THE NORTH LONDON INDEPENDENT GIRLS' SCHOOLS' CONSORTIUM

Group 2

YEAR 7
ENTRANCE EXAMINATION

MATHEMATICS

Friday 6 January 2017

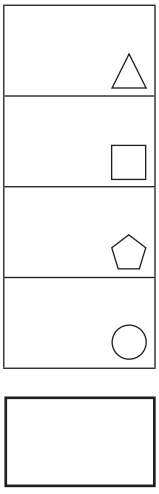
Time allowed: 1 hour 15 minutes

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.



1. Work out $5678 + 8765$

Answer: .....

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2. Work out $8765 - 5678$

Answer: .....

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3. Work out 4073×7

Answer: .....

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4. Work out $4524 \div 6$

Answer: .....

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5. Work out $\frac{4}{5}$ of 65

Answer: .....

6. Write down the next number in the sequence.

54, 46, 38, 30, …….

Answer: .....

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7. Write a number in the box to complete the statement.

$5.03 \times 1000 =$ ☐

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8. Which number is *five thousand and thirty-three* less than *eight thousand two hundred*?

Give your answer in figures.

Answer: .....

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9. Write the missing sign (= , < or >) in the box.

23×8 ☐ 25×6

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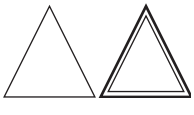
10. In Edinburgh, the temperature is 1 °C.

In Aviemore the temperature is 7 degrees cooler.

What is the temperature in Aviemore?

Answer: ..... °C



11. What is 40% of 200?

Answer: .....

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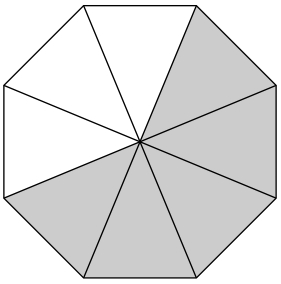
12. What fraction of the shape is shaded?



Answer: .....

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13. Ann ran 10 kilometres in 1 hour 24 minutes.

She started at 13:45

At what time did she finish?

Write your answer as a 24-hour clock time.

Answer: .....

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14. Sally's birthday is 29 June and Clare was born exactly 11 days later. On what date is Clare's birthday?

Answer: .....

---

15. Julius thinks of a number (in Roman numerals).

He adds `VI` and then multiples by `III`

His result is `XXIV`

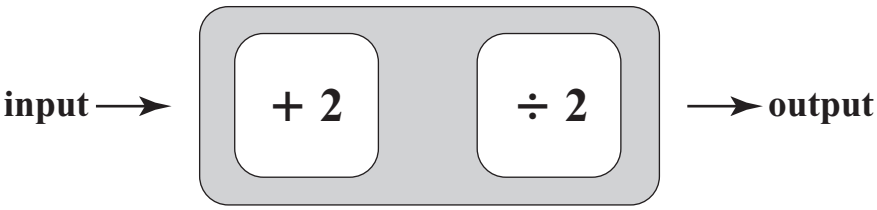
What number did Julius think of?

Write your answer in Roman numerals.

Answer: .....

16. The two-stage number machine below changes numbers according to the rule

'Add 2 and then divide by 2'



(a) Work out the output when the input is 10

Answer: .....

(b) Work out the output when the input is 7

Answer: .....

(c) Work out the input when the output is $3\frac{1}{2}$

Answer: .....

When Georgie put in a number, the same number came out.

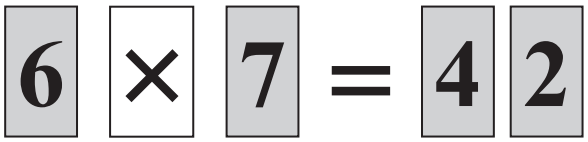
(d) What number did Georgie put in?

Answer: .....

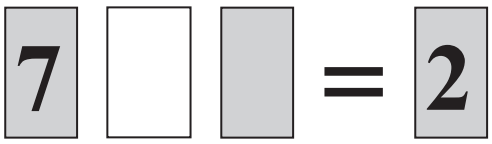
17. Lisa has six number cards and four operation cards.

