

SURNAME FIRST NAME

JUNIOR SCHOOL SENIOR SCHOOL



Independent Schools
Examinations Board

COMMON ENTRANCE EXAMINATION AT 11+

MATHEMATICS

Monday 15 January 2018

Please read this information before the examination starts.

- This examination is 60 minutes long.
- Please try **all** the questions.
- Write your answers on the dotted lines.
- All working should be written on the paper.
- Tracing paper may be used.
- Calculators are not allowed.
- **Answers given as fractions should be reduced to their simplest form.**



1. Write down the answers to these questions.

(You may work them out in your head.)

(i) $67 + 35$

Answer: (1)

(ii) $383 - 132$

Answer: (1)

(iii) $56 \div 7$

Answer: (1)

(iv) $7 - 12$

Answer: (1)

(v) half of three hundred and eight

Answer: (1)

(vi) $8057 \div 10^2$

Answer: (1)

(vii) $908 + 98$

Answer: (1)

(viii) 34×3

Answer: (1)

2. (i) Write down the value of each of these Roman numerals.

(a) XXXVIII

Answer: (1)

(b) LXV

Answer: (1)

(ii) Work out the sum of XXXVIII and LXV
Give your answer in Roman numerals.

Answer: (2)

3. Exercise books are sold in packs of 8.

Mrs Jones needs to buy enough exercise books for everyone in Year 6.

There are 52 pupils in Year 6.

(i) How many packs of books should she buy?



Answer: (1)

A pack of 8 identical books costs £13.52

(ii) Work out the cost of one book.

Answer: £ (2)

4. Adam and share some sweets.

For every 7 sweets Adam gets, Beth gets 8

If they share 60 sweets, how many sweets does each person get?

Answer: Adam:

Beth: (2)

5. (a) Fill in the boxes below to make the following statements true.

(i) $2 - 10 + 13 = \boxed{}$ (1)

(ii) $23 - 5 \times \boxed{} = 13$ (1)

(iii) $4 \times 8 - \boxed{} = 9$ (1)

- (b) A symbol can stand for a number.

For example, if $\mathfrak{H} = 5$, then $2 \times \mathfrak{H} = 10$

Work out the value of \odot in the statement below.

$$6 + 5 \times \odot = \odot \times 7$$

Answer: $\odot = \dots\dots\dots$ (1)

6. Work out

(i) $529 + 682$

Answer: (2)

(ii) $983 - 694$

Answer: (2)

(iii) $7716 \div 12$

Answer: (2)

7. (i) Round 7986 to the nearest 10

Answer: (1)

(ii) Round 81.264 to 1 decimal place.

Answer: (1)

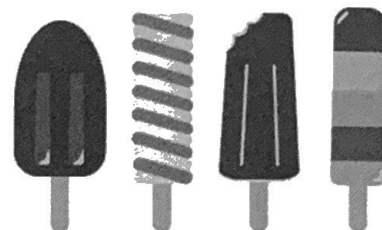
8. (i) Work out 15×45

Answer: (2)

(ii) A multipack of 15 identical lollies costs £4.95

One of these lollies costs 45 pence if bought individually.

How much cheaper is it to buy a multipack of 15 lollies rather than 15 lollies individually?



Answer: £ (2)

9. John takes 25 minutes to walk to school.

He cycles twice as fast as he walks.

How long will it take John to cycle to school?

Answer: minutes (1)

10. Use the table below to answer the questions which follow.

1 inch = 2.5 centimetres
1 foot = 12 inches
1 mile = 1.6 kilometres
1 kilogram = 2.2 pounds

(i) Write 1 foot in centimetres.

Answer: cm (2)

(ii) Write 6 feet in metres.

Answer: m (2)

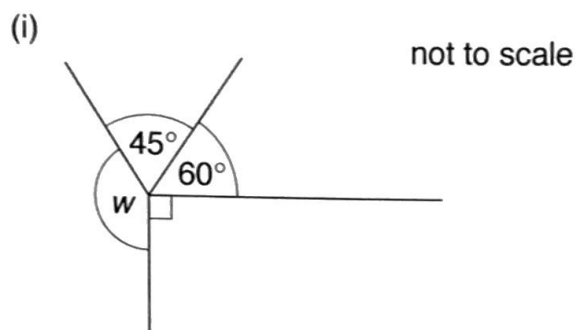
(iii) Write 15 miles in kilometres.

