THE NORTH LONDON INDEPENDENT GIRLS' SCHOOLS' CONSORTIUM

Group 1

YEAR 7
ENTRANCE EXAMINATION

MATHEMATICS

Friday 20 January 2012

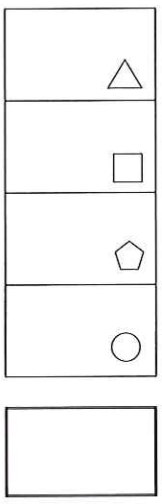
Time allowed: 1 hour 15 minutes

First Name: .....

Surname: .....

Instructions:

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



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1. Work out $2345 + 6789$

Answer: .....

2. Work out $9135 - 357$

Answer: .....

3. Work out 329×7

Answer: .....

4. Work out $5502 \div 6$

Answer: .....

5. (a) Write in figures the number which is 100 less than two thousand and twenty.

Answer: .....

(b) Write in figures the number which is 100 times bigger than two point two.

Answer: .....

---

6. Which number between 60 and 70 is divisible by both 7 and 9?

Answer: .....

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7. Circle the number in the list below which is closest in value to 1

0.993 **1.006** **1.1** **0.94** **0.99**

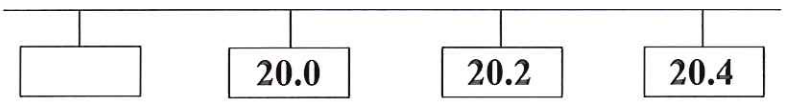
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8. Work out $\frac{5}{8}$ of 48

Answer: .....

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9. Write a number in the box to complete the number pattern below.



10. Fill in the gaps in the calculations below.

(a) $8 \times 7 + \square = 87$

(b) $(\square + 7) \times 6 = 54$

(c) $14.4 \times \square = 144\,000$

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11. Write these numbers in order of size, starting with the smallest:

52.4 **52.42** **52.402**

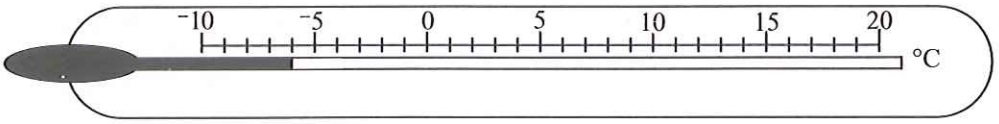
Answer: ..... , ... , ...

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12. Lucy is thinking of two numbers.
The sum of the two numbers is 17
When she multiplies them together, the result is 66
What are the two numbers?

Answer: ..... and .....

13. (a) Write down the temperature shown on this thermometer.



Answer: ..... °C

(b) One morning, the temperature in Grenoble is -4 °C.
At the same time, the temperature in Val Thorens is 7 degrees colder.
What is the temperature in Val Thorens?

Answer: ..... °C

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14. In a shop, 3 stickers cost 40 pence.

(a) How many stickers can be bought for £2.40?

Answer: .....

(b) How much would 33 stickers cost? *(Give your answer in pounds.)*

Answer: £ .....

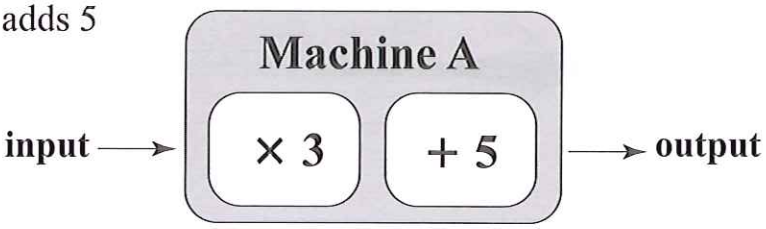
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15. Kitty is 8 years and 5 months old.
Rover is 5 years and 8 months younger than Kitty.
How old is Rover?

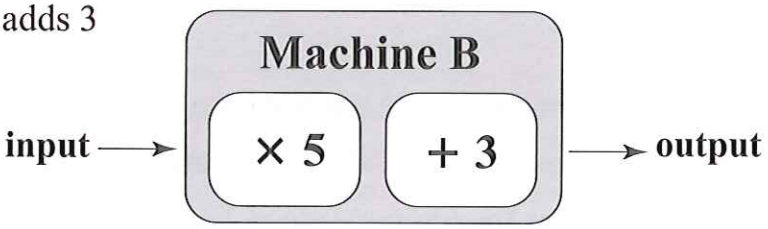
Answer: ..... years ..... months

16. Here are two number machines.

Machine A multiplies by 3, then adds 5



Machine B multiplies by 5, then adds 3



(a) What is the output from Machine A if the input is 2?

