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

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

ISEB

Independent Schools Examinations Board

COMMON ENTRANCE EXAMINATION AT 11+

MATHEMATICS

Monday 6 November 2017

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) 27 + 194

Answer: ..... (1)

(ii) 2005 – 1993

Answer: ..... (1)

(iii) Double 490

Answer: ..... (1)

(iv) 25% of £64

Answer: £ ..... (1)

(v) 4 × 313

Answer: ..... (1)

(vi) 832 ÷ 8

Answer: ..... (1)

(vii) 23.45 × 100

Answer: ..... (1)

(viii) 343 + 957

Answer: ..... (1)

2. Marcus has the following cards showing Roman numerals:

VI	L	IX

(i) What does **VI** represent?

Answer: ..... (1)

(ii) What does **L** represent?

Answer: ..... (1)

(iii) Marcus correctly finds the **sum** of the numbers on the three cards.
He writes this in Roman numerals.

What does he write?

Answer: ..... (2)

3. Here is the beginning of a number pattern:

1 8 15 22 29 36 43 ....

(i) What is the first multiple of 5 in the pattern?

Answer: ..... (1)

(ii) What is the first square number in the pattern?

Answer: ..... (1)

(iii) What are the next two numbers in the pattern?

Answer: ..... and ..... (1)

(iv) Will the 20th term in the sequence be an odd number or an even number?
Explain your answer.

Answer: ..... because .....

..... (1)

4. (a) (i) Write down all the factors of 30

Answer: ..... (2)

(ii) Work out the common factors of 18 and 30

Answer: ..... (2)

(b) Write down all the prime numbers between 15 and 25

Answer: ..... (1)

(c) The first two cube numbers are 1 and 8
Write down the third cube number.

Answer: ..... (1)

5. A box of 8 mini-eggs costs £1.84

(i) What is the cost of one mini-egg?
Give your answer in pence.

Answer: ..... p (2)

Jenny has a £10 note.

(ii) (a) How many boxes of mini-eggs can she buy?

Answer: ..... (1)

(b) How much change should she receive?

Answer: ..... p (2)

6. Calculate

(i) 1537 + 12 482

Answer: ..... (2)

(ii) 17 417 − 1865

Answer: ..... (2)

(iii) 243 × 23

Answer: ..... (3)

(iv) 3124 ÷ 11

Answer: ..... (2)

7. (i) Work out

(a) 600×12

Answer: ..... (1)

(b) 75% of 120

Answer: ..... (2)

(ii) Use the statements *'is less than'* *'is equal to'* *'is greater than'* to fill the boxes below.

You may use each statement more than once.

(The first box has been done for you.)

12	*is less than*	2×10
8×900		600×12
455×10		$9000 \div 2$
$5^2 + 6^2$		75% of 120

(3)

8. Six children are at a party.
They are **5**, **6**, **7**, **11**, **12** and **13** years old.

(i) What is their mean age?

Answer: ..... (2)

Twin sisters, aged 5, join the party.

(ii) What is the new mean age?

Answer: ..... (2)

9. (i) Write 3.75 litres in millilitres.

Answer: ..... ml (1)

(ii) Write 656 centimetres in metres.

Answer: ..... m (1)

(iii) Write 2050 grams in kilograms.

Answer: ..... kg (1)

10. (a) Write $2\frac{3}{7}$ as an improper fraction.

Answer: ..... (1)

(b) Write $4\frac{3}{10}$ as a decimal.

Answer: ..... (1)

(c) Write 8.2 as a mixed number.

Answer: ..... (1)

11. Writing answers in their simplest, mixed number form where appropriate, work out

(i) $\frac{13}{12} - \frac{7}{12}$

Answer: ..... (1)

(ii) $\frac{1}{2} + \frac{3}{4} + \frac{1}{8}$

Answer: ..... (2)

(iii) $\frac{1}{2} \times \frac{4}{5}$

Answer: ..... (1)

12. Peter has 40 socks in a drawer.
$\frac{2}{5}$ are blue, $\frac{1}{4}$ are red and the rest are black.

(i) How many socks are blue?

Answer: ..... (1)

(ii) How many socks are black?

