THE NORTH LONDON INDEPENDENT GIRLS' SCHOOLS' CONSORTIUM

Group 1

YEAR 7
ENTRANCE EXAMINATION

MATHEMATICS

Friday 18 January 2013

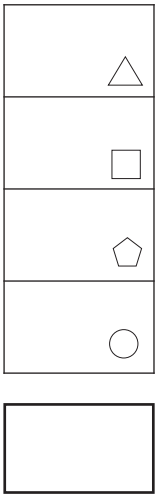
Time allowed: 1 hour 15 minutes

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 4567 + 7654

Answer: .....

2. Work out 7654 − 4567

Answer: .....

3. Work out 653 × 7

Answer: .....

4. Work out 5922 ÷ 6

Answer: .....

5. Half of a certain number is 17
What is the number?

Answer: .....

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6. (a) Which number is 1000 times larger than 0.8?

Answer: .....

(b) Which number is 100 times smaller than 349?

Answer: .....

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7. Work out the sum of the numbers below:

0.4 **0.07** **0.03**

Answer: .....

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8. Write a number in the box to complete the number pattern below:

45 **53** ☐ **69**

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9. Work out two thirds of 54

Answer: .....



10. Write these decimals in order of size, starting with the smallest:

5.22 **5.02** **5.202** **5.2**

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

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11. Claire bought an ice cream costing £1.55 and a can of drink costing 67 pence. She paid with a £5 note.

    (a) How much change should Claire receive?

Answer: £ .....

    (b) Claire was given the exact change, using the smallest possible number of coins.
    How many coins was Claire given?

Answer: .....

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12. Two numbers add to give 15 and multiply to give 56
    What is the difference between the two numbers?

Answer: .....

13. Fill in the gaps in the calculations below.

(a) $15 + \square = 13 \times 2$

(b) $2 + (4 \times 5) = 27 - \square$

(c) $\square \times 12 = 18 \div 3$

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14. The notice below shows part of a train timetable between 2 towns, Taymar and Raymar.

One of the times has been covered.

	train 1	train 2
Taymar	**09:24**	**14:51**
Raymar	**11:43**	[redacted]

(a) How long does it take train 1 to travel from Taymar to Raymar?

Give your answer in hours and minutes.

Answer: ..... hours ..... min

Train 2 takes the same time as train 1 to travel from Taymar to Raymar.

(b) At what time does train 2 arrive at Raymar?

Answer: .....

15. On 1st January the temperature in London was $^{-}2$ °C.

(a) On the same day, the temperature in Rome was 12 °C.
How many degrees hotter was it in Rome than in London?

Answer: ..... degrees

(b) On the same day, the temperature in Oslo was 5 degrees colder than in London.
What was the temperature in Oslo?

Answer: ..... °C

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16. Katharine was born on 1st May 1997
Helen was born on 1st March 2003

(a) By how many years and months is Katharine older than Helen?

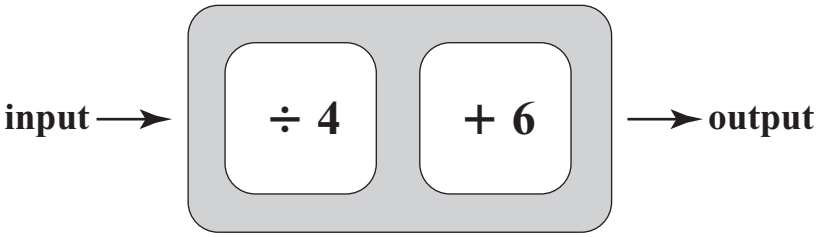
Answer: ..... years ..... months

(b) Sam is exactly 18 months younger than Katharine.
Work out Sam's date of birth.

Answer: .....

17. The number machine below changes numbers according to the rule

divide by 4 then add 6



(a) Work out the ***output*** number if the input is 20

Answer: .....

(b) Work out the ***output*** number if the input is 6

Answer: .....

(c) In the list below, circle the type of input numbers which will always give whole number output numbers.

odd **even** **multiples of 4** **prime numbers**

(d) Work out the ***input*** number if the output is 18

Answer: .....

(e) A number is put through the number machine twice.
After the second time, the output number is 9
Work out the original input number.

Answer: .....