Answer: .....

(b) What is the output from Machine B if the input is 2?

Answer: .....

(c) Which input would give an output of 23 from Machine A?

Answer: .....

(d) Which input would give the same output from both machines?

Answer: .....

17. A recipe for making 8 portions of cheesy pasta requires the following ingredients:

500 grams pasta
150 grams cheese
200 millilitres cream
8 sundried tomatoes



(a) How much cheese is needed to make 4 portions of cheesy pasta?

Answer: ..... grams

Mrs Smith is making 20 portions of cheesy pasta.

(b) Complete the list below to show the amount of each ingredient which Mrs Smith needs.

..... grams pasta

..... grams cheese

..... millilitres cream

.....20..... sundried tomatoes

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18. Rose buys a book which costs £7.46

She pays for the book with a £10 note and receives 4 coins as her change.

Which 4 coins does Rose receive?

Answer: ..... , ... , ... , ...

19. Patrick has made $\frac{3}{4}$ of the designs in his origami book.

If he has made 24 designs, how many are there altogether in his book?

Answer: .....

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20. On Mark's plate, there are 36 letters of Alphabet Spaghetti.
He uses 7 of these to spell TERRIER, and 5 to spell HOUND.
He eats the remaining letters.

(a) What fraction of the 36 letters does Mark eat?

Answer: .....

Mark now has the words TERRIER and HOUND on his plate.

(b) What percentage of the letters now on Mark's plate can be found in the word ALSATIAN?

Answer: ..... %

21. Freda Frog always does jumps of 25 centimetres.
Teddy Toad always does jumps of 40 centimetres.

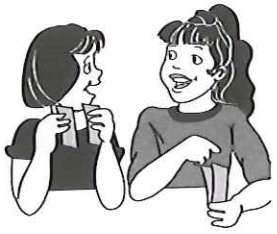


Freda and Teddy both do 30 jumps in a straight line in the same direction.
How much further has Teddy jumped than Freda? *(Give your answer in metres.)*

Answer: ..... m

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22. Georgia and Atlanta each think of a number.



(a) Georgia always tells the truth. She says
- my number is between 10 and 100
- my number has a larger tens digit than units digit
- my number is odd
- my number is a multiple of 29

What is Georgia's number?

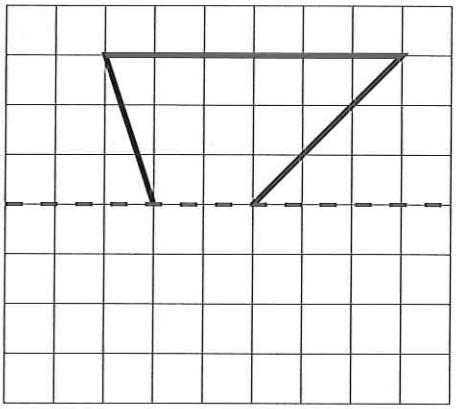
Answer: .....

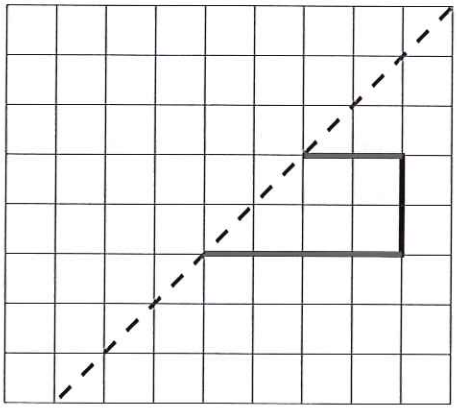
(b) Atlanta never tells the truth. She says
- my number is greater than 100
- my number is not a multiple of 10
- my number does not divide exactly by 3
- my number has a remainder when it is divided by 4

What is Atlanta's number?

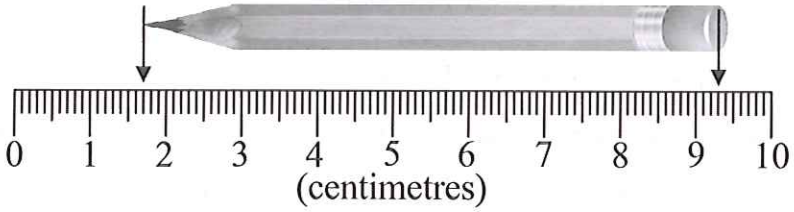
Answer: .....

