FOUNDED 1900

THE ENGLISH SCHOOL

A SECOND CENTURY OF EXCELLENCE

ENTRANCE EXAMINATIONS 2019

MATHEMATICS FIRST FORM

Time allowed: 1 hour and 15 minutes

- Answer ALL questions.
- Show all necessary working on the question paper in the spaces provided and write your answers in the appropriate places.
- The marks for each question are given at the end of the question.
- There are 30 questions in this paper.
- The total number of marks is 100.
- If you cannot do a question, move to the next one so you do not lose time.
- **CALCULATORS ARE NOT ALLOWED**.
- **DO NOT WRITE IN THE RIGHT-HAND MARGIN.**

Leave blank

1. Evaluate the following:

(a) $11997 + 146 - 744$

Answer: ……. **(2)**

(b) $306 \div 17$

Answer: ……. **(1)**

(c) $3\frac{5}{12} - \frac{7}{8}$

Answer: ……. **(3)**

(d) $2\frac{11}{12} \div 1\frac{3}{4}$

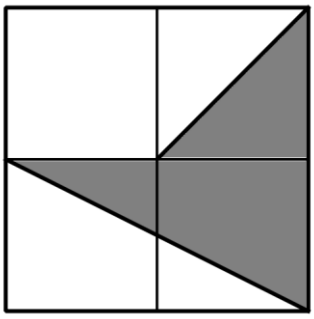
Answer: ……. **(3)**

(Total 9 marks)

Q1

Leave blank

2. What fraction of the shape below is shaded?



Answer: ……. **(2)**

(Total 2 marks)

Q2

3. In a test, 4 marks were given for each correct answer and a mark was deducted for each wrong answer. The test had 30 questions.

(a) Write down the maximum amount of marks available for this test.

Answer: ……. **(1)**

Tim got 24 questions right and 6 questions wrong.

(b) How many marks did he obtain?

Answer: ……. **(2)**

(c) Write this mark as a percentage.

Answer: …… % **(2)**

(Total 5 marks)

Q3

Leave blank

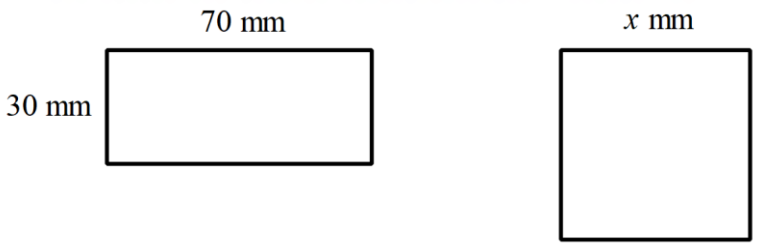
4. Leonard has €240. He gives $\frac{1}{8}$ to his sister and $\frac{1}{5}$ of what remains to his little brother. How much does he keep for himself?

Q4

Answer: € …… **(3)**

(Total 3 marks)

5. The rectangle and the square shown in the diagram below, have equal perimeters.
(*The diagram is not accurately drawn*)



(a) What is the length x of the side of the square?

Answer: x = …… mm **(2)**

(b) What is the difference in their areas?

Q5

Answer: …….. mm^2 **(3)**

(Total 5 marks)

Leave blank

6. **A**, **B** and **C** represent different digits. If

A	B	+	C	= 50
B	C	+	A	= 41

What are the values of **A**, **B** and **C**?

A = ...

B = ...

C = ...

(3)

Q6

(Total 3 marks)

7. Stephanie thinks of a two-digit number between 40 and 80.
When she divides this number by three the remainder is 2.
When she divides this number by four the remainder is 3.
When she divides this number by five the remainder is 4.
Which is Stephanie's number?