Answer: km (2)

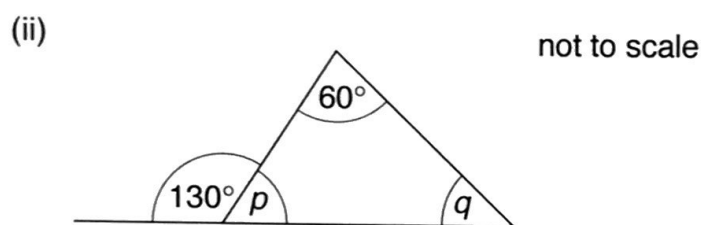
(iv) Write 44 pounds in kilograms.

Answer: kg (2)

11. (a) Work out the size of each of the missing angles.



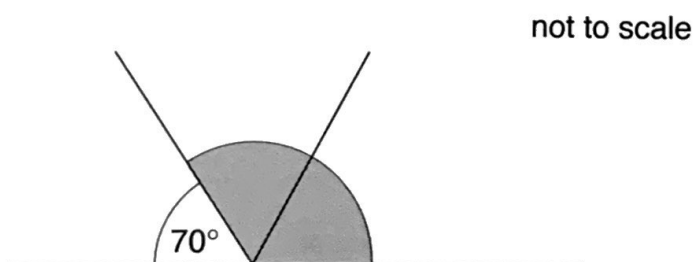
Answer: $w =$ (2)



Answer: $p =$
 $q =$ (2)

(b) The two shaded angles are equal.

Work out the size of one of the shaded angles.



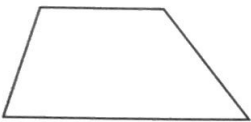

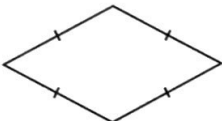
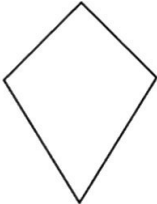
Answer: (2)

(c) Using your protractor, accurately draw angle $ABC = 110^\circ$



(1)

12. Match these shapes to their names and their properties, by linking them with arrows.
(Two of the arrows have been drawn for you.)

name	shape	properties
parallelogram		two pairs of opposite sides equal in length
kite		all four sides are equal in length
trapezium		exactly one pair of equal angles
rhombus		exactly one pair of parallel sides

(3)

13. (i) Fill in the missing numbers in this sequence.

3, 10, 17,, 31,

(1)

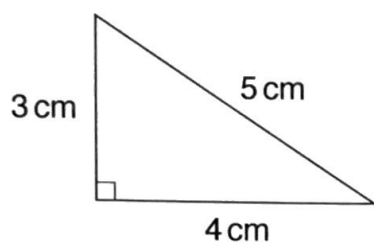
- (ii) Write down the rule for finding the next term in the sequence.

rule:

(1)

14. (a) Work out the area of this triangle.

not to scale

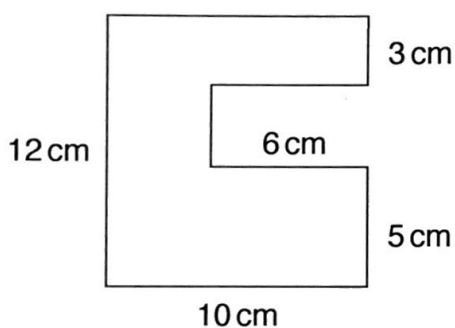


Answer: cm^2 (2)

- (b) Look at the shape below.

- (i) Work out its perimeter.

not to scale



Answer: cm (2)

- (ii) Work out its area.

Answer: cm^2 (2)

- (c) A square has sides of length 6 cm.

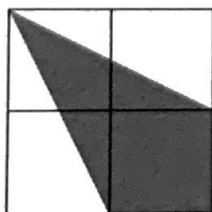
How long is its perimeter?

Answer: cm (1)

- (d) The diagram below is drawn on a centimetre-squared grid.