23. Reflect each shape in the dashed line.





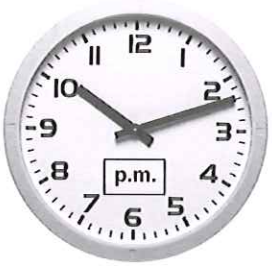
24. (a) Use the ruler below to work out the length of this pencil in centimetres.



Answer: ..... cm

(b) This clock shows a time in the evening.

(i) Write down the time shown by the clock using the 24 hour clock.



Answer: .....

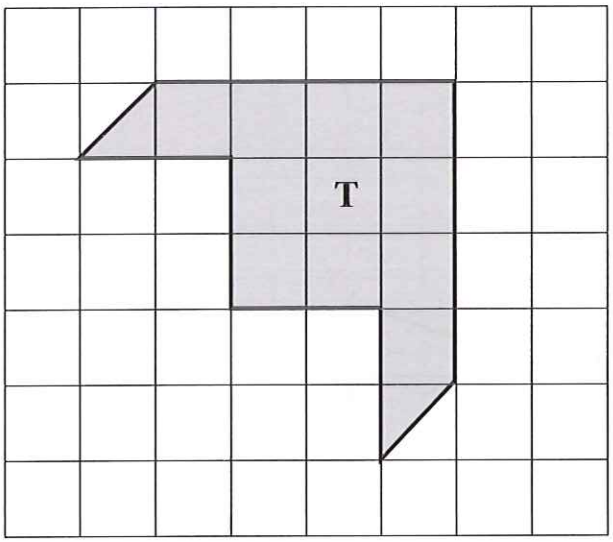
The clock is actually 5 minutes slow.

Sarah's watch is 8 minutes fast.

(ii) What time is shown on Sarah's watch?

Answer: ..... p.m.

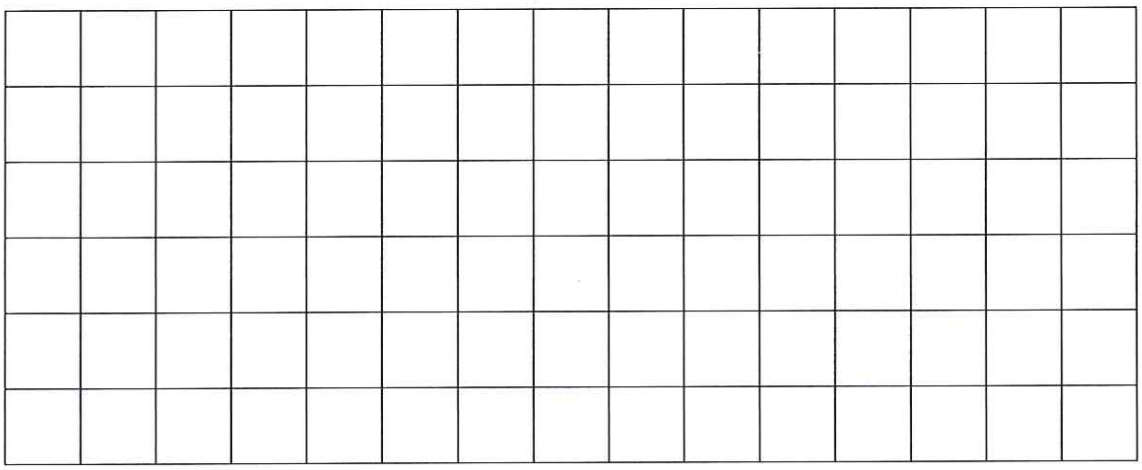
25. Shape **T** is drawn on centimetre-squared paper.