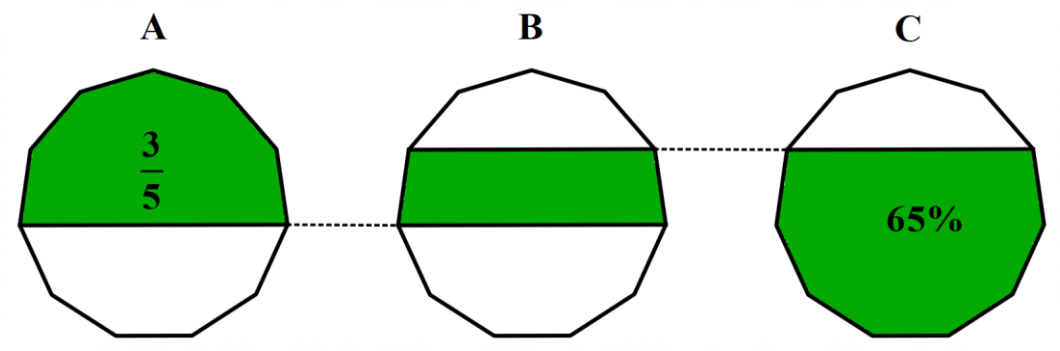
Answer: ..... **(2)**

Q7

(Total 2 marks)

Leave blank

8. The diagram shows three identical shapes **A**, **B** and **C**. (*The diagram is not accurately drawn*)
Three fifths of shape **A** is shaded.
Sixty five percent of shape **C** is shaded.



What percentage of shape **B** is shaded?

Answer: …… **(3)**

(Total 3 marks)

Q8

9. Find:

(a) 35% of 500

Answer: …… **(2)**

(b) $\frac{9}{32}$ of 256

Answer: …… **(2)**

(Total 4 marks)

Q9

Leave blank

10.

(a) In the sequence below, the term to term difference is always the same.

$$7 \text{ , } a \text{ , } b \text{ , } c \text{ , } d, 32 \text{ , } e \text{ , } \ldots$$

Find the value of e.

Answer: e = ……. **(2)**

(b) Find the sum of the terms in the 25th pair of brackets.

$$(1,\ 2,\ 3) \text{ , } (4,\ 5,\ 6) \text{ , } (7,\ 8,\ 9) \text{ , } (10,\ 11,\ 12) \text{ , ...}$$

Answer: ……. **(2)**

(Total 4 marks)

Q10

11. If the three-digit number 6M8 is divisible by 7, find M.

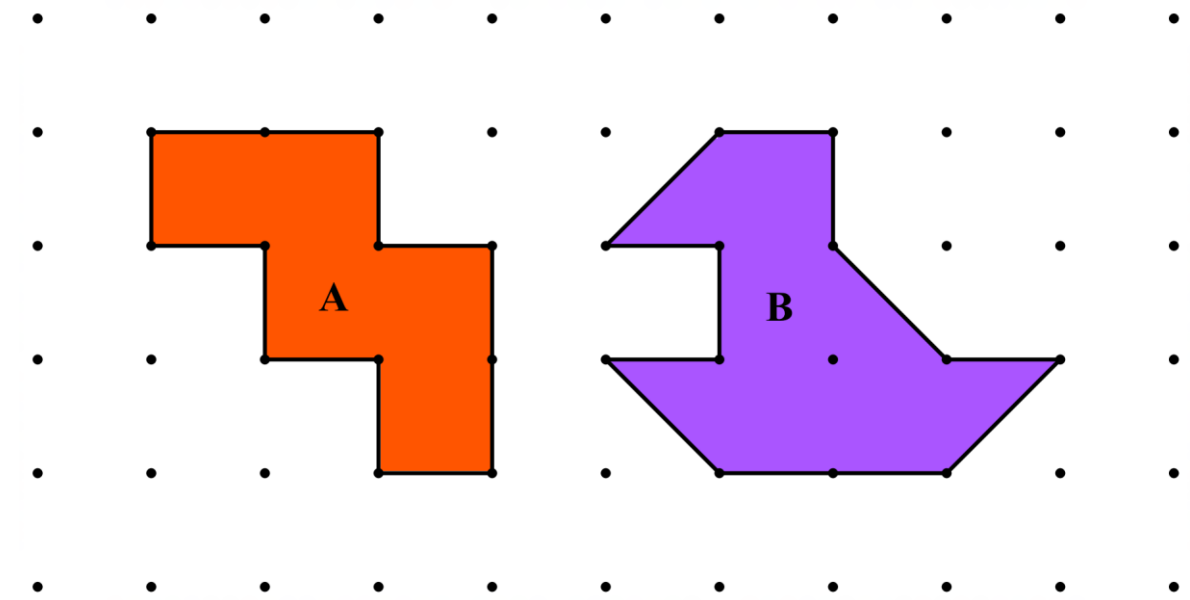
Answer: M = ……. **(2)**

(Total 2 marks)

Q11

Leave blank

12. If shape **A** has a perimeter of 36 cm what is the area of shape **B**?



Answer: ……cm^2 **(3)**

Q12

(Total 3 marks)

13. A metal rod is $10\frac{4}{5}$ metres long. How many short rods, each measuring $\frac{3}{10}$ metres long can be cut from the longer rod?