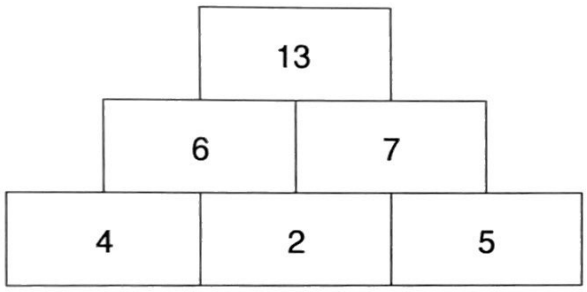
Answer: ..... (2)

13. There are 15 girls in Jane's class.
$\frac{3}{8}$ of her class are boys.

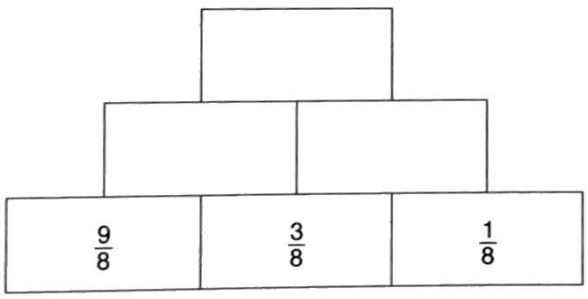
How many of Jane's class are boys?

Answer: ..... (2)

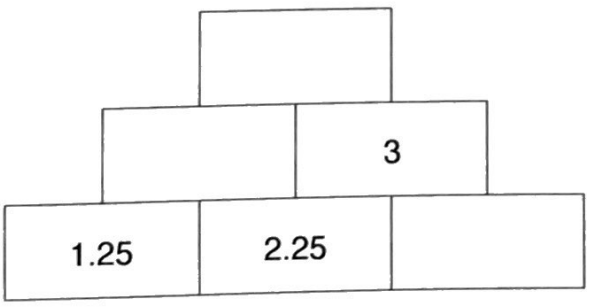
14. Each number in the addition wall is the sum of the two numbers below it.
For example $4 + 2 = 6$ and $6 + 7 = 13$



Fill in the missing numbers in these two addition walls.

