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

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

ISEB

Independent Schools
Examinations Board

COMMON ENTRANCE EXAMINATION AT 13+

MATHEMATICS

LEVEL 1: NON-CALCULATOR PAPER

Monday 26 January 2015

Please read this information before the examination starts.

- This examination is 60 minutes long.
- **All** questions should be attempted.
- A formula sheet is included to help you.
- A row of dots ..... denotes a space for your answer.
- You must show all your working or you may receive no marks.
- Answers given as fractions should be reduced to their lowest terms.

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1. (a) What is the value of the 8 in the number 2489?

Circle the answer written in words in the box below.

eight	**eighty**	**eight hundred**	**eight thousand**

(1)

(b) Write these numbers in order of size, starting with the smallest.

907 **970** **790** **709**

Answer: ....., ..., ..., ... (1)

(c) Write a number in each box to make the statements below correct.

(i) $34 + \square = 40$ (1)

(ii) $8 \times \square = 56$ (1)

(iii) $\square - 8 = 4$ (1)

(iv) $\square \div 8 = 4$ (1)

(d) Work out

(i) $327 \div 10$ Answer: ..... (1)

(ii) 76×10 Answer: ..... (1)

(iii) 1.4×100 Answer: ..... (1)

(iv) $9382 \div 100$ Answer: ..... (1)

2. You are told that **654 × 325 = 212550**

Use this fact to work out

(i) 6540 × 325

Answer: ..... (1)

(ii) 654 × 32.5

Answer: ..... (1)

(iii) 212550 ÷ 325

Answer: ..... (1)

3. (i) Write $\frac{1}{2}$ as a decimal.

Answer: ..... (1)

(ii) Write $\frac{3}{4}$ as a percentage.

Answer: .....% (1)

4. (a) Calculate 2800 – 473

Answer: ..... (2)

(b) Calculate 38 × 6

Answer: ..... (2)

(c) (i) Calculate 602 ÷ 7

Answer: ..... (2)

(ii) Use your answer to part (c)(i) to work out the value of 602 ÷ 14

Answer: ..... (1)

5. (a) Ann has £19.25 and Beth has £9.89

How much money do Ann and Beth have in total?



Answer: £ ..... (2)

(b) Colin has £21.32

He buys a bag which costs £8.73

How much money does he have left?



Answer: £ ..... (2)

(c) A box of pens costs £3.25

How much would it cost to buy 8 of these boxes of pens?



Answer: £ ..... (2)

(d) 3 identical skateboards cost £142.20 altogether.

How much does 1 skateboard cost?



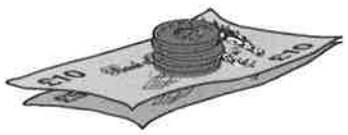
Answer: £ ..... (2)

6. Dan is 9 years old and Emma is 12 years old.

(i) Write the ratio of Dan's age to Emma's age in its simplest form.

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

Dan and Emma share some money in the ratio of their ages.



(ii) If Dan has £15, how much does Emma have?

Answer: £ ..... (2)

7. Work out the value of

(i) $4 + 8 \times 5$

Answer: ..... (2)

(ii) $2 \times 3^2 + 7$

Answer: ..... (2)

8. (i) What is 10% of 30 metres?

Answer: ..... m (1)

(ii) Jessica throws a javelin 30 metres.
Her second throw is 20% longer.

How long is Jessica's second throw?



Answer: ..... m (2)

9. (i) Write 32 as the product of its prime factors.

Answer: ..... (2)

(ii) Write 320 as the product of its prime factors.

Answer: ..... (1)

10. (i) Write each number in the following calculation correct to the nearest whole number:

$$\frac{2.98 \times 40.4}{1.85}$$

Answer: $\frac{\text{.....} \times \text{.....}}{\text{.....}}$ (2)

(ii) Use your answer to part (i) to **estimate** the value of:

$$\frac{2.98 \times 40.4}{1.85}$$

Answer: ..... (2)

11. (i) What fraction of this shape is shaded?