Answer: …… **(2)**

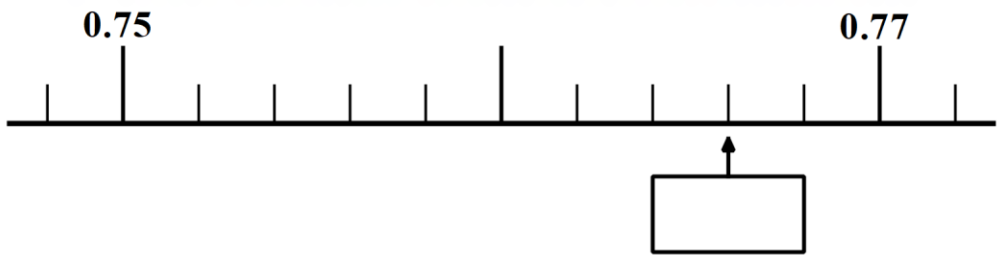
Q13

(Total 2 marks)

Leave blank

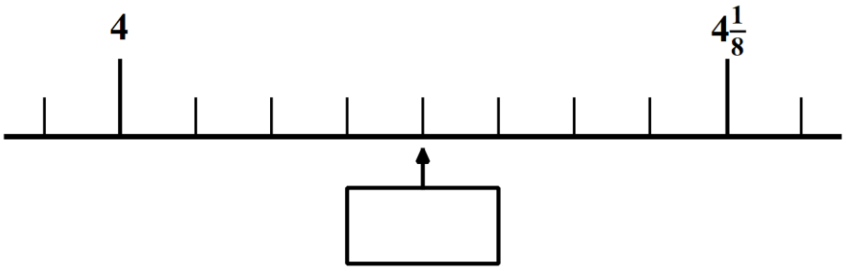
14. Here are parts of two different number lines.
Write in each box the number indicated by the arrow.

(a)



(1)

(b)



(1)

(Total 2 marks)

Q14

15. Nancy bought five oranges and two apples for €3.40
At the same shop, David bought three oranges and one apple and paid €2.00
How much is one apple?

Answer: ..... **(3)**

(Total 3 marks)

Q15

Leave blank

16. The mean height of four boys is 1.28 m
Two more boys, Raj and Sheldon join the group.
The new mean height of the six boys is now 1.29 m.

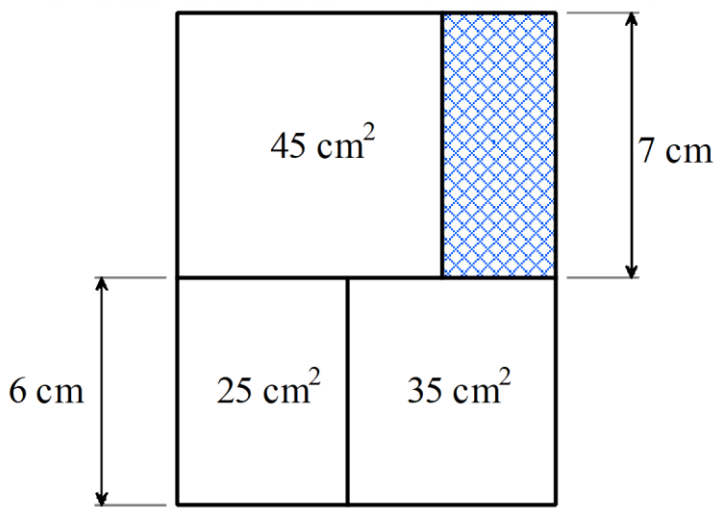
If Raj is 1.27 m, how tall is Sheldon?