18. A recipe for 18 oatcakes needs the following ingredients:

140 grams oatmeal
140 grams porridge oats
10 twists of black pepper
80 millilitres olive oil

(a) James wants to make 9 oatcakes.
What mass of oatmeal does James need to use?

Answer: ..... g

(b) Sarah has only 400 millilitres of olive oil.
She has plenty of all the other ingredients.
What is the largest number of oatcakes which Sarah can make?

Answer: .....

(c) Fill in the ingredients required to make 27 oatcakes.

..... grams oatmeal

..... grams porridge oats

..... twists of black pepper

..... millilitres olive oil

19. The instructions below are used to work out the cooking time for a turkey.

50 minutes per kilogram plus 20 minutes

Claire wants to cook a turkey with a mass of 2.5 kilograms.

For how long should Claire cook the turkey?

Give your answer in hours and minutes.

Answer: ..... hours ..... min

20.



At SuperMart, a packet of jam tarts costs £1.20

This week, there is a special offer:

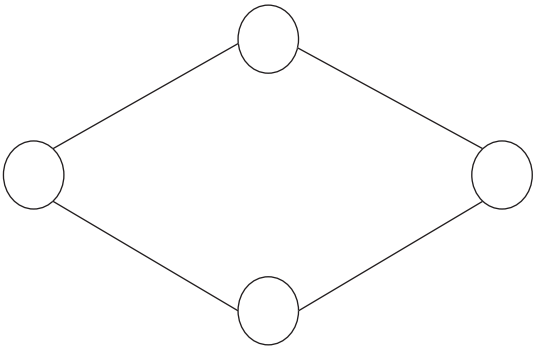
If you buy one packet, you can buy a second packet at half price.

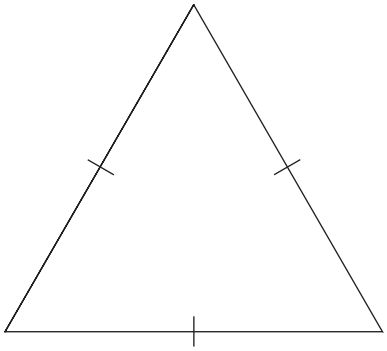
Erika needs to buy 13 packets of jam tarts.

Using the special offer, how much will it cost Erika to buy 13 packets?

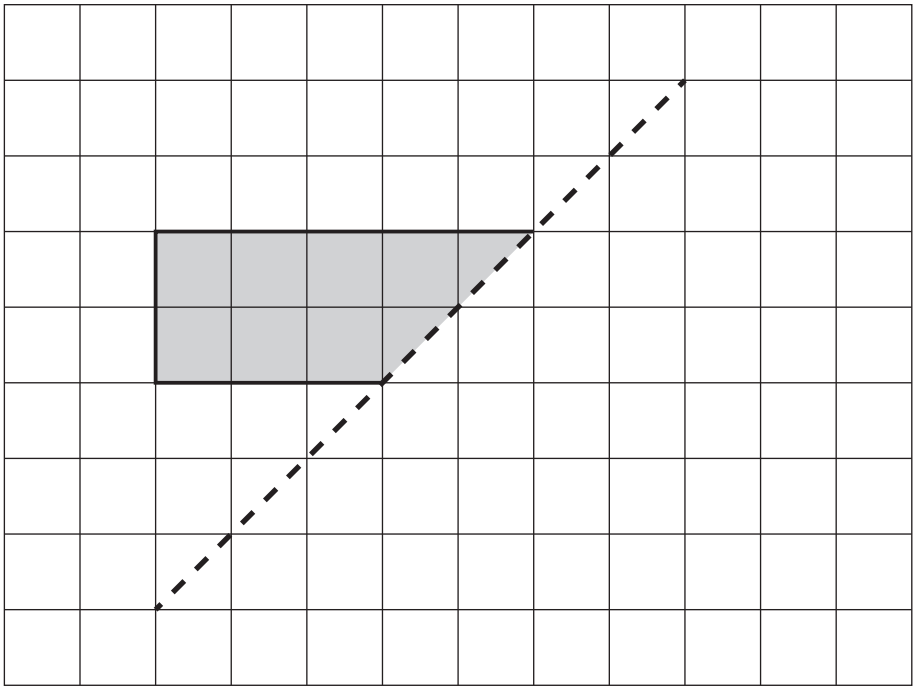
Answer: £ .....