Give your answer in its lowest terms.

Answer: ..... (2)

(ii) There are 28 cherries in a bowl.

Paul takes $\frac{5}{7}$ of them.

How many cherries does Paul take?



Answer: ..... (2)

(iii) Calculate $\frac{5}{8} + \frac{1}{8}$

Give your answer in its lowest terms.

Answer: ..... (2)

12. (a) At 9 am, the temperature is $-3\,^{\circ}C$.
By noon, the temperature has risen by $5\,^{\circ}C$.

What is the temperature at noon?



Answer: ..... °C (1)

(b) There are two different temperature scales: Celsius (°C) and Fahrenheit (°F).

Fred uses the following method to convert Celsius to Fahrenheit:

multiply by 2 then add 30



Use Fred's method to convert

(i) 35° Celsius into Fahrenheit

Answer: ..... °F (2)

(ii) 70° Fahrenheit into Celsius

Answer: ..... °C (2)

13. Given that $x = 2$ and $y = 3$ find the value of

(i) $5x + y$

Answer: ..... (2)

(ii) xy

Answer: ..... (1)

(iii) $y^2 - x$

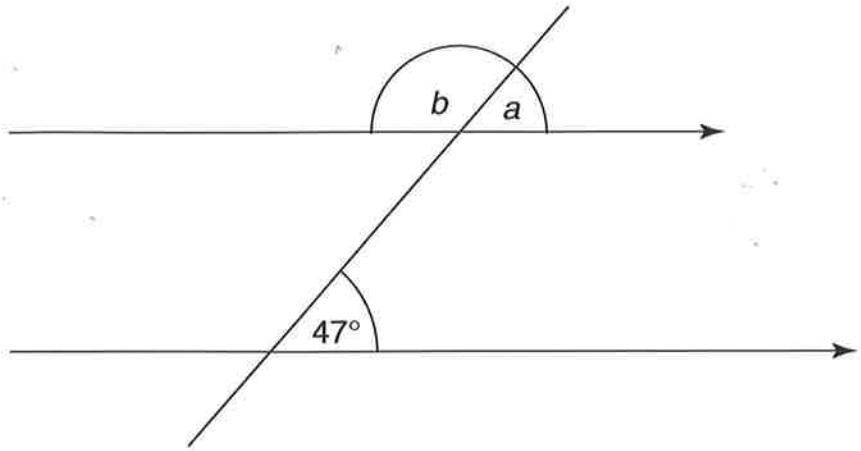
Answer: ..... (2)

(iv) $\frac{7x - 2y}{2}$

Answer: ..... (2)

14. Calculate the size of each of the angles marked *a*, *b*, *c*, *d* and *e*

(i)

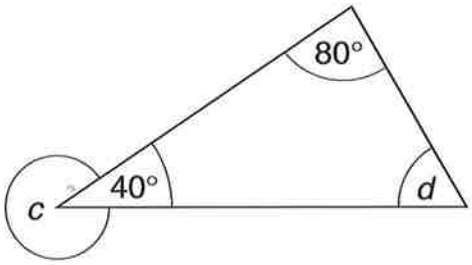


not to scale

Answer: *a* = ... ° (1)

b = ... ° (2)

(ii)

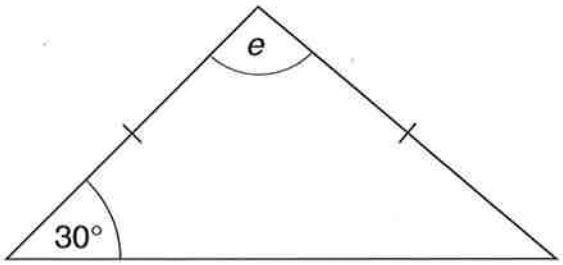


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Answer: *c* = ... ° (2)

d = ... ° (2)

