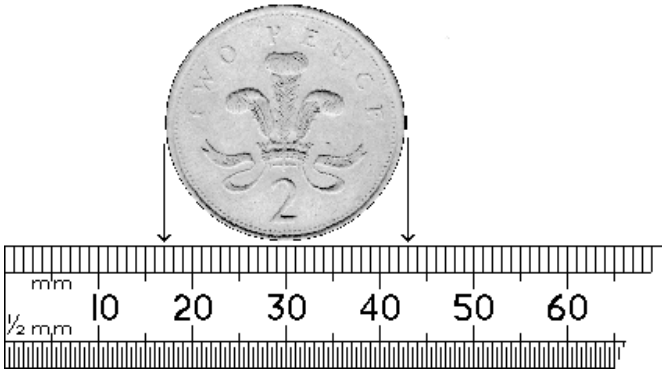
32. Write down the letters of the **two** shapes which will fold to make a cube.



Answer: .....

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33. a) What is the diameter of this two pence coin, in centimetres?



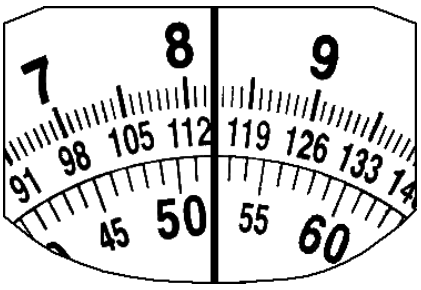
Answer: ……cm

b) If it is evening, what 24 hour clock time does the watch show?



Answer: ……

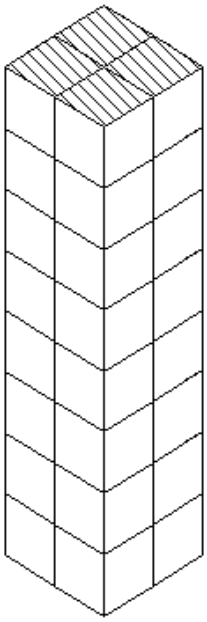
c) A teacher is weighing herself. The outer scale shows stones and lbs and the inner scale shows kg. What is the teacher's weight in kilograms?



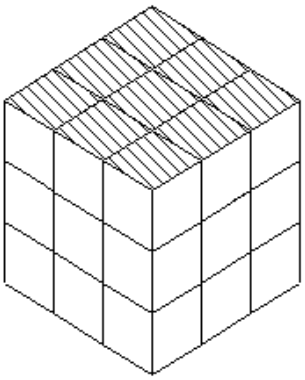
Answer: ……kg

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34. This tower is made of small cubes.

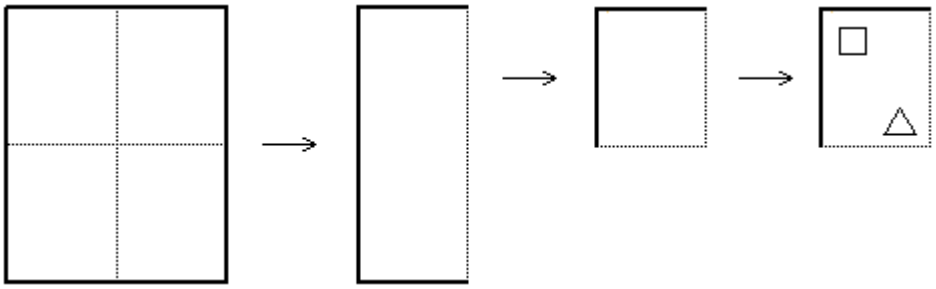


If the tower is taken apart and rebuilt into the big cube shown below, how many small cubes are left over?

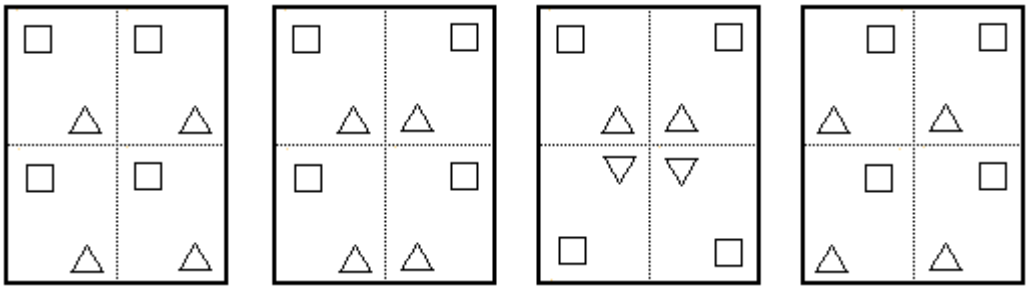


Answer: .....