Answer: ……. **(4)**

(Total 4 marks)

Q16

17. Work out the area of the shaded rectangle.
(*The diagram is not accurately drawn*)



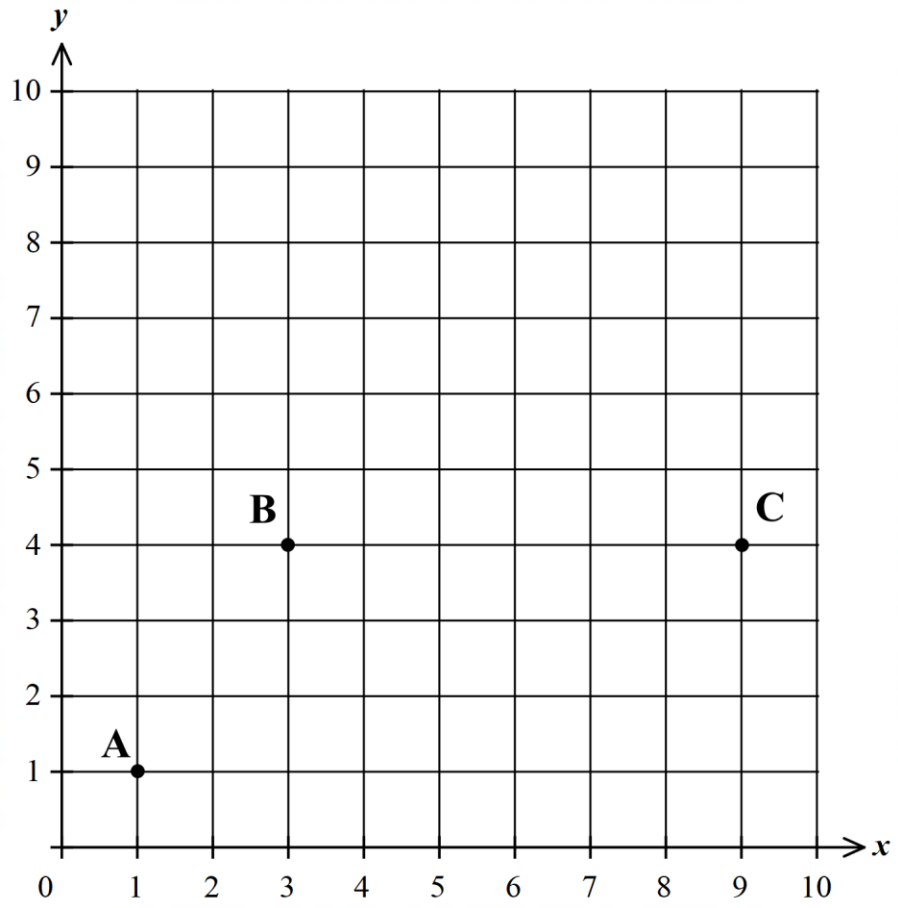
Answer: ……cm² **(3)**

(Total 3 marks)

Q17

Leave blank

18. Points **A**, **B** and **C** have been plotted on the centimetre square co-ordinate grid below.



Point **A** has coordinates (1, 1), **B** (3, 4) and **C** (9, 4).

ABCD is a parallelogram.

(a) On the grid above, plot and label point **D**.

(1)

(b) Calculate the area of the parallelogram **ABCD**.

Answer: ……cm^2 **(2)**

Q18

(Total 3 marks)

Leave blank

19. Use the fact that $17 \times 18 \times 19 = 5814$, to work out:

(a) $170 \times 180 \times 190$

Answer: ..... **(1)**

(b) $9 \times 19 \times 34$

Answer: ..... **(1)**

(c) $5814 \div 51 \div 38$

Answer: ..... **(1)**

Q19

(Total 3 marks)

20. Howard is now twice his cousin's age.
In 4 years' time Howard will be 16.
How old will his cousin be then?

Answer: ..... **(3)**

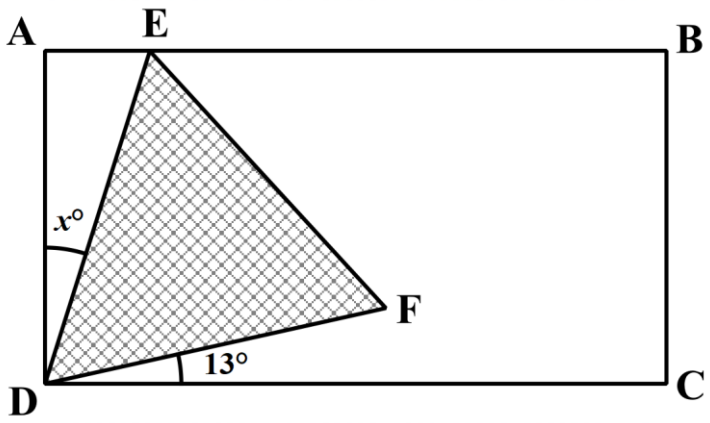
Q20

(Total 3 marks)