(iii)

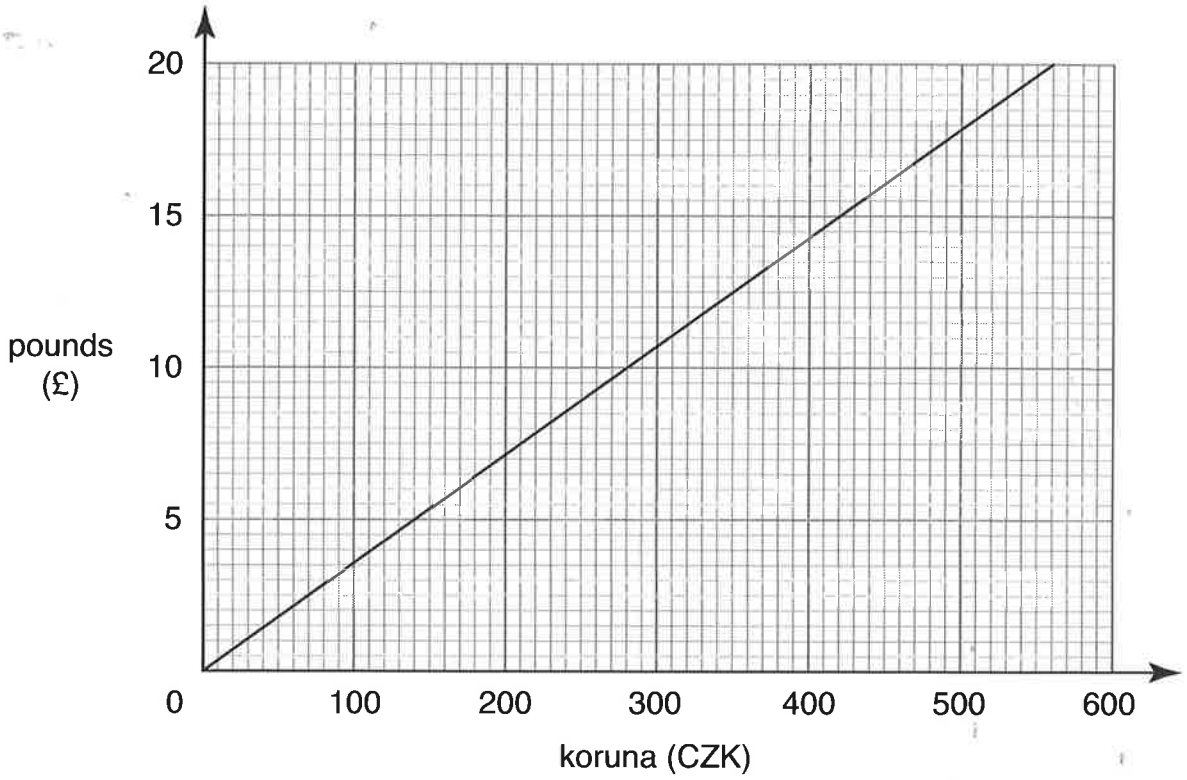


not to scale

Answer: *e* = ... ° (2)

15. The currency in the Czech Republic is the koruna (CZK).

The graph below can be used to convert between pounds and CZK.



(i) **Showing clearly where you take your readings on the graph**, convert

(a) £10 to CZK

Answer: .....CZK (2)

(b) 360 CZK to pounds

Answer: £ ..... (2)

(ii) Tomas has 36000 CZK.

Use your answer to part (i)(b) to find how much this is in pounds.

Answer: £ ..... (1)

16. (i) Construct an equilateral triangle with sides 8 centimetres long.
(One side has been drawn for you already.)