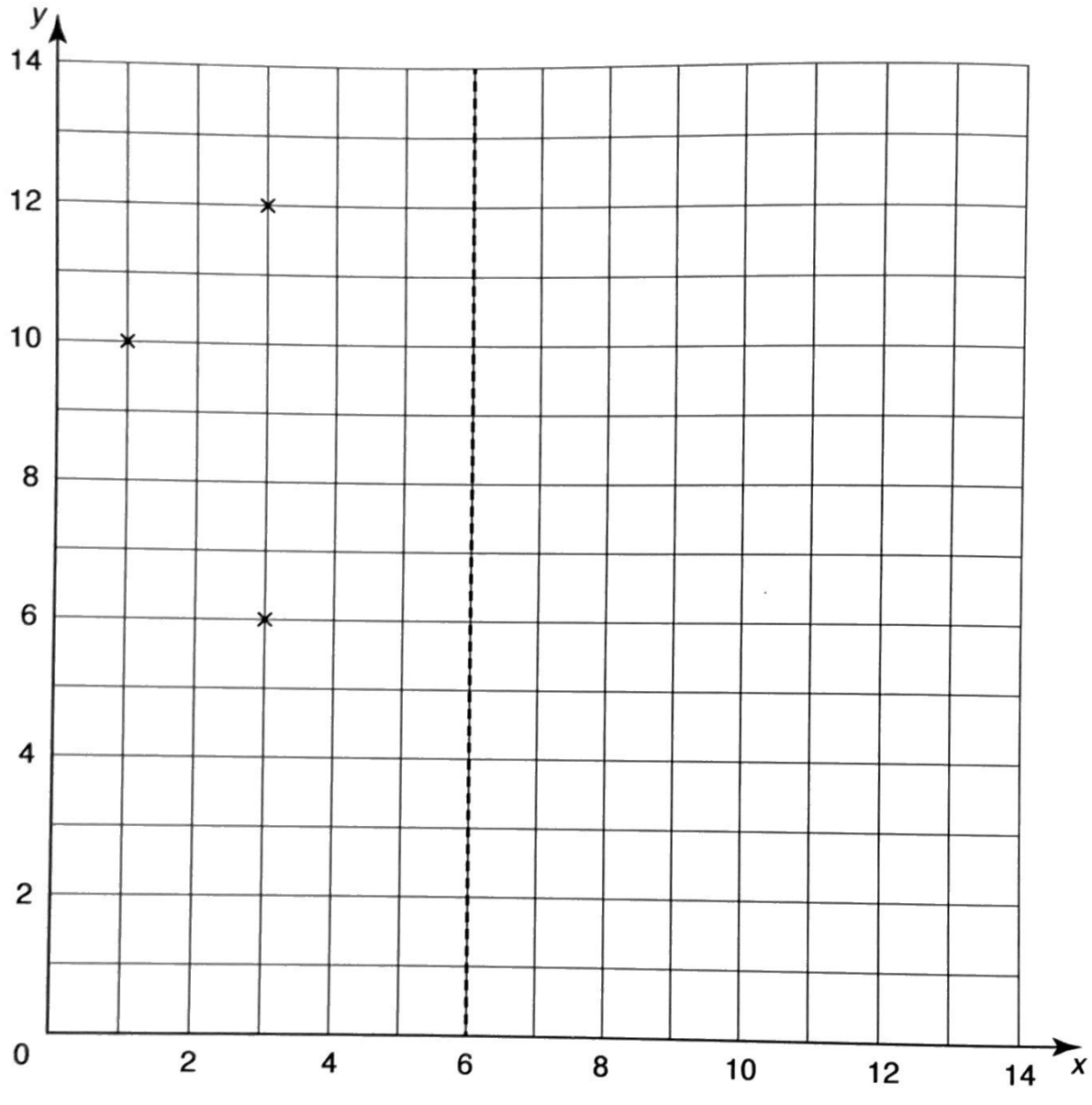


(2)



(2)

15. The points (1, 10), (3, 12) and (3, 6) have been plotted on the centimetre grid.



(i) Plot the point (5, 10) and join the four points to form a quadrilateral.
Label the shape **A**. (1)

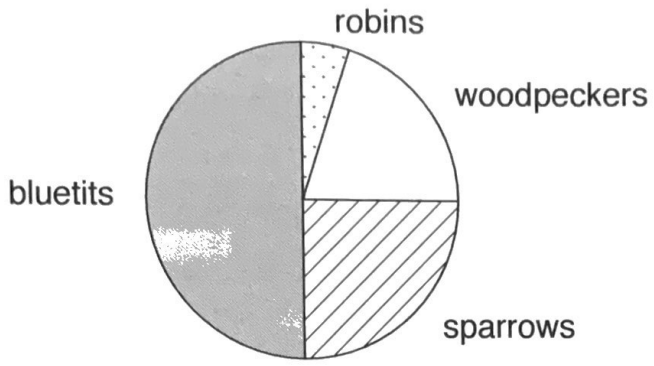
(ii) Draw any lines of symmetry on shape **A**. (1)

(iii) What is the area of shape **A**?

Answer: ..... cm^2 (1)

(iv) Reflect shape **A** in the dashed line.
Label the new shape **B**. (2)

16. Hannah makes this pie chart showing the number of birds visiting her bird table in a month.

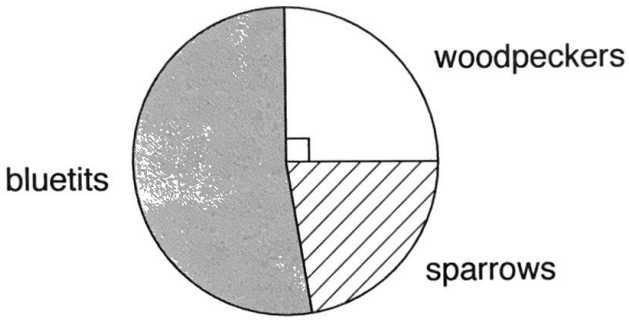


(i) Altogether Hannah saw 180 birds.
20% were woodpeckers.

How many woodpeckers did she see?

Answer: ..... (2)

Jamila makes this pie chart showing the number of birds visiting her bird table in the same month.



(ii) Jamila saw 20 woodpeckers.

How many birds did she see altogether?

Answer: ..... (1)

(iii) Jamila saw 18 sparrows.

How many bluetits did she see?

Answer: ..... (1)

Sarah says, 'Jamila saw more bluetits than Hannah.'

(iv) Is Sarah correct?
Circle yes or no, giving a reason for your answer.

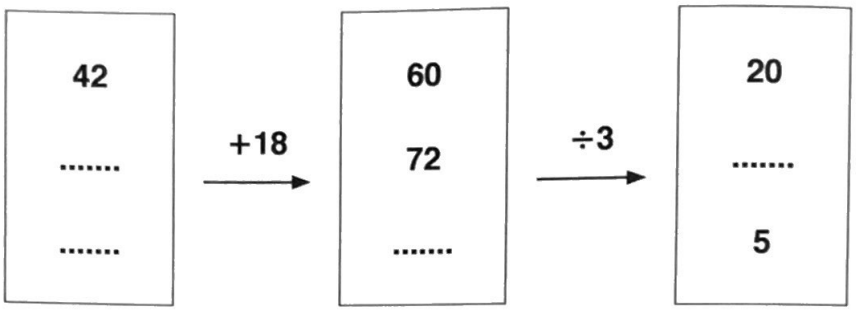
Answer: yes/no reason: .....