21. (a) Draw all lines of symmetry on each shape below.

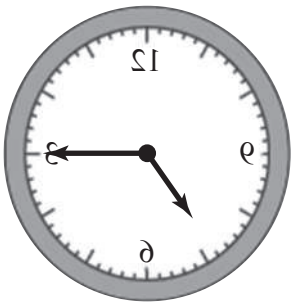




(b) Reflect the shaded shape in the dashed line.



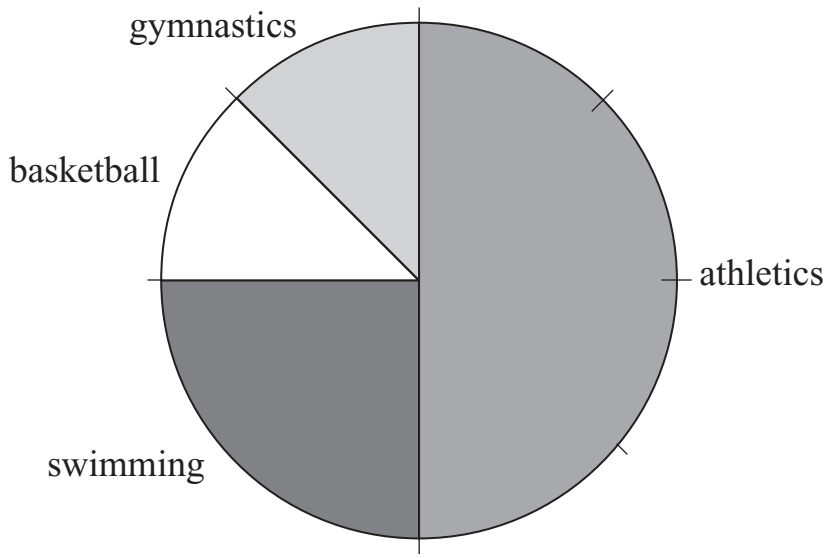
(c) This clock has been reflected in a mirror.
What time is it?



Answer: ..... a.m.

22. Mrs Spencer asked each of the children in class 6A to state their favourite Olympic sport.

The pie chart below shows the results.



(a) What fraction of the children in class 6A chose swimming?

Answer: .....

(b) What percentage of the children in class 6A chose athletics?

Answer: ..... %

6 pupils chose swimming.

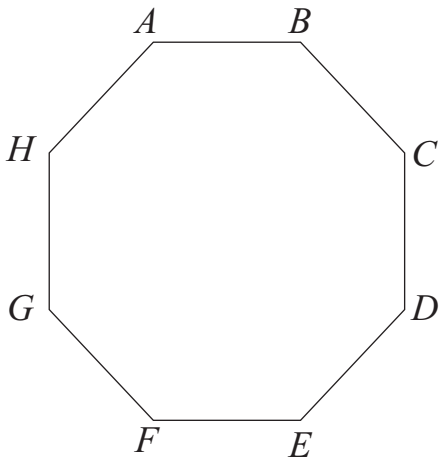
(c) How many children are there altogether in class 6A?

Answer: .....

(d) How many more children chose athletics than gymnastics?

Answer: .....

23. The diagram below shows a **regular** eight-sided polygon.



not to size

(a) What is the special name given to a polygon with eight sides?

Answer: .....

(b) Circle the word below which describes the type of angle inside the polygon at *A*.

acute **reflex** **right-angle** **obtuse**

(c) *CD* measures 34 mm.

(i) Write this measurement in centimetres.

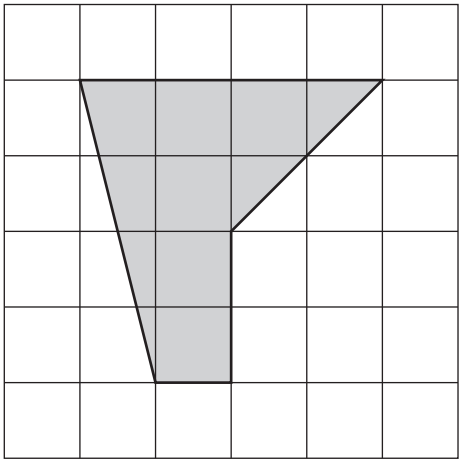
Answer: ..... cm

Adam the ant runs once around the perimeter of the polygon.

