

SURNAME

FIRST NAME

JUNIOR SCHOOL

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Independent Schools
Examinations Board

COMMON ENTRANCE EXAMINATION AT 11+

MATHEMATICS

Monday 18 January 2021

Please read this information before the examination starts.

- This examination is 60 minutes long.
- Please try **all** the questions.
- 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.)

a) $417 - 98$

Answer: [1]

b) $630 \div 9$

Answer: [1]

c) $77 + 56 - 76$

Answer: [1]

d) 50×82

Answer: [1]

e) $13 - 17$

Answer: [1]

f) $328 \div 8$

Answer: [1]

g) 6.07×100

Answer: [1]

h) $3^3 - 5^2$

Answer: [1]

2. A sequence of numbers starts

1 3 6 10 15 21 28 36

a) From the list of numbers above, write down

i) a prime number

Answer: [1]

ii) a square number

Answer: [1]

iii) a factor of 18

Answer: [1]

iv) the product of 3 and 12

Answer: [1]

b) Write down the next two numbers in the sequence.

Answer:, [2]

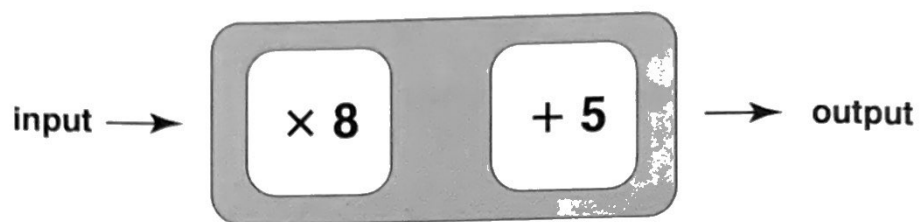
3. Fill in the boxes to make these statements true.

a) $11 - 7 + 2 = \boxed{}$ [1]

b) $234 + 235 = 236 + \boxed{}$ [1]

c) $6 + 3 \times \boxed{} = 27$ [1]

4. Here is a function machine:



Complete the table below.

4				
	$\times 8$	56	$+ 5$	
				109

[3]

5. Use the fact that $62 \times 25 = 1550$ to work out

a) $1550 \div 25$

Answer: [1]

b) 6.2×2.5

Answer: [1]