Leave blank

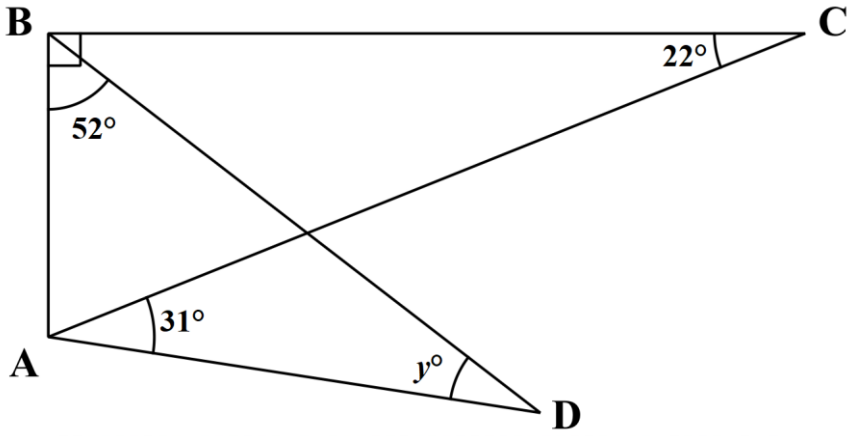
21.

(a) In the diagram below, **ABCD** is a rectangle and **DEF** an equilateral triangle.
Calculate the value of angle *x*.
(*The diagrams are not accurately drawn*)



x = ……° **(2)**

(b) In the diagram below, **ABC** is a right-angled triangle.
Calculate the value of angle *y*.
(*The diagrams are not accurately drawn*)



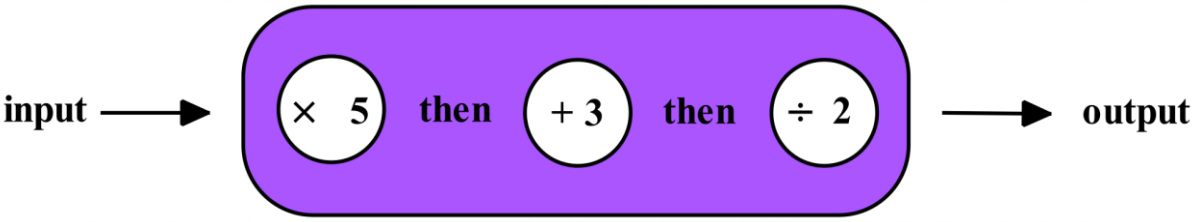
y = ……° **(3)**

Q21

(Total 5 marks)

Leave blank

22. George has the three-stage number machine shown below.



(a) Work out the output when the input is 3

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

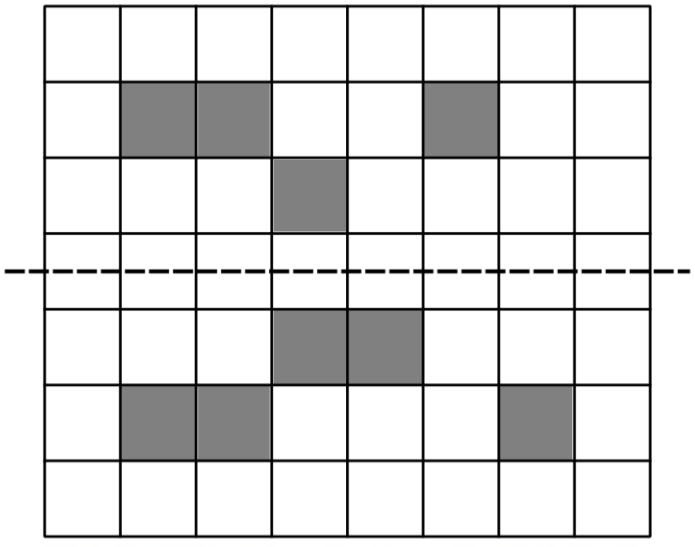
(b) Work out the input when the output is 29

