SURNAME ..... FIRST NAME .....

JUNIOR SCHOOL ..... SENIOR SCHOOL .....

ISEB

Independent Schools Examinations Board

COMMON ENTRANCE EXAMINATION AT 11+

MATHEMATICS

Monday 21 January 2019

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.**

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1. Write down the answers to these questions.
(You may work them out in your head.)

(i) 47 + 72

Answer: ..... (1)

(ii) 687 − 523

Answer: ..... (1)

(iii) 108 ÷ 9

Answer: ..... (1)

(iv) $3^2 - 11$

Answer: ..... (1)

(v) 324.5 ÷ 100

Answer: ..... (1)

(vi) a quarter of eight hundred and twenty-four

Answer: ..... (1)

(vii) 27 × 4

Answer: ..... (1)

(viii) 1089 + 98

Answer: ..... (1)

2. The *Corner Café* sells coffee.

A customer who buys 9 coffees will get a 10th coffee free.

(i) What is the **least** a customer could spend to get a free cup of coffee?

Coffee menu

Americano	£1.85
Cappuccino	£2.20
Café Latte	£2.20
Flat White	£2.45

Answer: £ ..... (2)

Mr Wiles bought 7 coffees, which cost him £17.15

He buys the same type of coffee every time.

(ii) What type of coffee does Mr Wiles buy every time?

Answer: ..... (2)

3. (a) Write the following Roman numerals as normal numbers:

(i) MMI

Answer: ..... (1)

(ii) LXXIX

Answer: ..... (1)

(b) Marcus is XIV years old and Lucia is XII years old.

What is the sum of their ages?

Give your answer in Roman numerals.

Answer: ..... (2)

4. (i) Round 35 495 to the nearest 1000

Answer: ..... (1)

(ii) Round 0.58 to 1 decimal place.

Answer: ..... (1)

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

(i) $3 + 4 \times 7 =$ ☐ (1)

(ii) $7 \times 5 -$ ☐ $\times 5 = 3 \times 5$ (1)

(b) Letters can stand for numbers.
For example, if $w = 4$, then $3 \times w = 12$
It is usual to write $3 \times w$ as $3w$

Work out the value of the unknown letter in each of the equations below.

(i) $8y - 3 = 37$

Answer: $y =$ ..... (2)

(ii) $20 - t = t + 6$

Answer: $t =$ ..... (1)

6. Work out

(i) 378 + 622

Answer: ..... (2)

(ii) 746 − 589

Answer: ..... (2)

(iii) 485 × 37

Answer: ..... (2)

(iv) 6948 ÷ 12

Answer: ..... (2)

7. (i) Write $4\frac{3}{4}$ litres in millilitres.

Answer: ..... ml (1)

(ii) Red paint and white paint are mixed to make pink paint.

Sally wants to make 4 litres of pink paint.

She follows the instructions shown in the box on the right.

Instructions for making pink paint

For every 300 ml of red paint, add 200 ml of white paint.

(a) How much red paint and how much white paint should Sally use?

Give your answers in millilitres.

Answer: red paint ..... ml

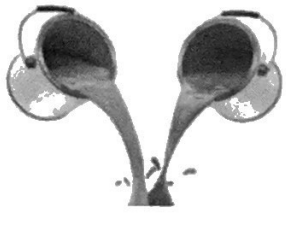
white paint ..... ml (2)

Peter has 2.5 litres of red paint and 1.4 litres of white paint.

(b) How much pink paint can Peter make?

Give your answer in litres.

Answer: ..... litres (2)



8.

Pentrose Supermarket	Hexbury Supermarket
Flour £1.60 per bag Buy 4 bags, get 1 free!	Flour £1.60 per bag Buy 5 bags, get 25% discount!

Sally needs 5 bags of flour.

Which supermarket is cheaper for Sally's flour and by how much?

Answer: ..... supermarket is cheaper by ..... pence (3)

9. In the number patterns below, the numbers go up or down in equal steps.

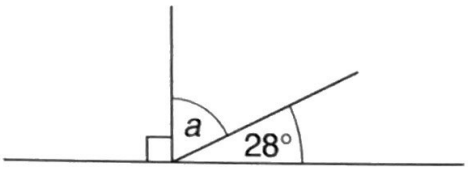
Fill in the missing numbers.