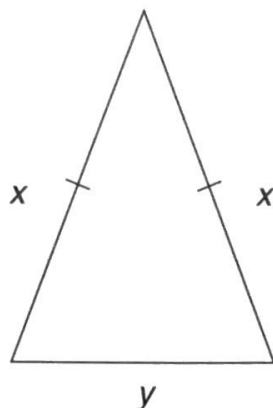
Work out the shaded area.

not to size



Answer: cm^2 (1)

15. (a) The perimeter of this triangle is 20 centimetres.



Jack correctly says, 'Each length x could be 6 centimetres and length y could be 8 centimetres.'

Write down 2 alternatives for the lengths x and y

$x = \dots\dots\dots$ cm, $y = \dots\dots\dots$ cm

$x = \dots\dots\dots$ cm, $y = \dots\dots\dots$ cm (2)

- (b) A car has 4 wheels and a motorbike has 2 wheels.

- (i) How many wheels do 3 cars and 5 motorbikes have in total?

Answer: $\dots\dots\dots$ wheels (1)

Let the number of cars be c and the number of motorbikes m

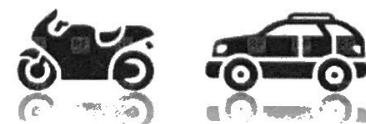
A formula for the total number of wheels is

$$w = 4c + 2m$$

There are 12 wheels in the garage, all belonging to cars or motorbikes.



- (ii) How many cars are there, and how many motorbikes?

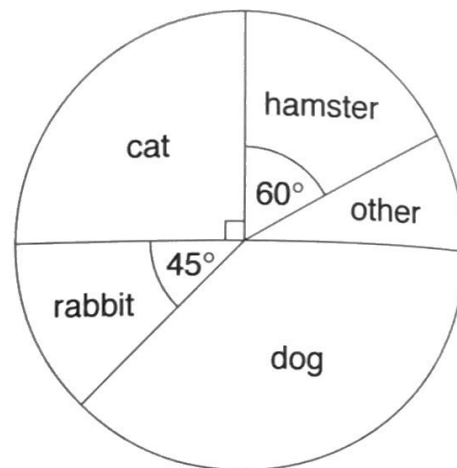


Give two different possible answers.

$c = \dots\dots\dots$, $m = \dots\dots\dots$

$c = \dots\dots\dots$, $m = \dots\dots\dots$ (2)

16. The pie chart represents data collected in a survey of favourite pets of a sample of school children.
Half of the children preferred dogs or rabbits.



- (i) Write down the angle of the sector representing the number of children who preferred 'other' pets.

Answer: (1)

120 children completed the survey.

- (ii) How many children preferred cats?

Answer: (1)

- (iii) What fraction of children preferred rabbits?
Give your answer in its simplest form.

Answer: (1)

There are 480 children in the school where the survey was carried out.

- (iv) Use the pie chart to estimate how many children in the school would prefer rabbits.

Answer: (2)



17. The start and finish times of a film are shown on this poster.
How long does the film last?



**Dr Reflex
Strikes Back!**

Start: 6:35 p.m.
End: 9:14 p.m.

Answer: hours minutes (2)

18. The temperatures below in $^{\circ}\text{C}$ were taken at 10 a.m. in several countries.

5 -2 14 21 -6 7

- (i) Write these temperatures in order from coldest to hottest.

Answer: , , , , (2)

- (ii) What was the difference between the hottest and coldest temperatures?

Answer: $^{\circ}\text{C}$ (1)

- (iii) The coldest temperature was measured inaccurately.
It should have been 7 degrees lower.

Write down this new temperature.

Answer: $^{\circ}\text{C}$ (1)

19. (a) Work out

(i) $\frac{1}{4}$ of 48

Answer: (1)

(ii) $\frac{2}{3}$ of 27

Answer: (1)

(b) Write $\frac{15}{4}$ as a mixed number.

Answer: (1)

20. (i) Work out $\frac{2}{9} \times \frac{3}{4}$

Answer: (2)

(ii) Work out the mean of $4\frac{1}{3}$ and $5\frac{2}{3}$

Answer: (2)

(iii) (a) Write $\frac{1}{5}$ as a decimal.