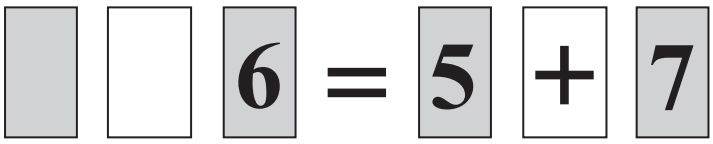
She has one only of each card.

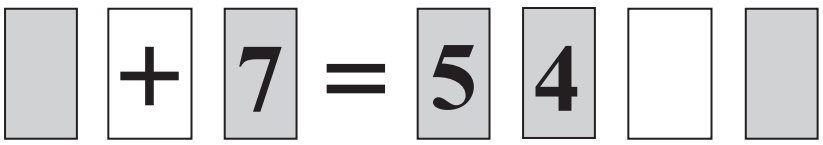
The cards can be placed side by side to form number statements, for example,



Use the cards above to complete these statements:

(a) 

(b) 

(c) 

(d) 

18. Prunella likes eating prunes and she keeps the stones in a box so that she knows how many prunes she has eaten.

Each day, she increases the number of prunes she eats by three.

On Monday she eats 6 prunes.

On Tuesday she eats 9 prunes.

On Wednesday she eats 12 prunes.

(a) How many prunes does Prunella eat on Thursday?

Answer: .....

On Friday Prunella is ill and does not eat any prunes.

(b) How many prune stones are in the box?

Answer: .....

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19. In a restaurant, a service charge of 10% is added to the cost of a meal.

(a) The Macbeth family meal cost £37.50

What service charge was added to the bill for this meal?

Answer: £ .....

(b) The Stuart family meal cost £43.50

When the service charge was added, what was the bill for this meal?

Answer: £ .....

20. The table below compares the information on the packets of three brands of potato crisps.

The information is for 100 g of crisps.

	brand X	brand Y	brand Z
protein (g)	6.6	6.2	6.0
carbohydrate (g)	56.4	48.8	50.1
fat (g)	22.5	31.9	33.9
fibre (g)	14.5		10.0

(a) Calculate the mass of fibre in 100 g of brand Y crisps.

Answer: ..... g

(b) What percentage of the mass of crisps of brand X is fat?

Answer: ..... %

(c) What fraction of a crisp of brand Z is protein?

Give your answer in its lowest terms (simplest form).

Answer: .....

(d) What is the mass of fibre in a 40 g packet of brand Z crisps?

Answer: ..... g

21. Kelly has correctly performed the following division using her calculator:

$$768 \div 32 = 24$$

Without doing any long calculations, use Kelly's calculation to help you write down the results of the following:

(a) $768 \div 16$

Answer: .....

(b) $768 \div 48$

Answer: .....

(c) 24×16

Answer: .....

(d) $800 \div 32$

Answer: .....

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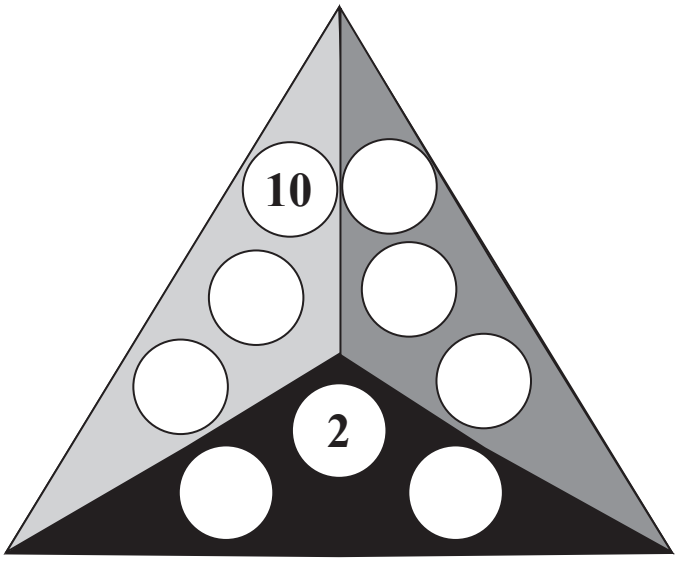
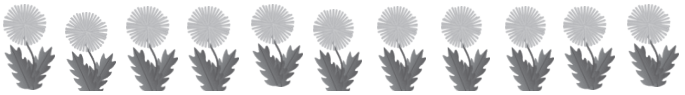
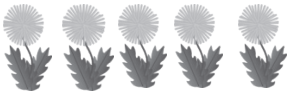
22. In the puzzle below, the numbers 2 to 10 inclusive are placed in the circles so that the sum of the numbers in each shaded sector is the same.