(i) 4, ..., 10, 13, ... (1)

(ii) ....., 8, 4, 0, $^{-}4$ (1)

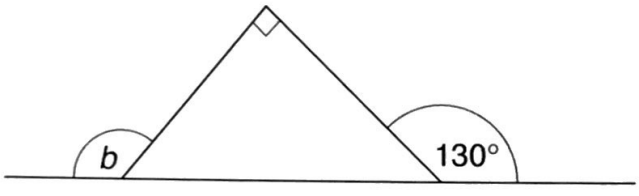
(iii) 3, ..., ..., ..., 9 (2)

10. (a) Work out the size of the angles marked *a* and *b*



the diagrams in this question are not to scale

Answer: a = ... ° (1)



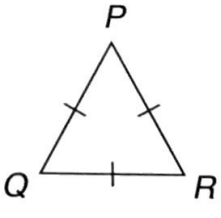
Answer: b = ... ° (2)

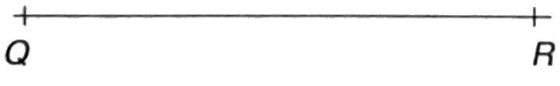
(b) (i) What is the size of each angle in an equilateral triangle?

Answer: ..... ° (1)

(ii) Using your protractor, construct accurately equilateral triangle *PQR*.

(Side QR has been drawn for you.)

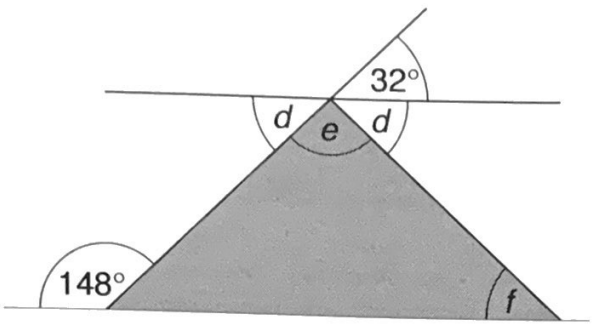




(2)

(c) (i) The two angles marked d in the diagram below are equal.

Work out the size of the missing angles.



not to scale

Answer: d = ... °

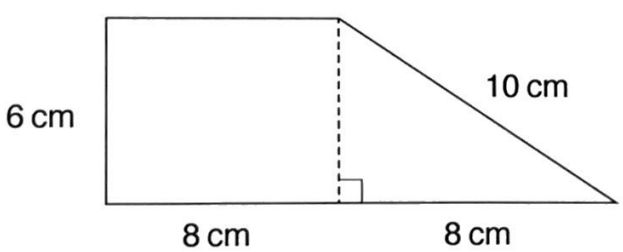
e = ... °

f = ... (3)

(ii) What is the special name given to the shaded triangle above?

Answer: ..... (1)

11. The shape below is made from a rectangle and a right-angled triangle.



not to scale

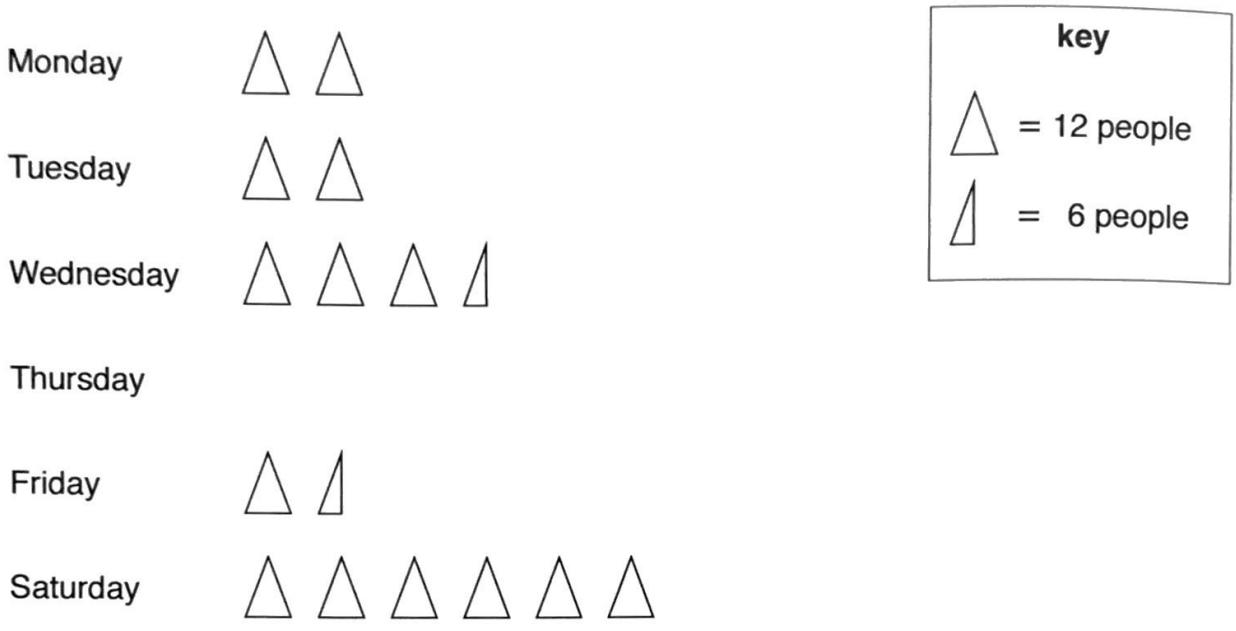
(i) Work out the area of the shape.