(ii) How far does Adam run?

Answer: ..... cm

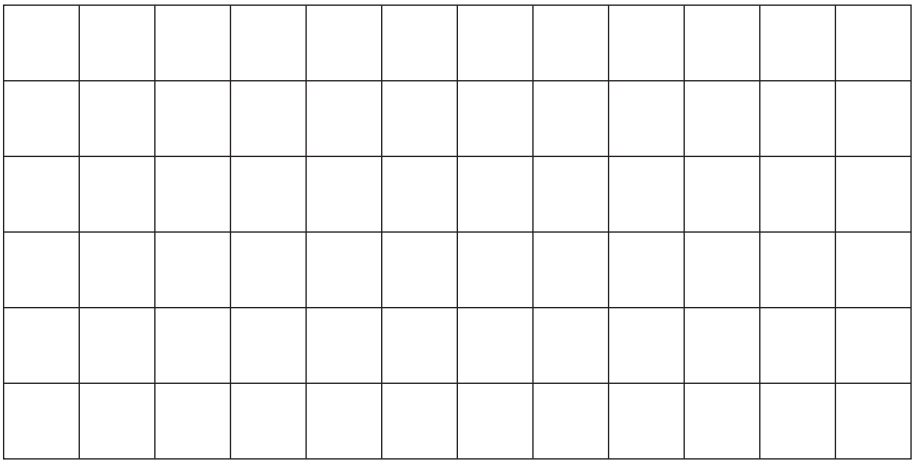
24. (a) Work out the area of the shape below, drawn on centimetre-squared paper.



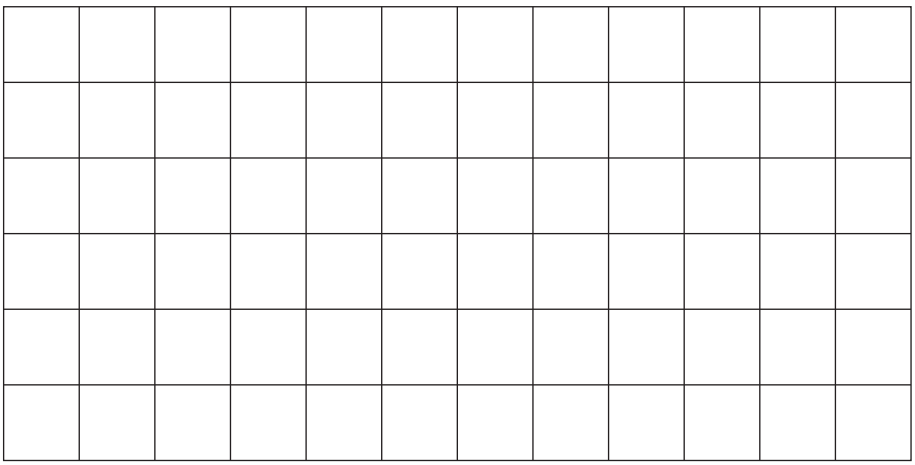
Answer: ..... cm^2

(b) On the centimetre-squared grids below, draw:

(i) a rectangle with perimeter 10 cm



(ii) a triangle with area 10 cm^2



25. In each list below, circle the most sensible unit to measure:

(a) the mass of a battleship

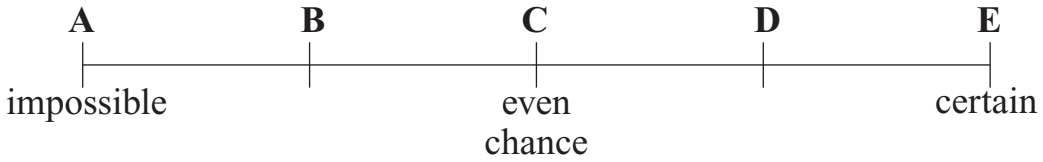
tonnes **kilograms** **metres** **grams** **litres**

(b) the amount of water in a bath

metres **millilitres** **litres** **millimetres** **kilograms**

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26. Anna has a bag containing 8 counters.
4 are red, 2 are blue and the rest are green.
She picks a counter at random from the bag.



Write down the letter on the probability scale which indicates the probability that the counter she picks is

(a) green

Answer: .....