Answer: (1)

(b) Work out $\frac{3}{4} - \frac{1}{5}$

Give your answer as a decimal.

Answer: (2)

22. On Saturday, Maya spent $\frac{3}{5}$ of her birthday money. She then had £6.40 left.
- How much did she spend?

$\frac{5}{8}$

$$\frac{3}{4}$$

$$\frac{9}{16}$$

50%

Answer: , , , (3)
smallest **largest**

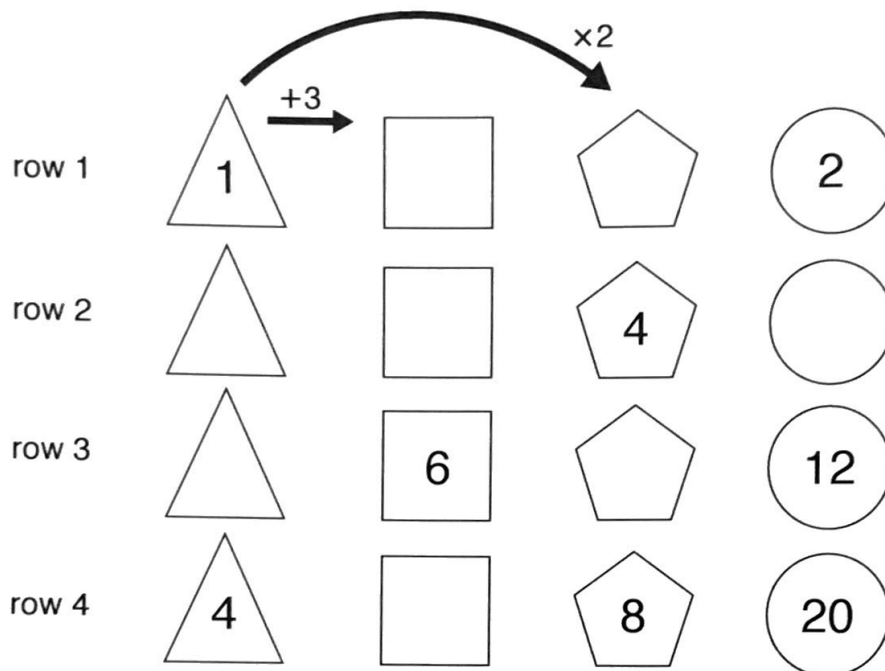
22. On Saturday, Maya spent $\frac{3}{5}$ of her birthday money.
She then had £6.40 left.
How much did she spend?

Answer: £ (2)

S.A. 28118203

23. In each row in the grid below,

- the number in the square is 3 more than the number in the triangle.
- the number in the pentagon is double the number in the triangle.

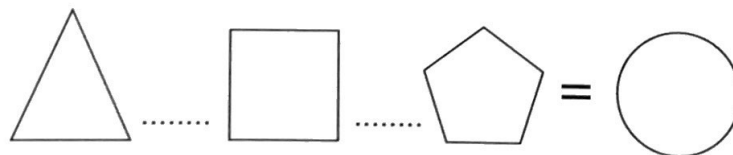


(i) Fill in the missing numbers in the triangles, squares and pentagons.

(3)

There is a rule linking the numbers in the triangles, squares and pentagons in each row, with the circles.

(ii) Show this rule on the dotted lines by choosing the appropriate symbols from $+$ $-$ \times \div



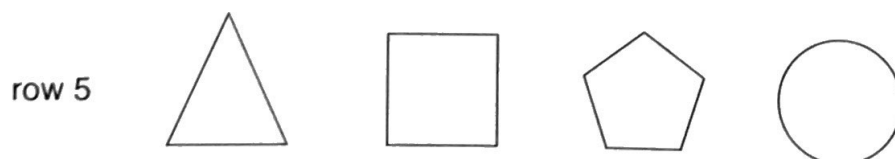
(1)

(iii) Fill in the missing number in the **circle** in row 2

(1)

(iv) The fifth row is shown below.

Fill in the missing numbers.



(2)

(Total: 100 marks)