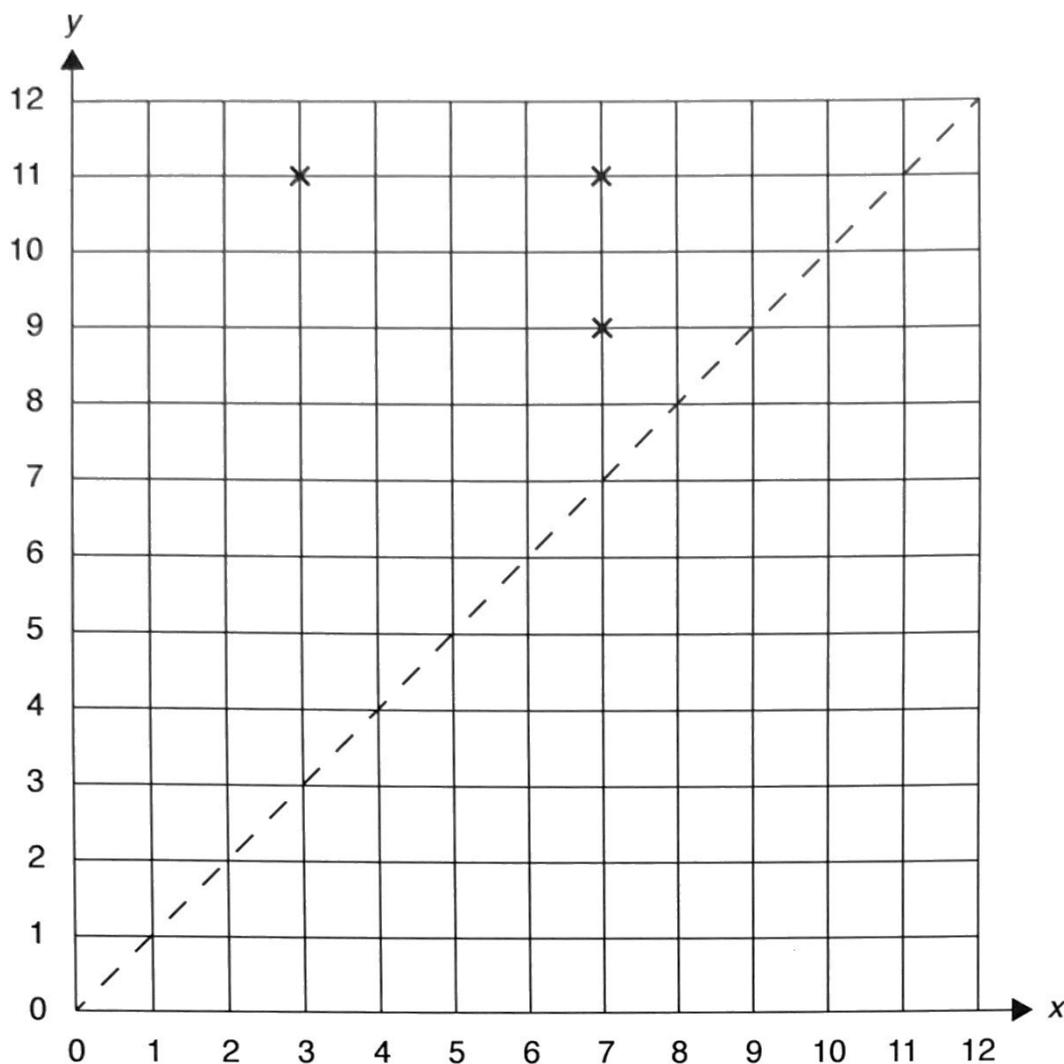
c) 62×50

Answer: [1]

d) $1550 \div 620$

Answer: [2]

6. The points (7, 9), (7, 11) and (3, 11) have been plotted on the centimetre-square grid below.



- a) Plot the point (3, 7) then join the four points to form a quadrilateral.
Label the shape **A**.

[2]

- b) What is the mathematical name of shape **A**?

Answer: [1]

- c) Reflect shape **A** in the dashed line.
Label the new shape **B**.

[2]

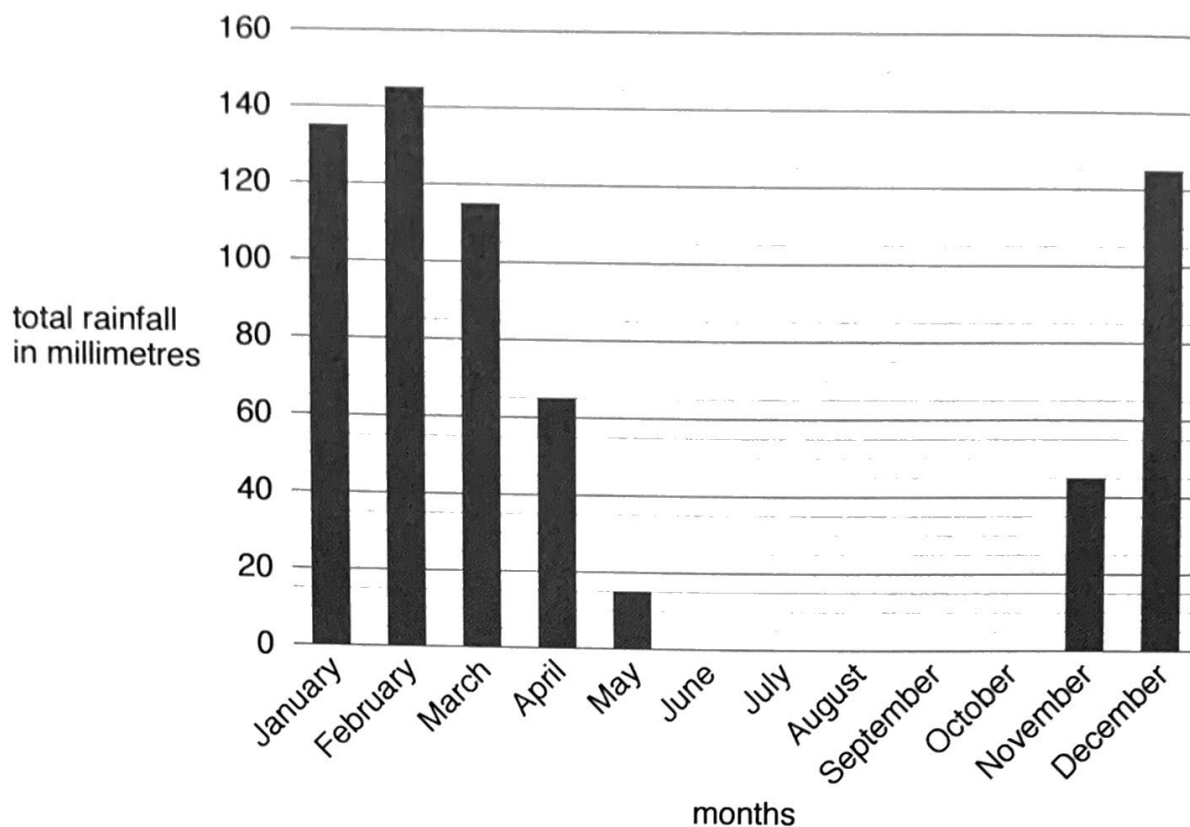
- d) Translate shape **A** 3 units left and 4 units down.
Label the new shape **C**.