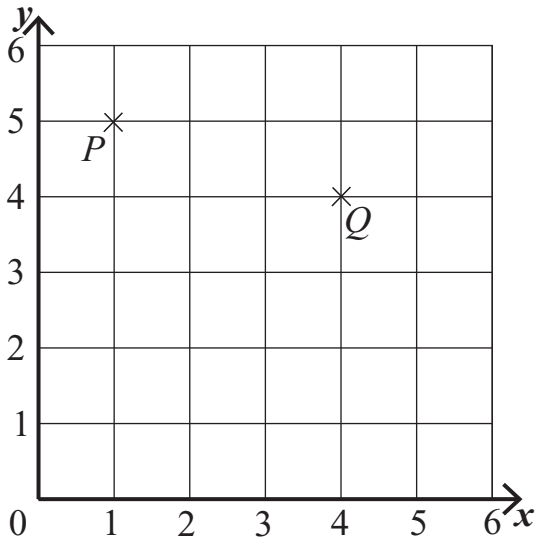
(b) white

Answer: .....

(c) either red or blue

Answer: .....

27. Points P and Q have been plotted on the coordinate grid below.



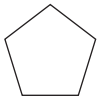
(a) Write down the coordinates of the point P.

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

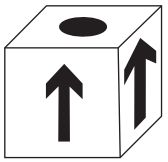
Point R can be plotted on the grid so that when P, Q and R are joined, they form an isosceles triangle.

(b) Using only whole numbers, write down 3 possible coordinates of point R.

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

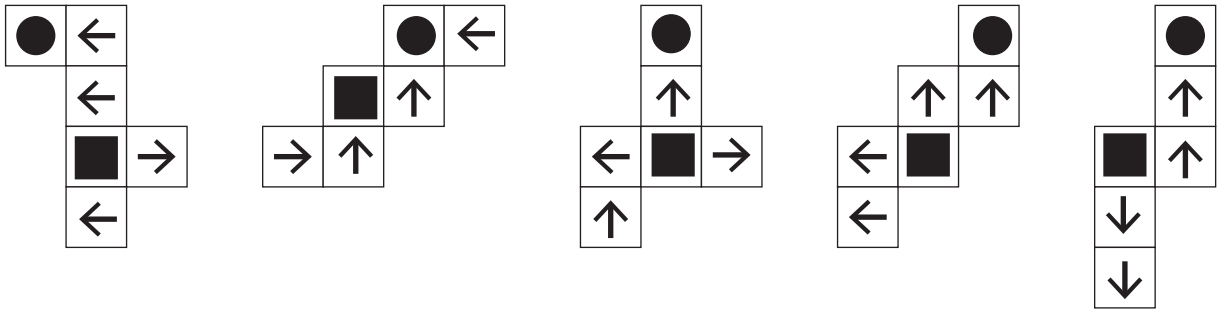


28. A cube has a circle on its top face and a square on its bottom face. and a square on its bottom face.



On each of the other faces there is an arrow, pointing towards the top face.

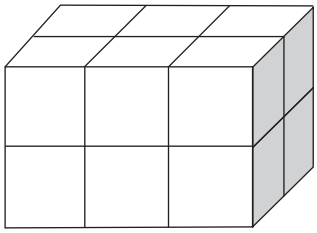
Circle the net below which will make the cube described above.



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29. Tilly and Tally have a large tub of 1-centimetre cubes.

Tilly uses some of the cubes to make the cuboid shown below.



(a) How many 1-centimetre cubes has she used?

Answer: .....

Tally decides to make a cuboid which is exactly twice as high, twice as wide and twice as long as Tilly's cuboid.

(b) How many more cubes does Tally use than Tilly?

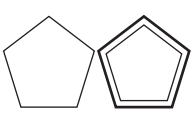
Answer: .....

30. A shopping bag, of mass 0.4 kg, and its contents have a total mass of 2.5 kg.
Inside the shopping bag are the following items:

2 bags of carrots, each with mass of 250 grams
1 cabbage with a mass of $\frac{3}{4}$ kilogram
1 bag of potatoes

Use this information to work out the mass of the bag of potatoes.
Give your answer in grams.