35. A piece of paper is folded in half and then folded in half again. Two shapes are then cut out of it.



The paper is unfolded. Which diagram shows what the paper looks like?



A B C D

Answer: .....

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36. ● × ■ +

These shapes have been put in an endless pattern.
The first 21 shapes are shown below.

● × × ■ ■ ■ + + + + ● ● ● ● ● × × × × × × ×

If the pattern continued what would be the

a) next shape ?

Answer: .....

b) 30th shape ?

Answer: .....

37. "David is 11", said Anne.
"I am 13", said David.
"David is older than me", said Meera.

Anne sometimes tells the truth, Meera always tells the truth and David never tells the truth. One of them is 11, another 12 and the other 13.

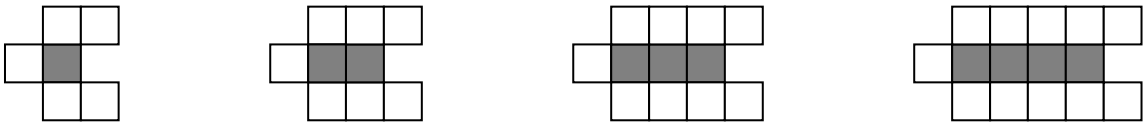
a) How old is David?

Answer: .....

b) How old is Anne?

Answer: .....

38. Look at these patterns:



a) Complete the table below

Number of dark squares	**1**	**2**	**3**	**4**	**5**
Number of white squares	5	7	9		
Total number of squares	6	9	12		

b) How many white squares would be needed for a pattern with 9 dark squares?

Answer: ……

c) How many dark squares would be needed for a pattern with 23 white squares?

Answer: ……

d) A pattern has 45 squares in total. How many of them are white?

Answer: ……

39. What is the acute angle between the hands of a clock at



a) 1p.m

Answer: .....

b) 6.30p.m

Answer: .....

40. Oni has 11 penpals. Last week she wrote to all of them.
She wrote a 4-page letter to some of her penpals and a 3-page letter to the rest. Altogether she wrote 38 pages.

To how many penpals did Oni write a 3-page letter ?

Answer: .....

41. If a and b are whole numbers, then **a ☺ b** means **(b × b) ÷ (a + 1)**

So for example, **2 ☺ 6 = (6 × 6) ÷ (2 + 1) = 36 ÷ 3 = 12**

a) Find **1 ☺ 10**

Answer: .....

b) Find **(3 ☺ 4) ☺ 5**

Answer: .....

c) If **6 ☺ *y* = 7**, what is the value of ***y***?

Answer: .....

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42. Billy is given some toffees by his father. He eats one and then shares the rest out equally between himself and Emily. He then eats another and then shares the rest out equally between himself and Detti. He eats one more and gives the last one to Sean.



a) How many toffees did Detti get?

Answer: .....

b) How many toffees did Emily get?

Answer: .....

c) How many toffees did Billy have at the start?

Answer: .....

43. **A B C D E** are the first five letters of the alphabet in the usual order.

A and **B** are neighbours as they are next to each other in the alphabet.
B and **C** are also neighbours.
C and **D** are neighbours, **D** and **E** are neighbours.

The five letters have to be written down in some other order so that **no** neighbours are next to each other (in any order).
For example, **A C E D B** is **not allowed** because the neighbours **D** and **E** are next to each other.

a) If we start with **A** there are only two ways of writing the five letters with no neighbours next to each other. The first one is done for you. Complete the other way.

Answer 1: **A** **C** **E** **B** **D**

Answer 2: **A** **D** ___ ___ ___

b) Now start with the letter **B**. There are three ways of writing the five letters with no neighbours next to each other. The first one is done for you. Complete the other two ways.

Answer 1: **B** **D** **A** **C** **E**

Answer 2: **B** **D** ___ ___ ___

Answer 3: **B** **E** ___ ___ ___

c) In total, how many ways are there of arranging the letters **A B C D E**, so that none are next to their neighbours?

Answer: .....

END

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