Complete the puzzle.

23. May has counted the dandelions in her garden.

In the pictogram below, one symbol  represents two dandelions.

lawn	
flower bed	

How many more dandelions are in May's lawn than in her flower bed?

Answer: .....

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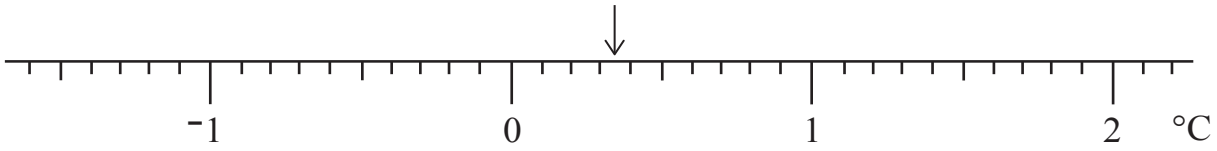
24. What is the reading on the temperature scale below?



Answer: ..... °C

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25. Terry rolls an ordinary die 100 times.

About how many times would she expect to score 6?

Circle the most likely number in the choices below.

1 **9** **17** **25** **33** **41** **49**

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26. What type of angle is an angle of 145°?

Answer: .....

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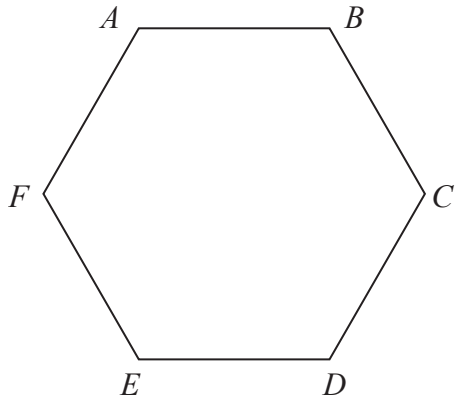
27. A cube has edges of length 2 cm.

What is the volume of the cube? Answer: ..... cm^3

28. Here is a regular hexagon:



(a) How many lines of symmetry has the hexagon got?

Answer: .....

Riya joins *A* to *E* with a straight line.

She then joins *E* to *C* with another straight line.

(b) What sort of triangle is *AFE*?

Answer: .....

(c) What sort of quadrilateral is *AECB*?

Answer: .....

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29. A bottle of medicine holds a quarter of a litre of medicine when full.

(a) How many millilitres of medicine are in the bottle when it is full?

Answer: ..... ml

Su Fong must take 5 ml of medicine three times a day for two weeks.

(b) When Su Fong has finished taking the medicine, how many millilitres are left in the bottle?

Answer: ..... ml

30. Here is a calendar for August 2017:

AUGUST

M	T	W	T	F	S	S
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

(a) How many Saturdays are there in August 2017?

Answer: .....

(b) On which day of the week will September 4th fall?

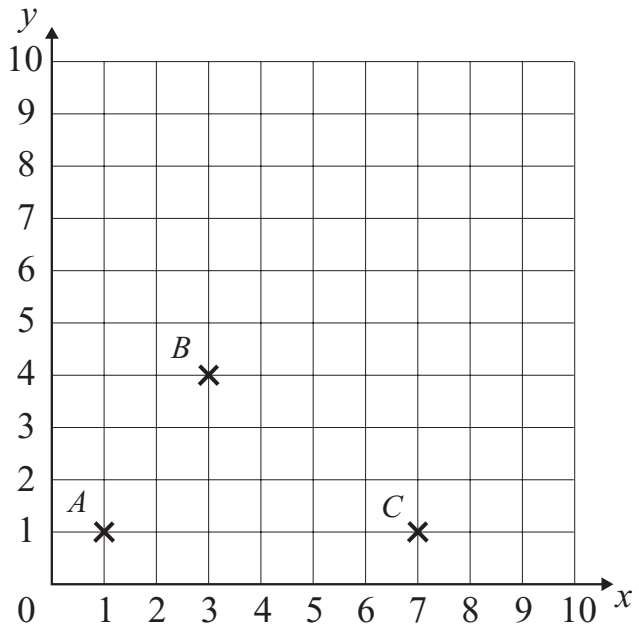
Answer: .....