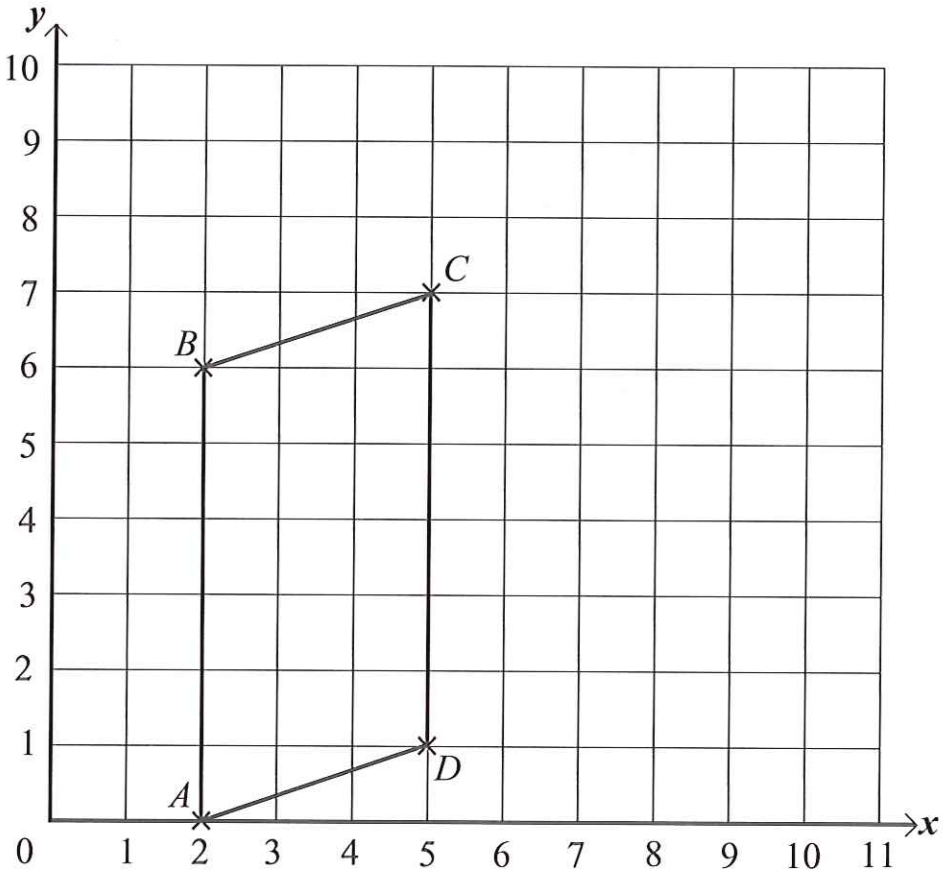
(a) What is the area of shape **T**?

Answer: ..... cm^2

(b) On the centimetre-squared grid below, draw a rectangle which has the same area as shape **T**.



26. Points A, B, C and D have been joined to form shape $ABCD$.



(a) What special type of quadrilateral is shape $ABCD$?

Answer:.....

(b) How many lines of symmetry has shape $ABCD$?

Answer:.....

(c) Write down the coordinates of point A.

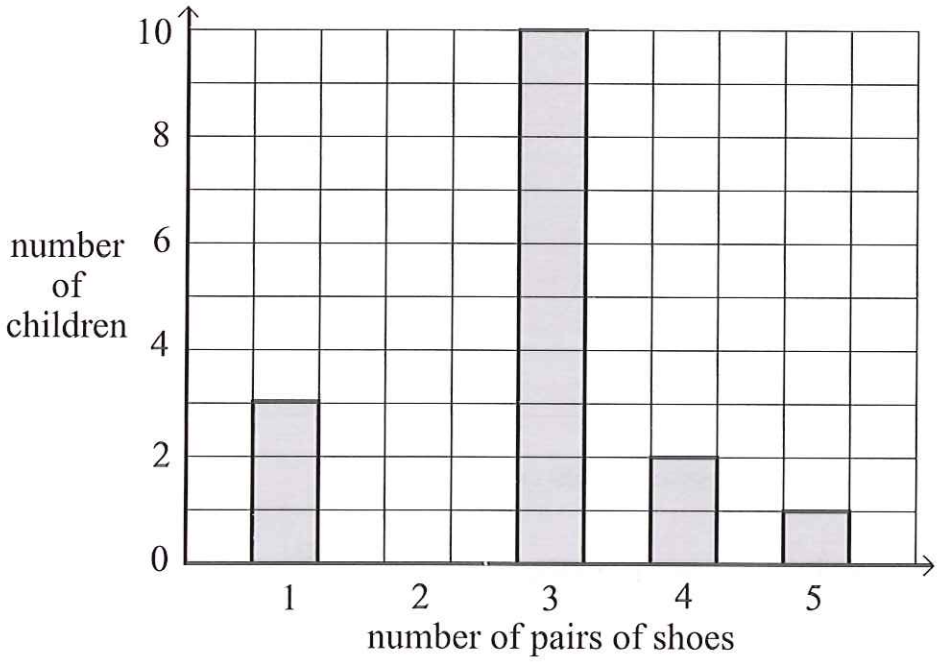
Answer: (..... , ...)