..... (1)

17. (a) This number machine changes numbers according to the rule

add 18 and then divide by 3

Fill in the missing numbers on the dotted lines.



(2)

(b) Laura chooses a number.
She multiplies it by 5 and then subtracts 11
The result is 29

What number did she start with?

Answer: ..... (1)

(c) David's number machine adds 11 and then divides by 2

(i) David inputs 12

What is his output?

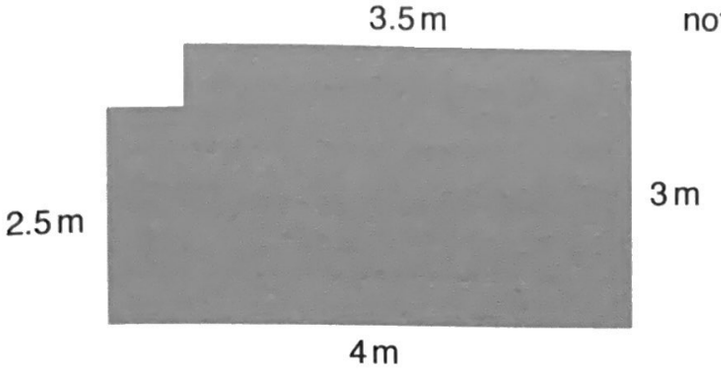
Answer: ..... (1)

(ii) For each of David's next inputs, the output is a whole number.

What does this tell you about his input numbers?

Answer: ..... (1)

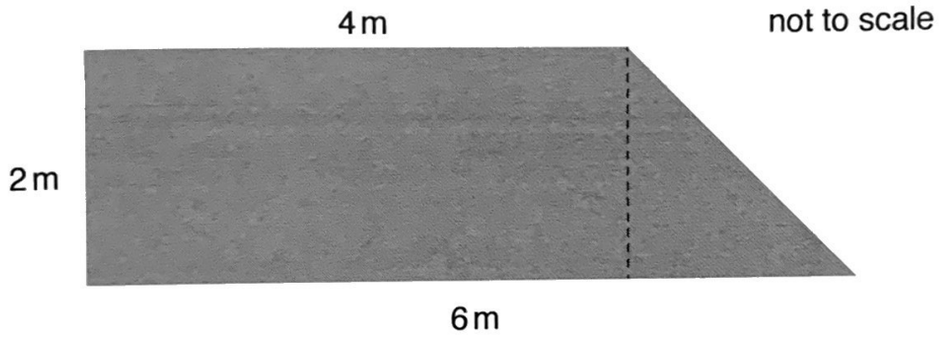
18. (a) Sara has drawn a sketch of her pond.



Work out the perimeter of Sara's pond.

Answer: ..... m (2)

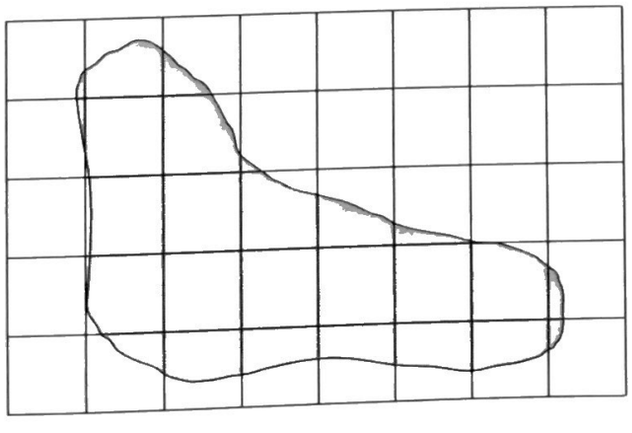
(b) Tim has drawn a sketch of his pond.



Work out the area of Tim's pond.

Answer: ..... m^2 (2)

(c) Anna has drawn a plan of her pond.
The area of each square on her plan represents 1 m^2 in real life.