There are twice as many August days before Adam's birthday as there are after his birthday.

(c) On which date in August does Adam's birthday fall?

Answer: .....

31. On the grid below, points A, B and C are plotted.



(a) Write down the co-ordinates of point B.

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

(b) Join B to A, and then A to C.

What sort of angle have you drawn?

Circle the correct answer:

acute right obtuse

(c) D is a point on the grid so that if you join D to B and C to D you get a parallelogram.

Write down the co-ordinates of D.

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

32. The ages of five children are 7, 9, 4, 5 and 10 years.

(a) What is their mean age?

Answer: ..... years

(b) What is the range of their ages?

Answer: ..... years

(c) In one year's time, what will be

(i) their mean age

Answer: ..... years

(ii) the range of their ages?

Answer: ..... years

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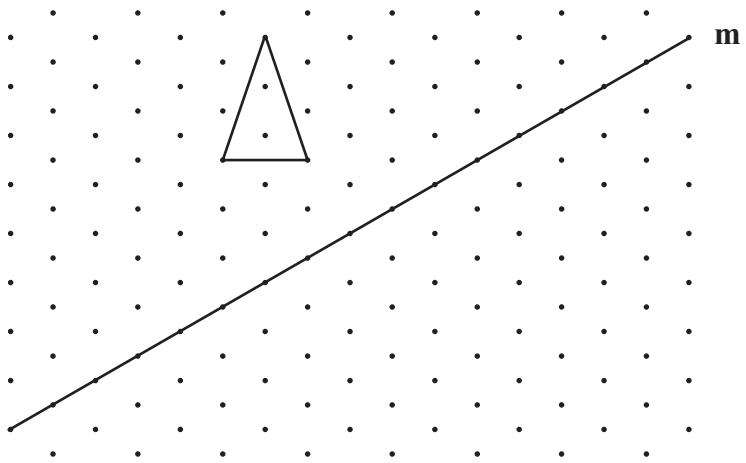
33. Reflect the triangle in the mirror line **m**.



34. Every day Violet and Rose set their watches right at 12 noon.

Rose's watch loses 10 seconds per hour.

Violet's watch gains 15 seconds per hour.

(a) At 2 p.m., how many seconds ahead of Rose's watch is Violet's watch?

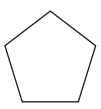
Answer: ..... seconds

(b) When Violet's watch shows 16:01:00, what time will Rose's watch show?

Answer: ..... : ..... : .....

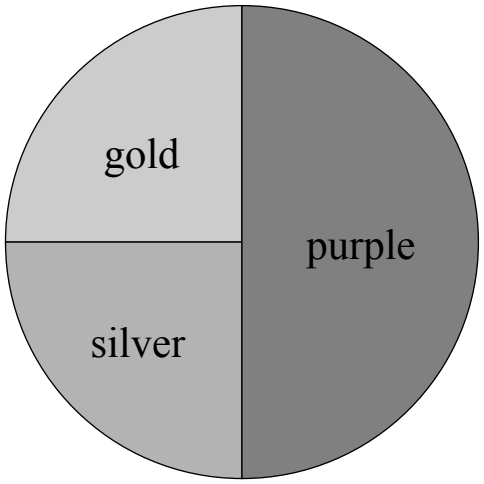
(c) Just before the girls set their watches right at 12 noon the following day, how many minutes will Violet's watch have gained?

Answer: ..... minutes

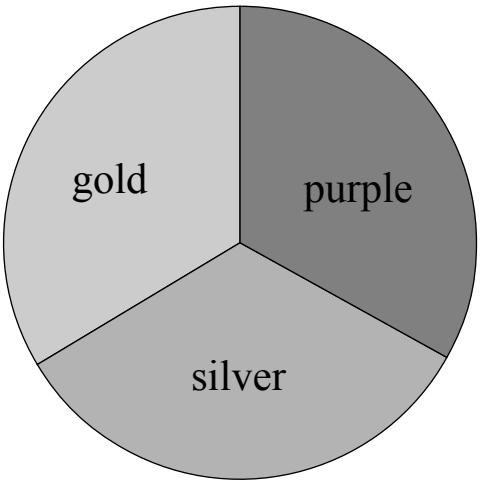


35. Barry and Aydin asked a total of 100 people 'What is your favourite colour?'

They recorded their results on pie charts.