Point E can be plotted so that when points C, D and E are joined, an isosceles triangle is formed.

(d) Write down possible coordinates of point E.

Answer: (..... , ...)

27. Mrs Clark asked every child in class 6A how many pairs of shoes they own.
The bar chart below shows some of her results.
Everyone owns at least 1 pair of shoes and no-one owns more than 5 pairs.



5 students own 2 pairs of shoes.

(a) Use this information to complete the bar chart.

(b) How many students own 4 pairs of shoes?

Answer: .....

(c) How many students are there altogether in class 6A?

Answer: .....

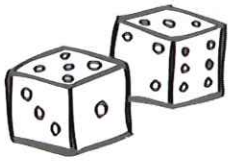
(d) How many pairs of shoes do all of the children in class 6A own altogether?

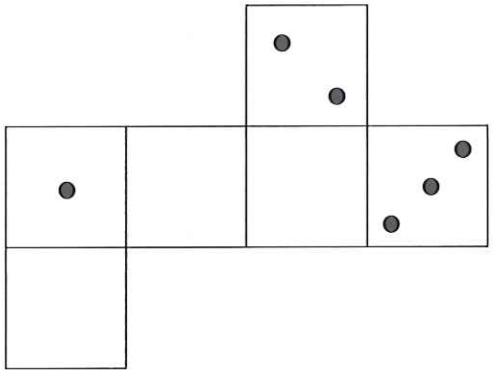
Answer: .....

28. Below is the net for a 6-sided die.

Complete the net.

(Remember that the opposite faces must add up to 7)

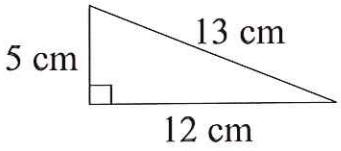




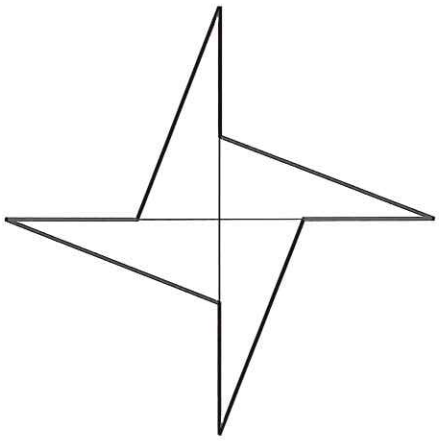
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29. Jiggy Sore has made 4 full size copies of this triangle:

not to scale



He puts his 4 triangles together to make the shape shown below.



(a) What is the perimeter of the shape?

Answer: ..... cm

The total area of his shape is 120 cm^2.

(b) What is the area of one triangle?

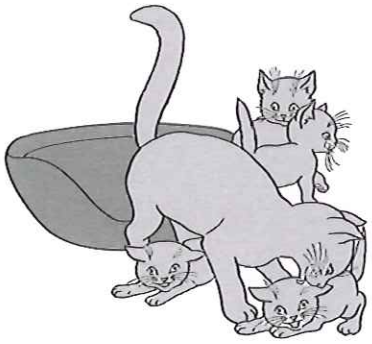
Answer: ..... cm^2

30. A cat, her 4 kittens and their cat basket altogether have a mass of $6\frac{1}{2}$ kilograms.

The cat basket has a mass of 500 grams.

Each kitten has a mass of 0.6 kilograms.

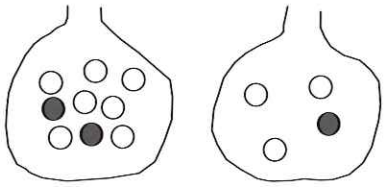
What is the mass of the cat?



Answer: ..... kg

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31. Bag A and bag B contain black and white balls as shown below.



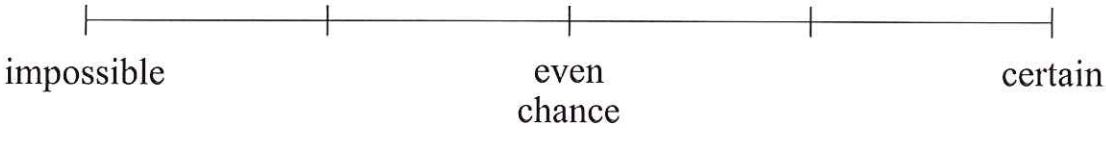
bag A bag B

Bob is going to pick a ball at random from each bag.