(2)

(ii) Draw a line of symmetry on the triangle as accurately as you can. (1)

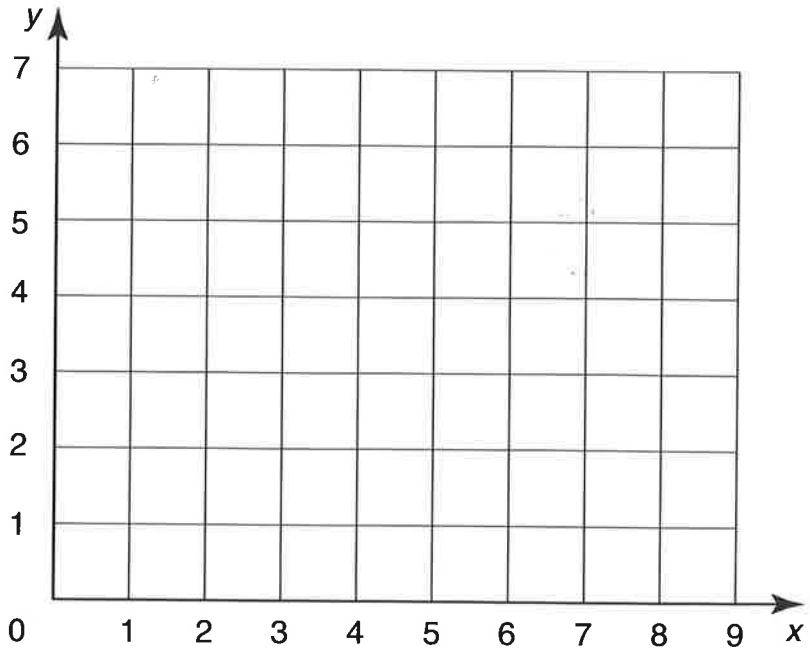
(iii) Measure the perpendicular height of the triangle.
Give your answer correct to the nearest millimetre.

Answer: ..... cm (1)

(iv) Calculate the area of the triangle.

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

17. Look at the grid below.



(i) On the grid, plot and label the points $A(2, 4)$, $B(5, 1)$ and $C(7, 3)$. (2)

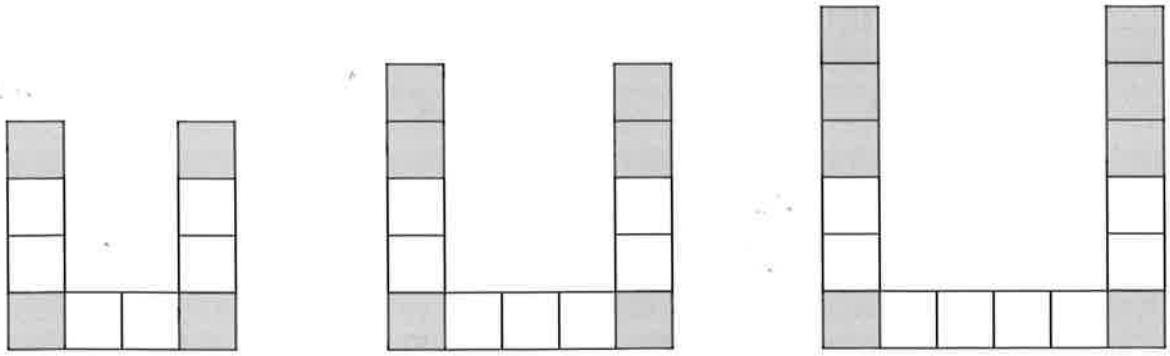
(ii) Plot a fourth point D so that $ABCD$ is a rectangle. (1)

18. Chris writes down a number.
He multiplies it by 9 and then takes away 5
The result is 22

Find the number which Chris wrote down.