Barry asked 40 people



Aydin asked 60 people

(a) What percentage of people asked by Barry chose gold?

Answer: ..... %

(b) How many people asked by Aydin chose gold?

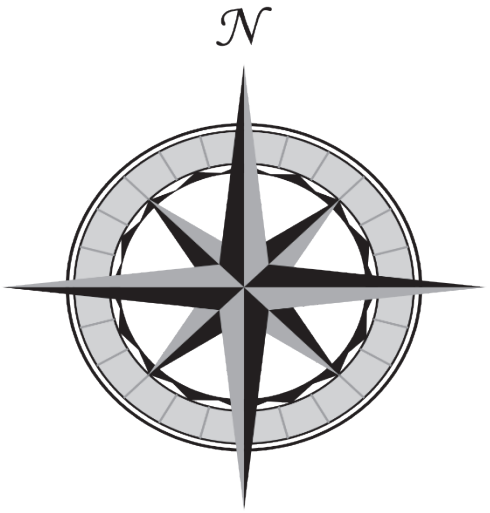
Answer: ..... people

(c) What was the most popular colour chosen by the 100 people?

Answer: .....

36. Stephanie has a compass.

(a) Label the points East, South and West on the compass below.



Stephanie faces North.

She has a fair coin which she tosses.

If the coin lands on Heads (H), she turns 45°clockwise.

If it lands on Tails (T), she turns 45°anticlockwise.

Stephanie throws Heads twice.

(b) In which direction is she now facing?

Answer: .....

Stephanie now faces East, throws the coin six times and gets H T H T H T.

(c) In which direction is she now facing?

Answer: .....

Stephanie now faces South West.

She throws the coin five times and ends up facing North.

(d) Circle **all** of the following which she could have thrown.

HHHHT TTTTT HHTTT HHTHH HTHHH

37. Eve is thinking of a two-digit number and gives the following clues:

My number is:

- two less than a multiple of 3
- a prime number
- two more than an multiple of 5
- less than 50

What is Eve's number?

Answer: .....

---

38. The numbers on opposite faces of a die always add up to 7

Roger stacks two dice one on top of the other.

(a) The number visible on the top face of the upper die is 3

What is the total of all the dots on the faces that Roger can see?

Answer: .....

(b) Roger jumbles up the two dice again and restacks them.

The total of dots visible is 34

What is the number showing on the top face of the upper die?

Answer: .....

39. Kasia has 42 sweets.

She keeps $\frac{1}{3}$ for herself and shares the rest equally between her two friends Maya and Lucie.

Lucie then gives $\frac{2}{7}$ of her sweets to Joan.

How many sweets does Lucie keep?

Answer: .....

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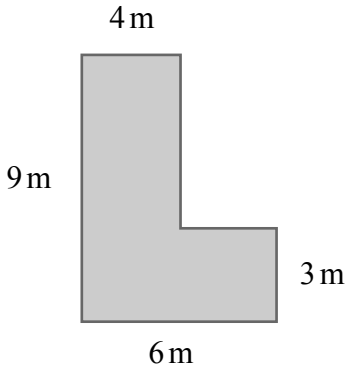
40. Leander has an L-shaped lawn (not drawn to scale!)

Some of its measurements are shown for you already.



(a) What is the perimeter of the lawn?

Answer: ..... m

(b) What is the area of the lawn?

Answer: ..... m^2

41. In the land of Zog the operation $ means 'multiply the two numbers together and then add the first number to the product.'

Examples:

4 $ 5 means 4 × 5 + 4 = 24

In the same way, 1 $ 2 = 1 × 2 + 1 = 3

(a) Find the value of 5 $ 7

Answer: .....

(b) What is the missing value to make the following statement correct?

7 $ ……. = 63

Answer: .....

(c) What is the missing value to make the following statement correct?

…… $ 9 = 50

Answer: .....

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42. Penny has lots of 10p coins, lots of 20p coins and lots of 50p coins.

List all the ways Penny can make 60p using her 10p, 20p and 50p coins.

Answer: .....

.....