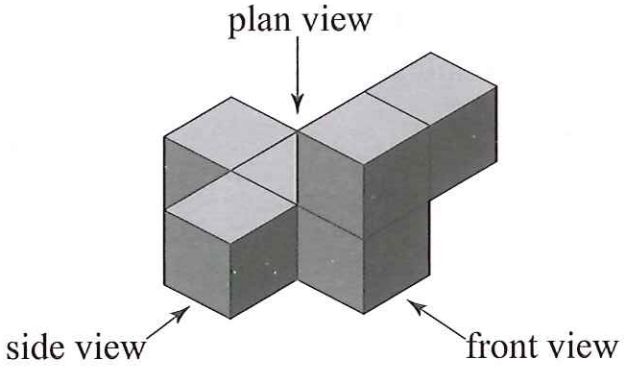
(a) From which bag does he have a higher chance of picking a black ball?

Answer: .....

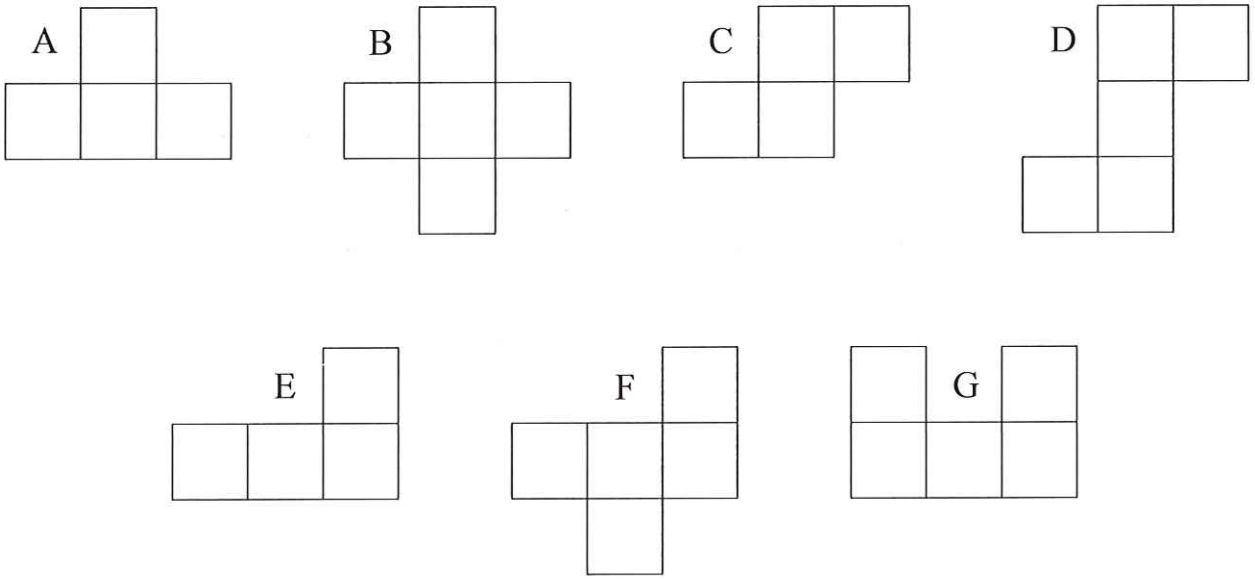
(b) On the probability scale below, mark with an arrow the probability that the ball he picks from bag B is white.



32. This shape is made from 6 cubes.



The diagrams show possible side, plan and front views of the shape.



Write the letter of the diagram which shows the

side view ..... plan view ..... front view .....

33. Tom downloads 3 music tracks.

The length of each track is shown in the table below.

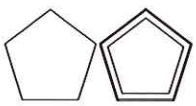
track	length
track 1	4 min 45 sec
track 2	5 min 5 sec
track 3	4 min 40 sec

(a) What is the total length of the 3 tracks?