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

(Total 4 marks)

Q22

23. Shade the smallest number of squares required to make the dotted line shown a line of symmetry.



(2)

Q23

(Total 2 marks)

Leave blank

24. How many minutes are there between 9.23 am and 1.06 pm?

Answer: …… minutes **(2)**

(Total 2 marks)

Q24

25. Five children share a box full of sweets.
All five children get the same amount of sweets.
The number of sweets in the box is a three-digit number.
The tens digit is three more than the units digit.
The hundreds digit is twice the tens digit.

Find how many sweets are in the box.

Answer: …… sweets **(2)**

(Total 2 marks)

Q25

26. The calculator display below shows $\frac{5}{160000}$ as a decimal.

How would the calculater show $\frac{5}{160}$ as a decimal?

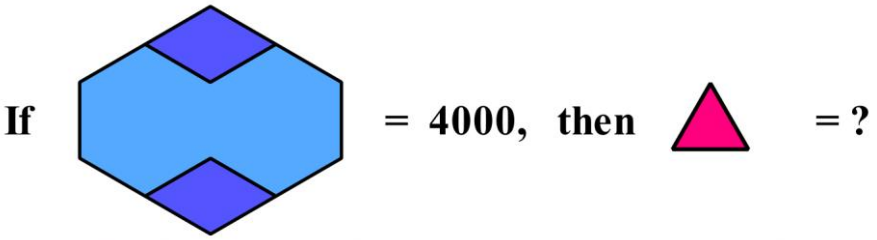
Answer: …… **(1)**

(Total 1 mark)

Q26

Leave blank

27. The following question is on pattern blocks.

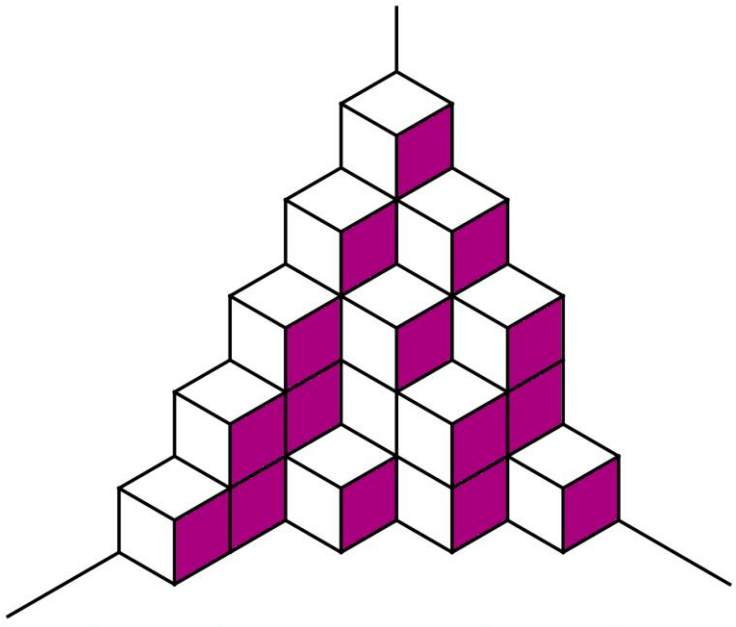


Answer: ……. **(2)**

Q27

(Total 2 marks)

28. The diagram shows some cubes of the same size stacked in the corner of a room. How many cubes are there all together? (*There are no gaps behind visible cubes*)



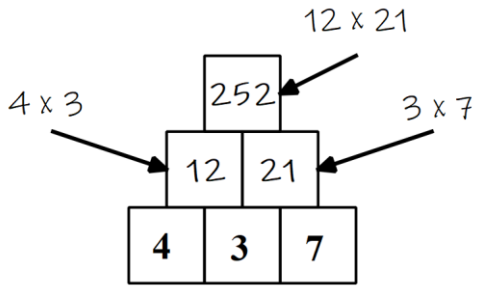
Answer: ……. **(2)**

Q28

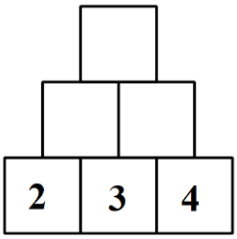
(Total 2 marks)