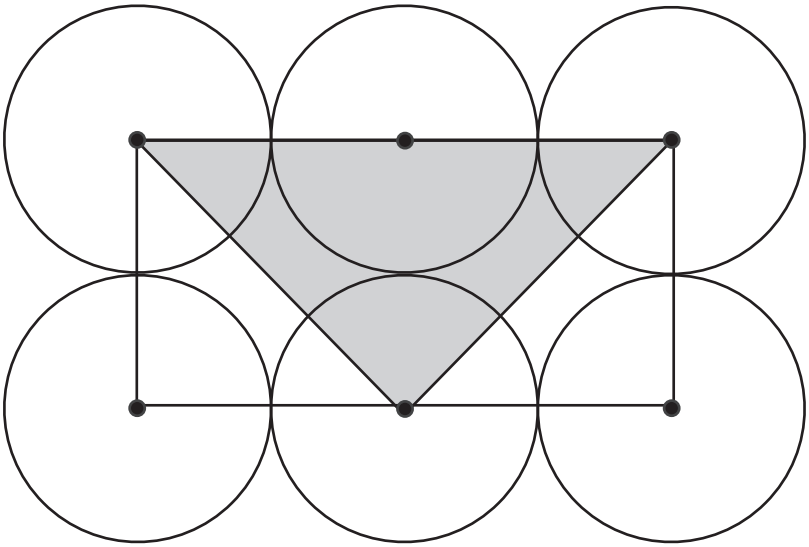
.....

.....

.....

43. Six touching circles of radius 5 cm are shown.

Find the area of the shaded triangle.



Answer: ..... cm^2

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44. Sarah bought 8 books and 3 pencils.

Rebecca bought 3 books and 8 pencils.

Sarah paid £1.00 more than Rebecca.

A pencil cost 40p. How much was a book?

Answer: ..... pence

45. If Jane gives £2 to Charlotte they will have equal amounts of money.

If instead Charlotte gives £4 to Jane then the ratio of Jane's money to Charlotte's will be 2:1

How much do Jane and Charlotte each have to start with?

Answer: Jane: £ ..... Charlotte: £ .....

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46. In the table below, the row and column totals are given.

Fill in the missing values:

A	B	A	B	**100**
C	A	B	D	
C	C	D	D	**120**
B	C	C	D	
	100		**125**	

47. Helen left home and drove 135 miles in 3 hours.

(a) If she travelled at the same speed, how far would she travel in 5 hours?

Answer: ..... miles

(b) If she travelled at the same speed, how long would she take to travel 60 miles?

Give your answer in hours and minutes.

Answer: ..... hours ..... minutes

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48. At the school fair, $\frac{3}{5}$ of the visitors were children.

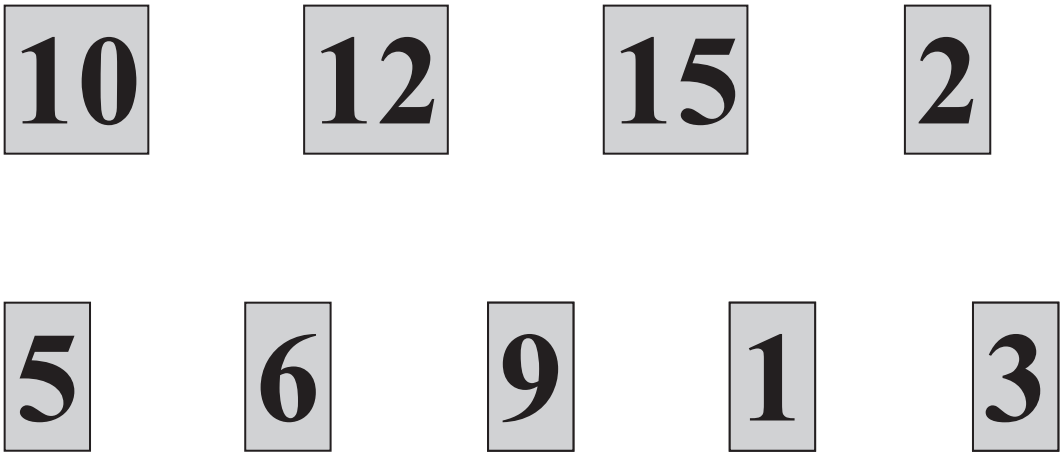
$\frac{1}{2}$ of the remaining visitors were men. There were 140 more children than men.

How many visitors were there at the fair?

Answer: ..... visitors

49. Using the number cards below, fill in the following table.

Each card must be used once and once only.



	factor of 10	**multiple of 3**	**factor of 18**
even			
odd			
prime			