[2]

- e) What is the area of shape **A**?

Answer: cm² [1]

7. The graph below shows the total amount of rainfall each month in Dodoma, the capital of Tanzania.



- a) How much more rain fell in February than in May?

Answer: mm [1]

The year in Dodoma is divided into a dry season and a rainy season.

- b) In which month of the year does the rainy season begin?

Answer: [1]

- c) Calculate the mean amount of rainfall per month in the first four months of the year.

Answer: mm [3]

Kilimanjaro is the highest mountain in Africa.

The temperature at the summit at midday was 21°C

At midnight, the temperature at the summit was -8°C

- d) What was the difference between the temperature at midday and the temperature at midnight?

Answer: $^{\circ}\text{C}$ [1]

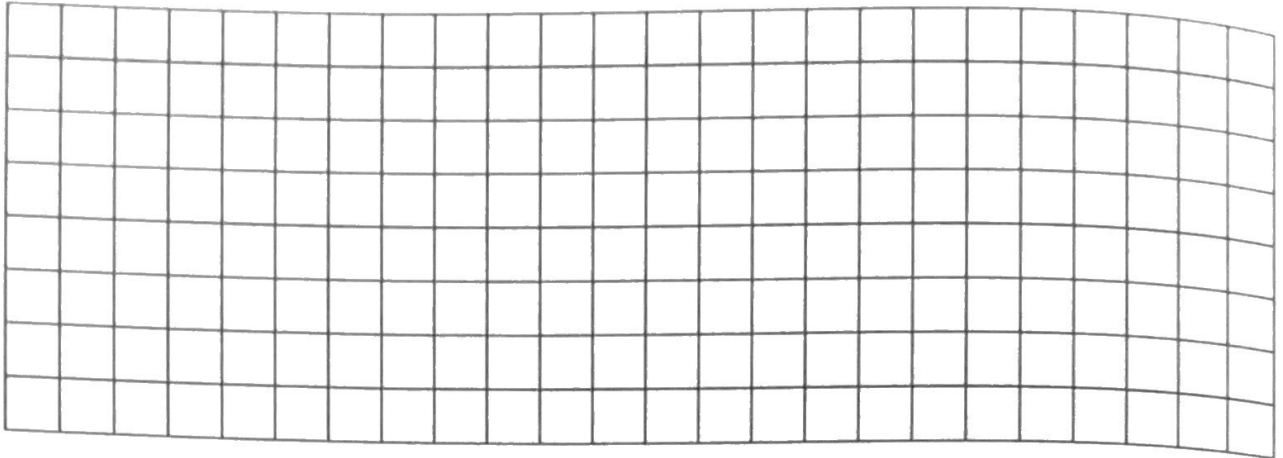
8. Use estimation to match each calculation with the correct approximate answer.
(One has been completed for you.)

calculation	approximate answer
$\sqrt{0.0576}$	2.45
$4.9^2 \div 9.8$	2400
0.87×28.1	24
$7.8 \div 0.0032$	247
19.4×12.72	0.24