Answer: ..... g



31. Here is the start of a pattern made with black hexagons and white hexagons:



pattern 1



pattern 2



pattern 3

(a) Complete the table showing the numbers of black hexagons and white hexagons in each pattern.

pattern number	1	2	3	4
number of black hexagons	2			
number of white hexagons	8			

(b) How many black hexagons are there in pattern number 13?

Answer: .....

(c) How many white hexagons are there in pattern 10?

Answer: .....

(d) One pattern has 50 white hexagons.
How many black hexagons are there in this pattern?

Answer: .....

32. The symbols ©, ♣, ♥, ☼ and ∂ each stand for one of the numbers 1, 4, 5, 9 and 16
Given that the following statements are true, work out the value of each symbol.

∂ × ♥ = ∂

© × © = ♣

∂ + © = ☼

Answer: ♥ = ...

☼ = ...

∂ = ...

© = ...

♣ = ...

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33. In a survey of 120 people, $\frac{3}{5}$ are female.
Of the males, 30 can drive.
In total 40 people cannot drive.
Fill in the table below to show this information.

	males	females	total
can drive	30		
cannot drive			
total			120

34. A fair die has six faces marked 0p, 0p, 0p, 0p, 0p and 50p.

In a game at a village fete, players pay 10p to roll the die and they win the amount shown on the top face of the die.

During the fete, the game is played 60 times.

(a) How many times would you expect a player to win 50p?

Answer: .....

(b) How much money do the players pay altogether to roll the die?

Answer: £ .....

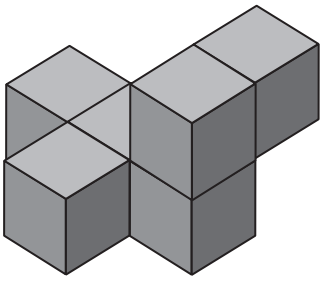
(c) Does the game expect to make a profit or a loss and by how much?

Answer: the game expects to make a ..... of £ .....

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35. 6 cubes have been joined together to make the shape below.

The area of each face of the cubes is 1 cm^2.



If the shape is dipped into a large pot of paint, what is the total area which will be covered in paint?

Answer: ..... cm^2

36. 10 teachers can mark 180 exam papers in 3 hours.
It takes each teacher the same amount of time to mark each exam paper.

(a) How many teachers would it take to mark 90 exam papers in 3 hours?

Answer: .....

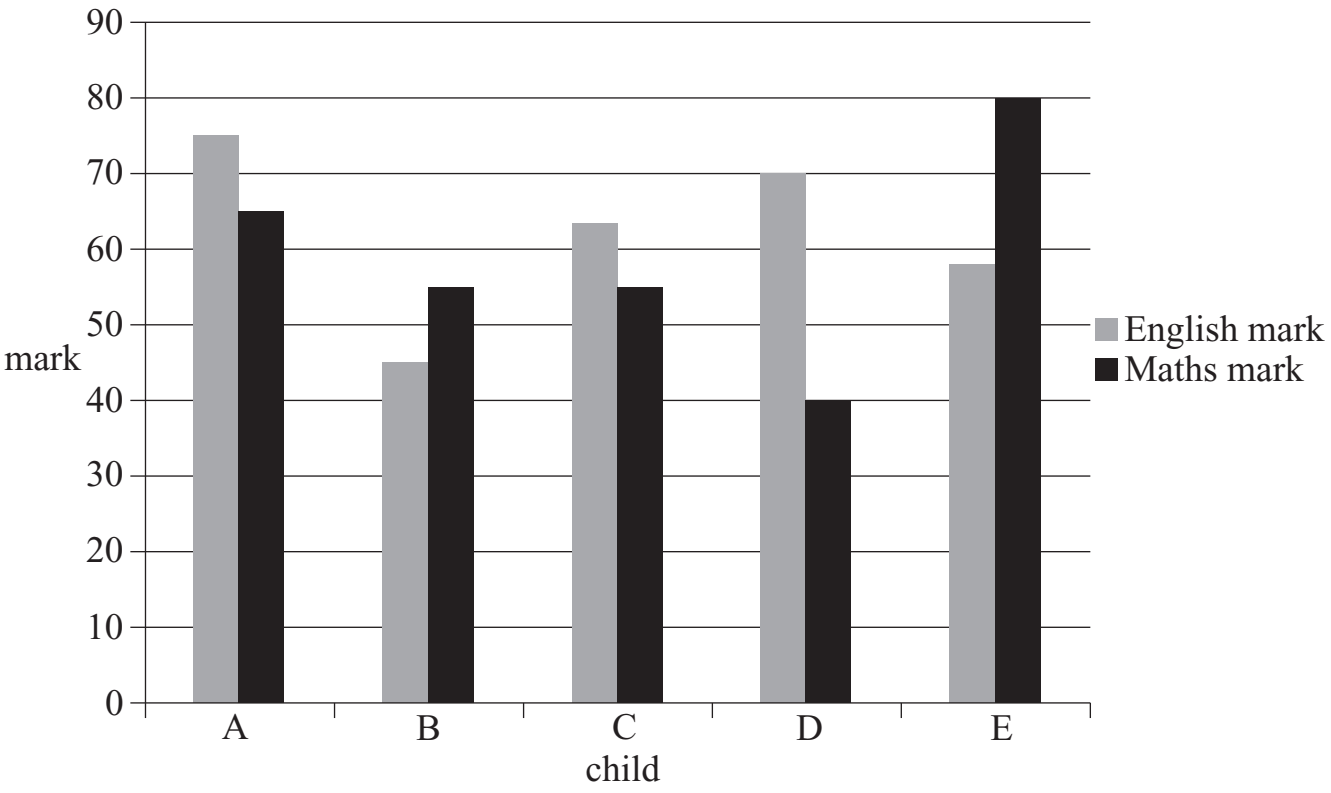
(b) How long would it take 5 teachers to mark 180 exam papers?