Answer: ..... cm^2 (2)

(ii) Work out the perimeter of the shape.

Answer: ..... cm (2)

12. The pictogram below shows how many people visited a local library on each day of one week.



(i) How many people visited the library on Wednesday?

Answer: ..... (1)

(ii) On Thursday, 60 people visited the library.
Show this on the pictogram. (1)

(iii) What was the difference between the number of visitors on Friday and Saturday?

Answer: ..... (2)

(iv) What was the total number of visitors to the library that week?

Answer: ..... (2)

13. Catherine is monitoring the mass of each of her five cats.
Every month, she records the change in the mass of each cat.
The table below shows the change in mass of Catherine's cats since last month.

cat's name	change in mass (g)
Coricopat	+95
Growltiger	-150
Macavity	+125
Mungojerry	0
Rumpleteezer	-50

(i) Which cat's mass has stayed the same?

Answer: ..... (1)

(ii) By how many grams did Coricopat's mass increase?

Answer: ..... g (1)

(iii) Which cat had the greatest change in mass?

Answer: ..... (1)

(iv) Work out the mean change in mass for the five cats.

Answer: ..... g (2)

14. (a) Work out

(i) $\frac{1}{5}$ of 60

Answer: ..... (1)

(ii) $\frac{3}{4}$ of 60

Answer: ..... (1)

(b) Write $\frac{24}{7}$ as a mixed number.

Answer: ..... (1)

15. (i) Work out $\frac{5}{12} \times \frac{3}{10}$

Give your answer in its simplest form.

Answer: ..... (2)

(ii) (a) Write $\frac{2}{5}$ as a decimal.

Answer: ..... (1)

(b) Work out $1\frac{1}{4} - \frac{2}{5}$

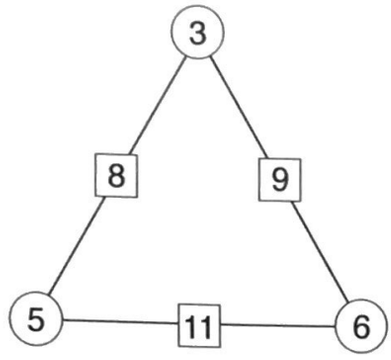
Answer: ..... (2)

16. Arrange these numbers in order from **smallest** to **largest**.

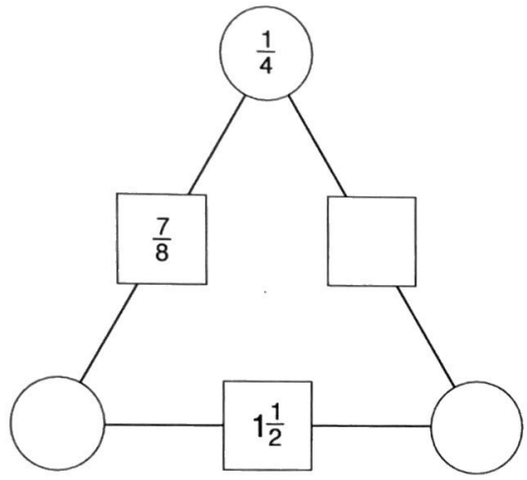
$\frac{2}{3}$ $\frac{3}{4}$ $\frac{7}{12}$ 78%

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

17. In these number triangles, the sum of the two numbers in the circles gives the number in the square between them.



Fill in the missing circles and squares in the number triangle below.