[2]

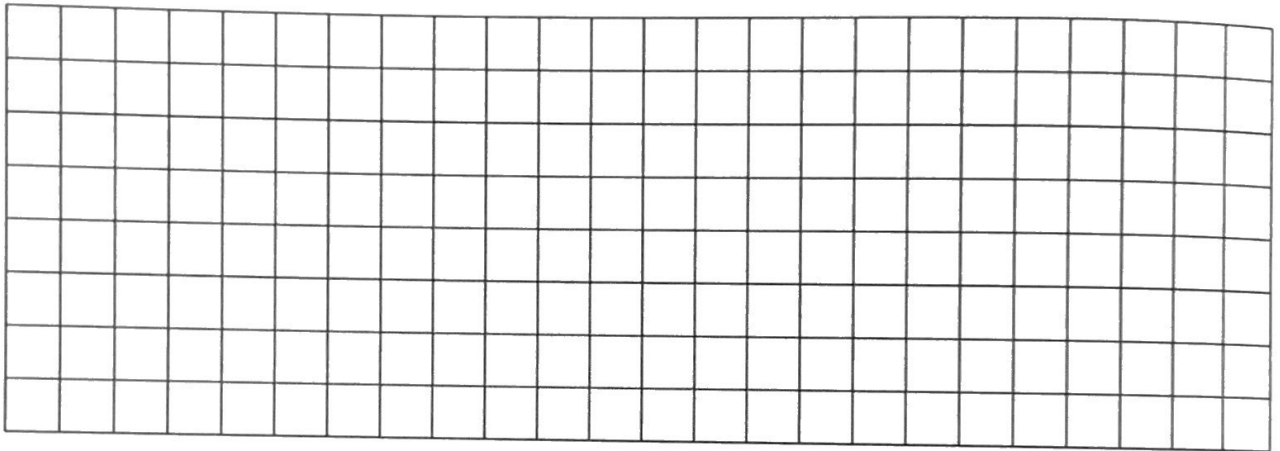
9. Work out

a) 876×54



Answer: [2]

b) $2673 \div 11$



Answer: [2]

10. a) Round 3049 to the nearest 100

Answer: [1]

b) Round 87.65 to 1 decimal place.

Answer: [1]

11. Which year is written in Roman numerals as MLXVI?

Answer: [1]

12. William has recently conquered his fear of flying and is going on holiday to Ghana to celebrate.

a) i) The plane takes off from the UK at 13:35 and lands in Ghana at 20:07

How long is the flight?

Give your answer in hours and minutes.

Answer: h min [2]

ii) William's return flight from Ghana to the UK is delayed.

The plane was due to take off at 23:10 but takes off 57 minutes late.

At what time does the flight take off?

Answer: [1]

b) At the airport, William buys three large bars of chocolate costing £3.79 each.

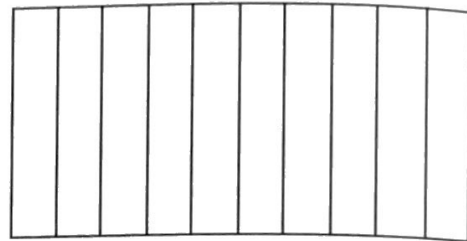
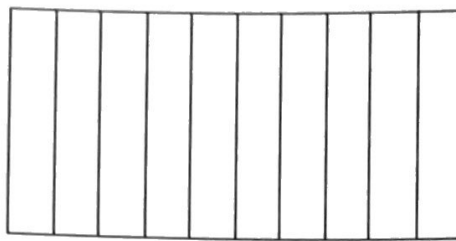
He pays with a £20 note.

How much change should he receive?

Answer: £ [2]

13. Answer the questions below.

(You may use the rectangles to help you.)



a) $\frac{1}{2} + \frac{1}{10}$

Answer: [1]

b) $\frac{2}{5} - \frac{3}{10}$

Answer: [2]

c) $2 \times \frac{9}{10}$

Give your answer as a mixed number.

Answer: [2]

d) How many tenths are there in five wholes?