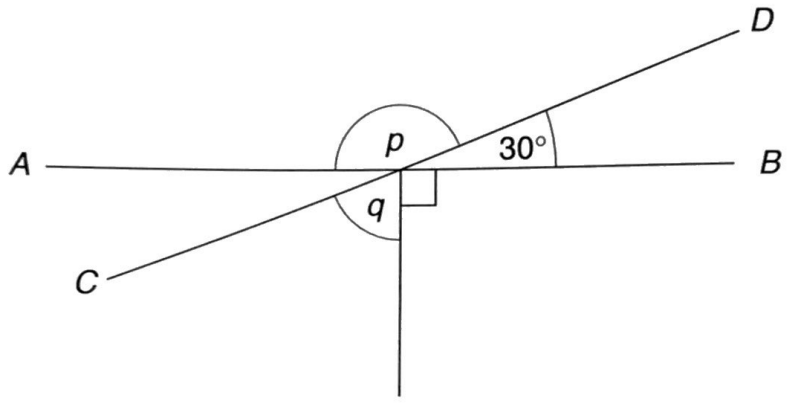
Estimate the area of Anna's pond.

Answer: ..... m^2 (1)

19. Work out the sizes of the missing angles in the diagrams below.

AB and *CD* are straight lines.

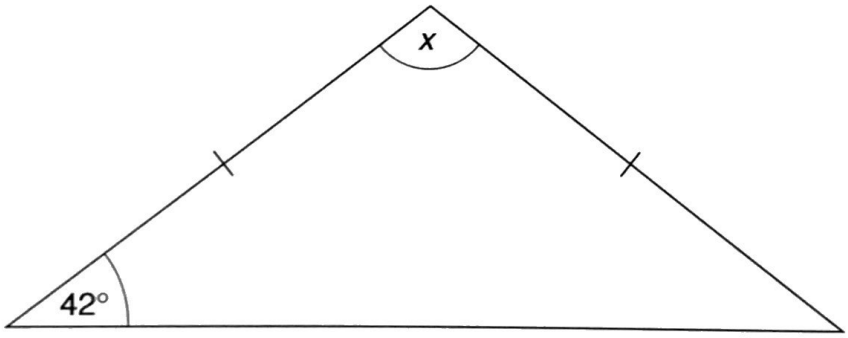
not to scale



Answer: p = ... °

q = ... °

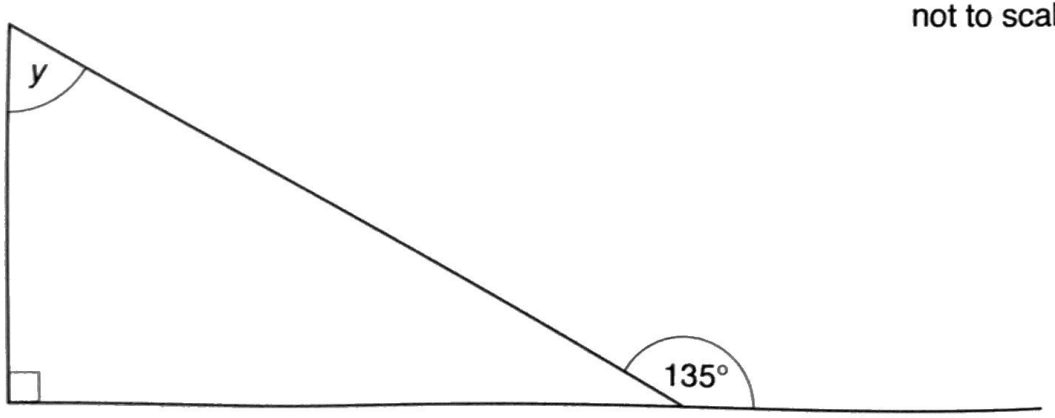
not to scale



isosceles triangle

Answer: x = ... °

not to scale

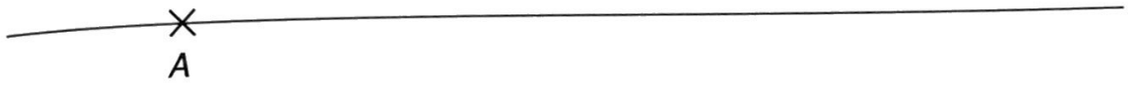


Answer: y = ... ° (6)

20. A triangle *ABC* has equal sides of length 6 cm.

Draw triangle *ABC* accurately.

A has been marked for you.



(2)

21. Use the number statement below to work out the answers to the following calculations:

$$415 \times 16 = 6640$$

(i) $4150 \times 160 =$ Answer: ..... (1)

(ii) $41.5 \times 16 =$ Answer: ..... (1)

(iii) $66400 \div 415 =$ Answer: ..... (1)

PLEASE TURN OVER FOR QUESTION 22

22. Letters can be used to represent numbers.

For example, $a + 20 = 36$

therefore $a = 16$

What numbers do the letters in these statements represent?

(i) $b - 23 = 14$

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

(ii) $c + c + 22 + c = 55$

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

(iii) $112 - 2 \times d = 32$

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

(Total marks: 100)