Answer: ..... min ..... sec

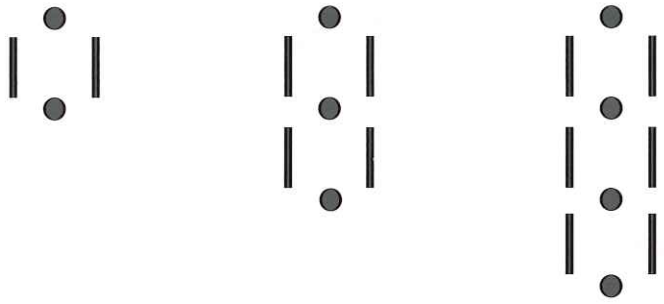
(b) What is the mean (average) length of each track?

Answer: ..... min ..... sec



34. Here is the start of a pattern made from dots and lines.

pattern 1 pattern 2 pattern 3 pattern 4



(a) Draw pattern 4 in the space above.

(b) Complete the table showing the number of dots and lines in each pattern.

pattern number	1	2	3	4
number of dots	2	3		
number of lines	2			

(c) How many dots are there in pattern 8?

Answer: .....

(d) Which pattern has 30 lines?

Answer: .....

(e) One pattern has 31 dots.
How many lines are there in this pattern?

Answer: .....

35. There are 80 members of the school orchestra.



35 of the members are boys.

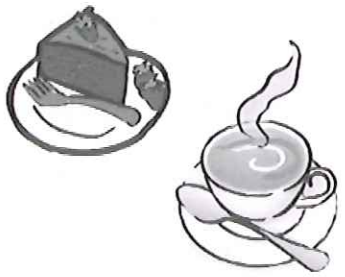
$\frac{2}{3}$ of the girls in the orchestra play a stringed instrument.

In total, 38 of the members do not play a stringed instrument.

Use this information to complete the table below.

	boy	girl	total
plays a stringed instrument			
does not play a stringed instrument			
total			80

36. (a) Jess bought a cake and a drink.
She paid £3.90 in total.
The cake cost twice as much as the drink.
How much did the cake cost?



Answer: £ .....

(b) Simon bought a cup of tea and a fizzy drink, paying £2.60 in total.
The fizzy drink cost 30p more than the cup of tea.
How much did the fizzy drink cost?

Answer: £ .....

(c) On Monday, Claire bought an apple and a banana. The total cost was 57p.
On Tuesday, Claire bought a banana and a pear. The total cost was 56p.
On Wednesday, Claire bought an apple and a pear. The total cost was 69p.

On Thursday, Claire bought an apple, a banana and a pear.
How much did Claire spend on Thursday?



Answer: ..... pence

37. Josie, Rosie, Maisie, Cassie and Daisy all want to sit in the front row at school.

- Maisie will only sit at an end of the row.
- Daisy will not sit next to Josie or Maisie.
- Cassie has to sit next to both Josie and Maisie.

Use the information to write the two possible seating arrangements for the 5 girls.

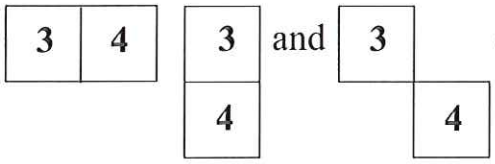
Answer: ..... , ... , ... , ... , ...

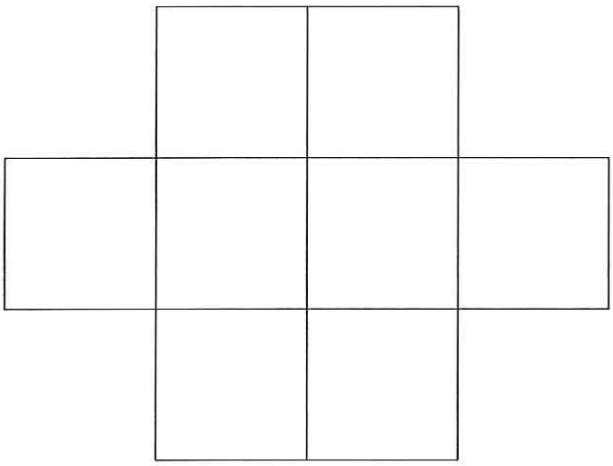
or ..... , ... , ... , ... , ...

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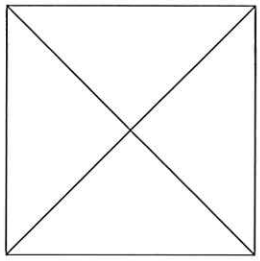
38. Write a number from 1 to 8 in each box below so that

- each number is used only once
- consecutive numbers, such as 3 and 4, are not in boxes which touch

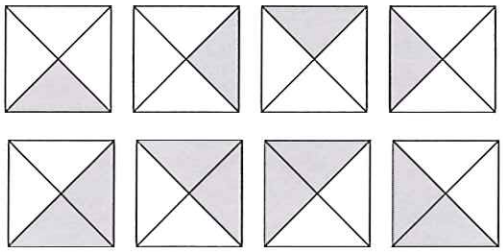
For example,  and are **not** allowed.