Leave blank

29. In this pyramid of bricks, the number on each brick is the product of the two bricks underneath it. For example:

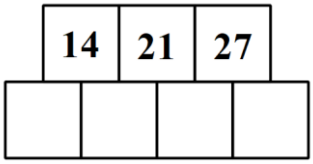


(a) Fill in all the empty bricks on this pyramid



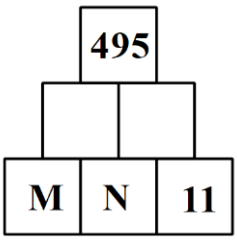
(1)

(b) Fill in the numbers in the empty row.



(1)

(c) **M** and **N** are whole numbers greater than 1. Find their values.



Answer: N = …….

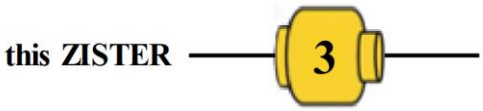
M = ……. **(2)**

Q29

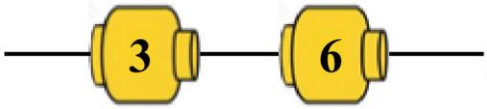
(Total 4 marks)

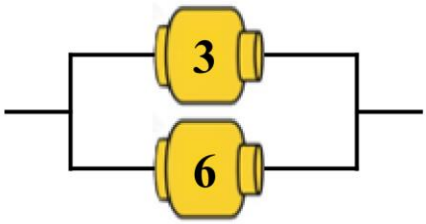
Leave blank

30. Alexander makes electrical components for his LEGO.



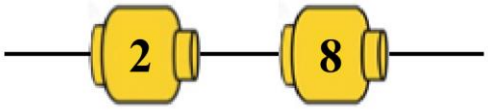
ZISTERS can be put together in two different ways as follows:





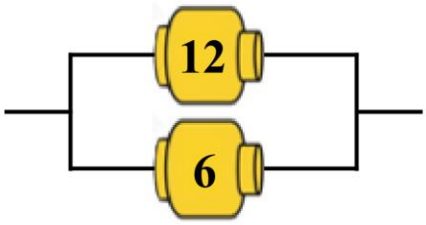
Find the value of:

(a)



Answer: ..... **(1)**

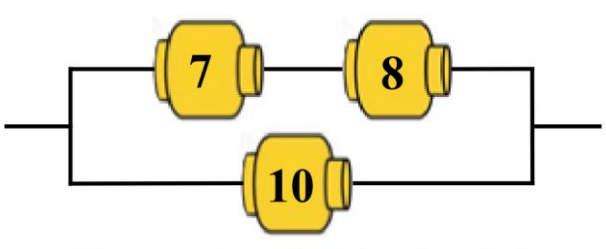
(b)



Answer: ..... **(1)**

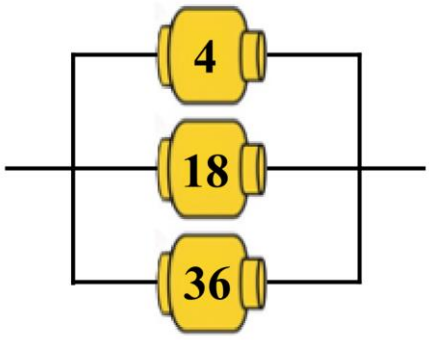
Leave blank

(c)



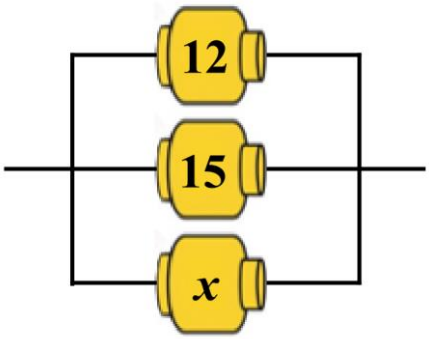
Answer: ……. **(2)**

(d)



Answer: ……. **(2)**

(e) If the following combination of **ZISTERS** has a value of 5, find *x*.



Answer: ……. **(2)**

Q30

(Total 8 marks)

END

TOTAL : 100 MARKS