Answer: ..... hours

(c) How many exam papers could 20 teachers mark in 1 hour?

Answer: .....

37. Five children took exams in English and Maths.
Their names are Dolly, Holly, Lolly, Molly and Polly.
The bar chart below shows their results.



Use the information below to work out which child is represented by each letter.

- Dolly came top in the Maths exam.
- In the English exam, it was Molly who scored the highest.
- Polly got the lowest total score.
- Holly scored 30 more marks in English than she did in Maths.

Answer: A represents .....

B represents .....

C represents .....

D represents .....

E represents .....

38. Jim runs a fruit stall at a local market.
He sells oranges in packets of 3 and apples in packets of 4

(a) George buys 5 packets of oranges and some packets of apples.
In total he has 31 pieces of fruit.
How many packets of apples did George buy?

Answer: .....

(b) Chris buys 2 more packets of apples than packets of oranges.
In total he has 29 pieces of fruit.
How many packets of each type of fruit did Chris buy?

Answer: ……..... packets of oranges and ……..... packets of apples

(c) Jamie buys 11 packets of fruit.
In total, he has 40 pieces of fruit.
How many more apples than oranges does he have?

Answer: .....

39. At a quiz show, Rachel has to choose between the following 3 coloured boxes to win a car.

Just one of the sentences written on the boxes is true.

blue box	**red box**	**yellow box**
the car is in this box	the car is not in this box	the car is not in the blue box

In which box is the car?

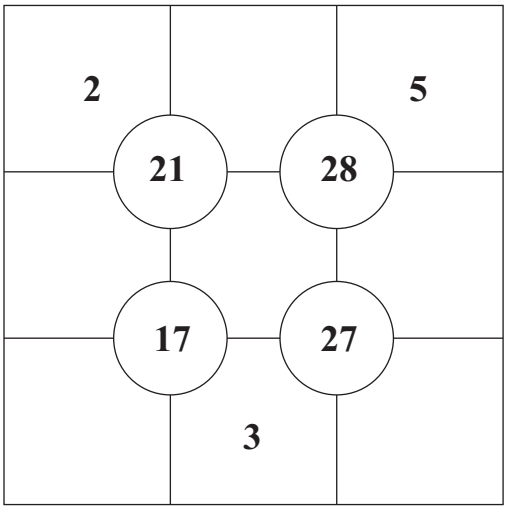
Answer: .....

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40. The grid below is made from 9 squares with 4 circles, as shown.

Place the numbers 1, 2, 3, 4, 5, 6, 7, 8 and 9 once each in the grid so that the number in each circle is the total of the numbers in each of the four surrounding squares.

The numbers 2, 3 and 5 have already been placed for you.



(Total: 100 marks)