39. Katie has been asked to count all of the triangles in the square below.

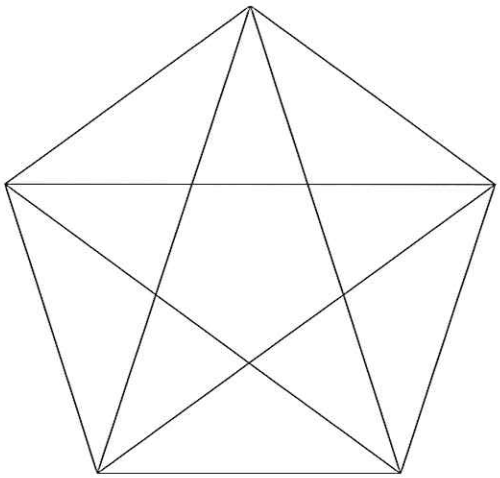


She realises there is a triangle on each side

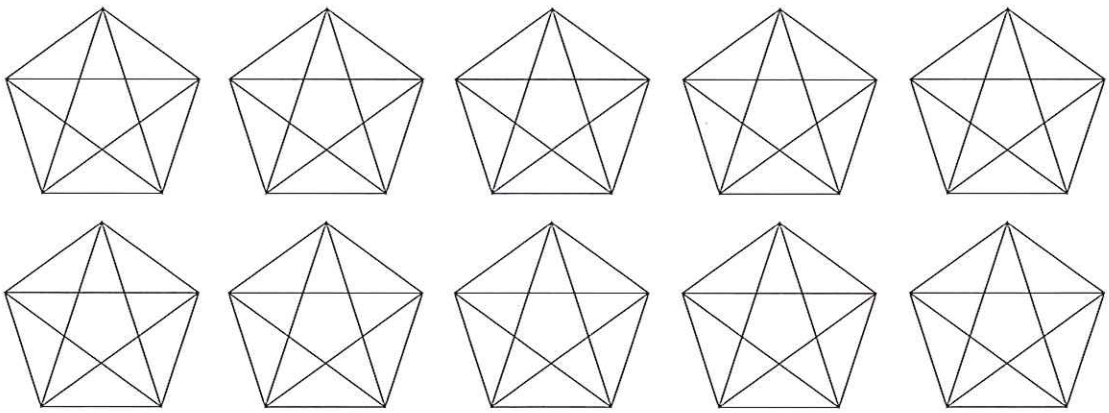


and that there are larger triangles at each corner.

In total, there are 8 triangles inside the square.
How many triangles are there in total inside this pentagon?



You may use the small pentagons to help you record the different types of triangle you find.



Answer: .....

40. On Planet Hat, the symbol $\boxed{\wedge}$ has a special meaning in arithmetic.

$a \boxed{\wedge} b$ means multiply a by 4, then subtract b.

For example, $3 \boxed{\wedge} 2 = 3 \times 4 - 2$
$= 12 - 2$
$= 10$

(a) Work out $5 \boxed{\wedge} 1$

Answer: .....

(b) Work out the value of m so that $m \boxed{\wedge} 6 = 26$

Answer: $m =$ .....

It is possible to use the symbol twice in a calculation.

For example, $3 \boxed{\wedge} (2 \boxed{\wedge} 1) = 3 \boxed{\wedge} (2 \times 4 - 1)$
$= 3 \boxed{\wedge} 7$
$= 3 \times 4 - 7$
$= 5$

(c) Work out $5 \boxed{\wedge} (4 \boxed{\wedge} 3)$

Answer: .....

(d) Work out the value of p so that $(6 \boxed{\wedge} p) \boxed{\wedge} 4 = 56$

Answer: $p =$ .....

41. Charlie enjoys eating Nickel bars.



His local store has a special promotion on Nickel bars.

Charlie can exchange 3 empty Nickel bar wrappers for a new Nickel bar.

Charlie buys 20 Nickel bars.

Assuming that Charlie always eats any Nickel bars he has and exchanges the used wrappers for new bars, how many bars will he be able to eat in total?

Answer: .....

(Total: 100 marks)