(3)

18. Roger ate $\frac{5}{7}$ of his sweets while watching a film.
He then had 18 sweets left.

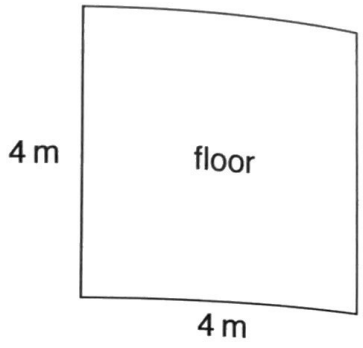
How many sweets did Roger eat during the film?

Answer: ..... (2)

19. A floor measures 4 m by 4 m.

The floor will be tiled with rectangular tiles measuring 80 cm by 50 cm.

There are no gaps between the tiles.



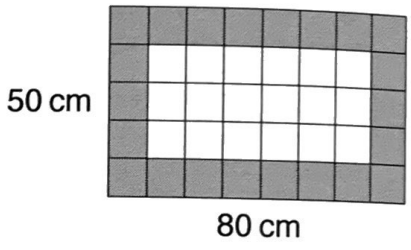
(i) Work out how many tiles are needed to cover the floor.

Answer: ..... tiles (2)

Each tile has the same pattern of identical squares.

Some of the squares are shaded grey.

The diagram shows the pattern on one tile.



(ii) What fraction of each tile is shaded grey?

Answer: ..... (2)

20. A penguin has 2 legs, a donkey has 4 legs and a crab has 8 legs.

(i) How many legs do 3 penguins, 4 donkeys and 5 crabs have altogether?

Answer: ..... legs (1)

Let the number of penguins be p, the number of donkeys d and the number of crabs c

A formula for the total number of legs L is

$$L = 2p + 4d + 8c$$

(ii) If $L = 42$, $p = 5$ and $d = 2$, work out the value of c

Answer: $c =$ ..... (2)

21. Below is a train timetable from Norwich to Sheringham.

Norwich to Sheringham		1st train	2nd train	3rd train	4th train	5th train	6th train
Norwich	*depart*	05:50	07:17	08:26	09:32	10:39	11:34
Salhouse	*depart*	06:00	07:27	08:36	–	10:49	–
Hoveton & Wroxham	*depart*	06:05	07:32	08:41	09:46	10:54	11:57
Worstead	*depart*	06:12	07:39	08:48	09:53	11:01	–
North Walsham	*arrive*	06:18	07:45	08:54	09:58	11:07	12:07
	depart	06:23	07:48	08:57	10:01	11:10	12:09
Gunton	*depart*	06:29	07:54	09:03	10:07	11:16	–
Roughton Road	*depart*	06:36	08:00	09:10	–	11:23	–
Cromer	*arrive*	06:41	08:05	09:14	10:17	11:27	12:24
	depart	06:44	08:08	09:18	10:20	11:30	12:27
West Runton	*depart*	06:48	08:12	09:22	10:24	11:34	12:31
Sheringham	*depart*	06:53	08:17	09:26	10:28	11:38	12:36

(i) For how many minutes does the 1st train stop in North Walsham?

Answer: ..... minutes (1)

(ii) If you had to be in Cromer by 10 a.m., which is the latest train you could catch from Norwich?

Answer: ..... (1)

(iii) How long does the 4th train take to travel from Worstead to West Runton?

Answer: ..... minutes (1)

(iv) Which is the fastest train from Norwich to Sheringham?

Answer: ..... (2)

22. (a) Alan is thinking of a number that is both a multiple of 6 and a factor of 108

What number might Alan be thinking of?
Give two possible answers.

Answer: ..... or ..... (2)

(b) Alex is thinking of a square number less than 50 that is 1 more than a multiple of 7

What number is Alex thinking of?

Answer: ..... (1)

(c) Alice is thinking of a number between 30 and 40
When she divides the number by 2, there is a remainder of 1
When she divides the number by 3, there is a remainder of 2
When she divides the number by 4, there is a remainder of 3

What number is Alice thinking of?

Answer: ..... (1)

(Total: 100 marks)