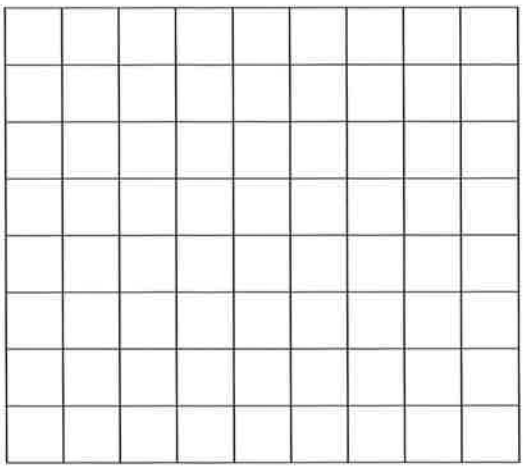
Answer: ..... (2)

19. The patterns below are made up of grey and white squares.



pattern 1 pattern 2 pattern 3

(i) Draw pattern 4 in the grid below.



(1)

(ii) Complete the table below to show the number of grey and white squares in the patterns above.

pattern	1	2	3	4
grey squares	4	6		
white squares	6	7		

(2)

(iii) How many grey squares are there in pattern 8?

Answer: ..... (1)

(iv) How many white squares are there in pattern 30?

Answer: ..... (1)

TURN OVER FOR QUESTION 20

20. (a) Circle the correct answer to each part of this question.

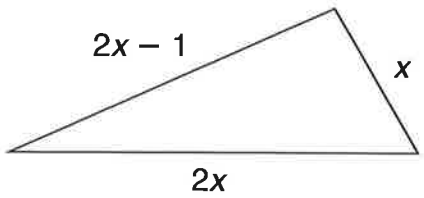
(i) Which expression means 'start with e, halve it and then add one'?

$2e + 1$ $\quad \frac{e+1}{2}$ $\quad \frac{1}{2} + 1e$ $\quad \frac{e}{2} + 1$ (1)

(ii) Which expression means 'start with w, add five and then double'?

$5w + 2$ $\quad 2w + 5$ $\quad 2(w + 5)$ $\quad w^2 + 5$ (1)

(b) The lengths of this triangle are shown in centimetres.



not to scale

(i) Write an expression, in terms of x, for the perimeter of the triangle.

Answer: ..... cm (1)

In fact, the perimeter is 54 cm.

(ii) Form an equation and solve it to find the value of x

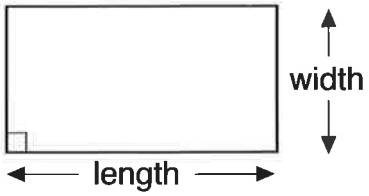
Answer: $x =$ ..... (2)

(Total marks: 100)

Formula Sheet

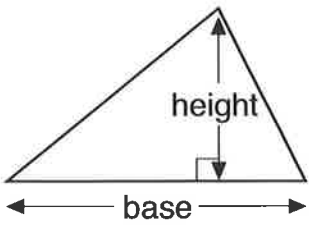
area

rectangle



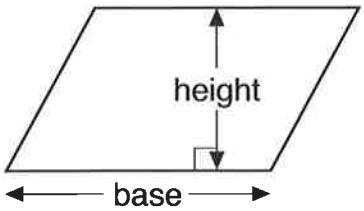
area rectangle = length × width

triangle



area triangle = $\frac{1}{2}$ × base × height

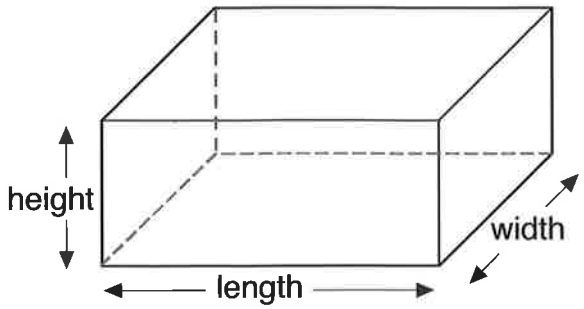
parallelogram



area parallelogram = base × height

volume

cuboid



volume cuboid = length × width × height