Answer: [1]

14. Write the following fractions as decimals.

a) $\frac{4}{5}$

Answer: [1]

b) $4\frac{1}{4}$

Answer: [1]

15. Write these lengths in order from **smallest** to **largest**.

70 mm

0.007 km

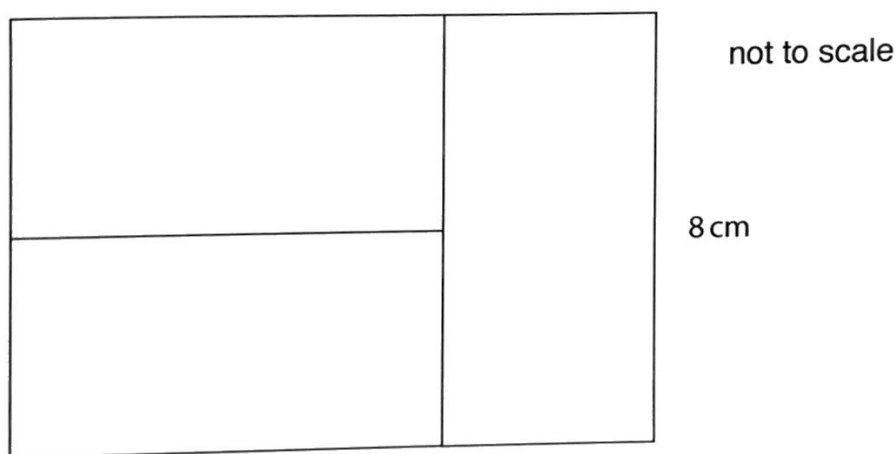
0.7 cm

$\frac{7}{10}$ m

Answer:,,, [3]

16. The shape below is made from 3 identical rectangles.

The height of the shape is 8 cm.



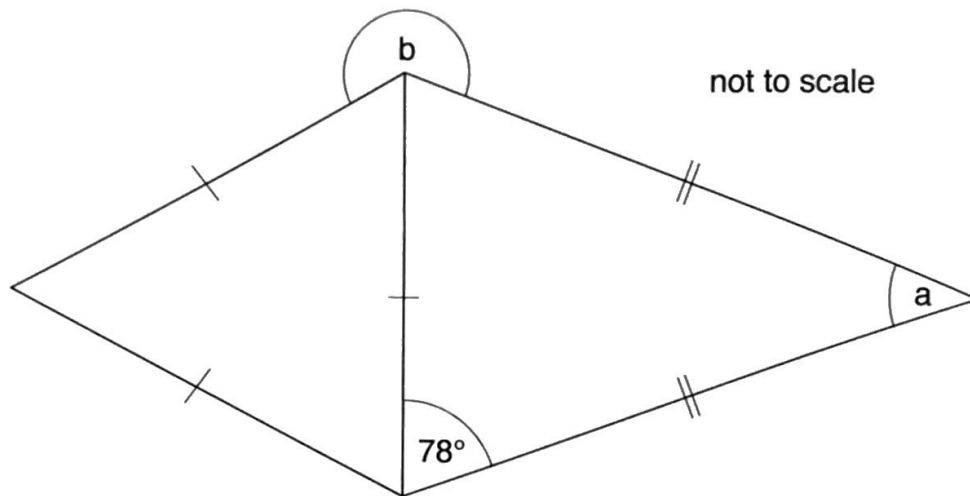
Work out the area of the shape.

Answer: cm² [3]

17. a) What is the size of each angle in an equilateral triangle?

Answer: [1]

The shape below is made from an equilateral triangle and an isosceles triangle.



- b) Work out the sizes of the missing angles a and b

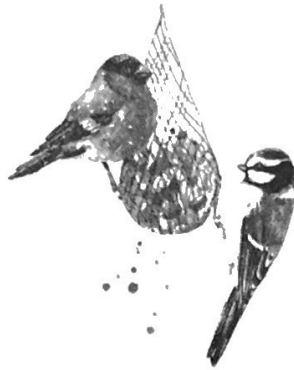
Answer: $a =$

Answer: $b =$ [4]

18. Bird seed costs 35 pence for 100 grams.
Rachel buys 1.2 kilograms of bird seed.
a) How much does she spend?

Answer: £ [2]

Suet balls cost £2 for 8 or £12 for 50



- b) Which is better value?
Circle the correct answer

£2 for 8 suet balls

£12 for 50 suet balls

Explain how you know:

..... [3]

Nest boxes originally cost £16.

They are reduced by 20% in a sale.

- c) What is the sale price of a nest box?

Answer: £ [3]

19. Here is a formula used in physics:

$$P = \frac{F}{A}$$

a) Find P if $F = 48$ and $A = 8$

Answer: $P = \dots\dots\dots$ [1]

b) Find F if $P = 9$ and $A = 5$

Answer: $F = \dots\dots\dots$ [2]

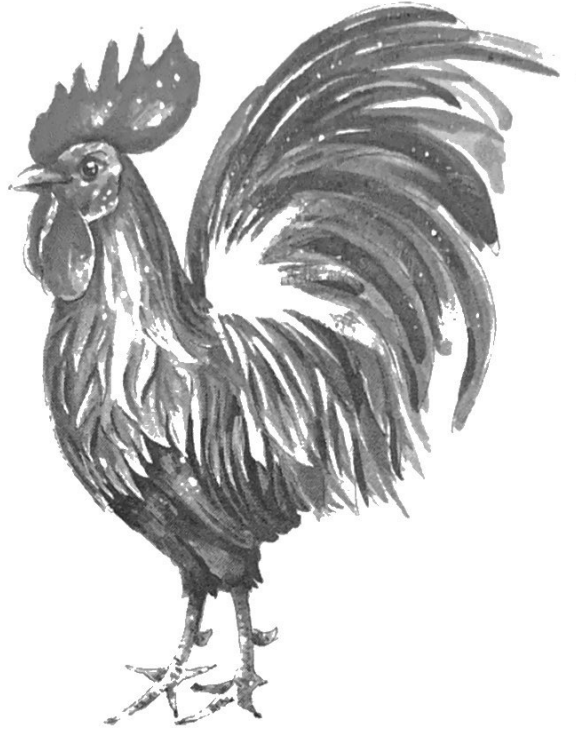
c) Find A if $P = 15$ and $F = 105$

Answer: $A = \dots\dots\dots$ [2]

20. How many children would there need to be in a class so that at least two of the children were born in the same month?

Answer: $\dots\dots\dots$ [1]

21. 8 sacks of grain will feed 12 chickens for 4 days.



- a) i) How many sacks of grain will be needed to feed 3 chickens for 4 days?

Answer: [1]

- ii) 8 sacks of grain will feed how many chickens for 12 days?

Answer: [2]

A family of foxes gets into a chicken run.

Counting all of the foxes and all of the chickens there are 11 heads and 30 legs altogether.

- b) How many foxes get into the chicken run?

Answer: [2]

22. Winston, Leonard and Spencer are each thinking of a different 2-digit number.

- a) Three quarters of Winston's number is 27

What is two thirds of Winston's number?

Answer: [2]

- b) Forty per cent of Leonard's number is 12

What is seventy per cent of Leonard's number?

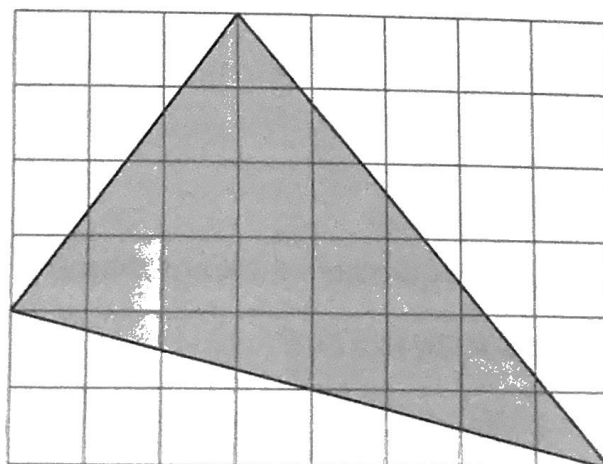
Answer: [2]

- c) Spencer's number is one more than a square number and one less than a prime number.

What number is Spencer thinking of?

Answer: [2]

23. The triangle below is drawn on a centimetre-square grid.
Calculate its area.



Answer: cm^2 [3]

(Total: 100 marks)