



FOUNDED 1900

THE ENGLISH SCHOOL
A SECOND CENTURY OF EXCELLENCE

THE ENGLISH SCHOOL
ENTRANCE EXAMINATIONS 2016

MATHEMATICS

FIRST FORM

Time allowed: 1 hour and 30 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 particular question, move to the next question without losing time.
- **CALCULATORS ARE NOT ALLOWED.**
- **DO NOT WRITE IN THE RIGHT HAND MARGIN**

1. Evaluate the following:

(a) $207 + 1989 + 24$

Answer: (1)

(b) $7322 \div 14$

Answer: (1)

(c) $\frac{3}{4} - \frac{1}{3}$

Answer: (2)

(d) $2\frac{4}{5} \div \frac{7}{10} \times 4\frac{1}{4}$

Answer: (3)

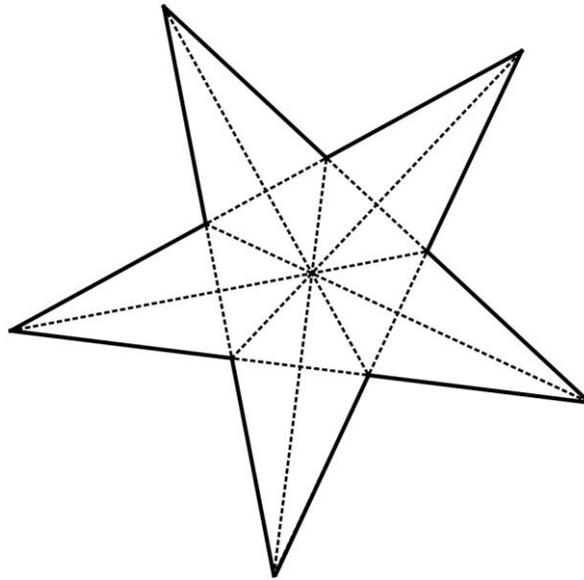
(Total 7 marks)

Q1

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Leave blank

2. Shade 30% of the shape below.



Q2

(Total 2 marks)

3.

- (a) Daphne bought a sandwich and a muffin from the cafe. She paid for these with a €20 note, and received €14.35 change. Given that the sandwich cost €3.95, how much did the muffin cost?



Answer: € (2)

- (b) Alexander buys a new laptop costing €399.00. He pays this in 6 equal monthly amounts. How much is each monthly amount?



Answer: € (2)

(Total 4 marks)

Q3

4. At the market, pineapples cost €1.20 each and mangoes cost 75 cent each.

- (a) Marty spent the same amount on pineapples as he did on mangoes. Given that he bought at least one of each fruit, what is the smallest amount he could have spent altogether?



Answer: € (2)

- (b) Jennifer spends €7.05 altogether on pineapples and mangoes. How many mangoes does she buy?

Answer: (2)

(Total 4 marks)

Q4

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5. Write the missing numbers in the boxes to make the calculations correct.

(a) $11 \times 13 - \square = 90$ (1)

(b) $64 + 12 \div 4 = \square + 19$ (1)

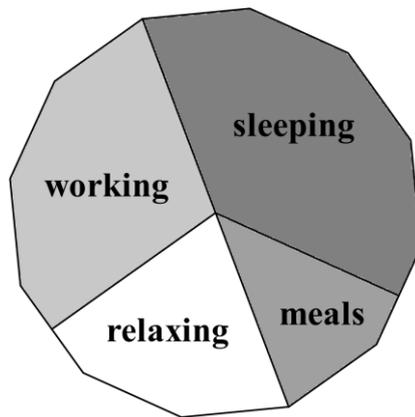
(c) $6^2 = 4^2 + (2 \times \square)$ (1)

(Total 3 marks)

Q5

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6. The chart below shows the way Rebecca spends her 24-hour day.



(a) How many hours does Rebecca spend sleeping?

Answer: hours (2)

(b) What fraction of the 24 hours does Rebecca spend working?

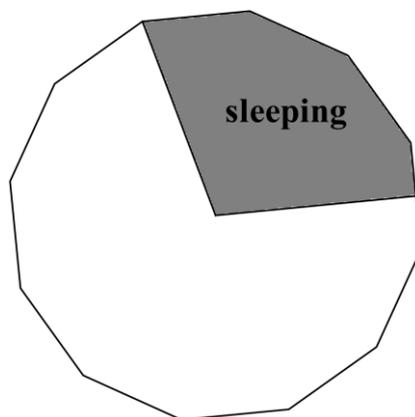
Answer: (1)

Jamie provides the information below about the way his 24-hour day is spent.

sleeping	7
working	9
relaxing	4
Other activities	4

(c) Complete the chart to show how Jamie spends his 24-hour day.

(1)



Q6

(Total 4 marks)

7. Write down the missing term in each of the sequences below:

(a) 64, 32, 16, 8,

(1)

(b) 1, 3, 4, 7, 11, 18,

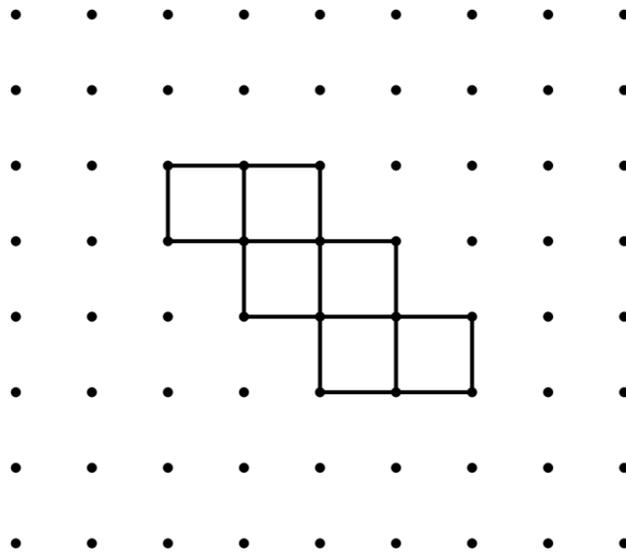
(1)

(Total 2 marks)

Q7

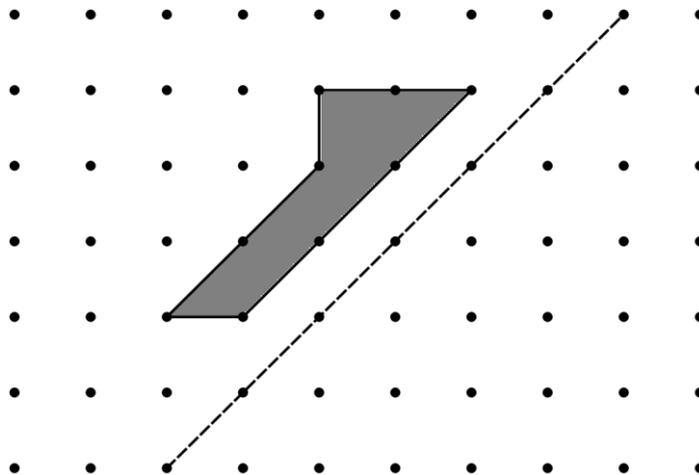
8.

(a) Add one square to the shape drawn on the dotted grid below, so that the finished shape has exactly one line of symmetry.



(1)

(b) Reflect the shape below in the dotted line.



(1)

(Total 2 marks)

Q8

9. Write a digit in each box to make the calculations correct.

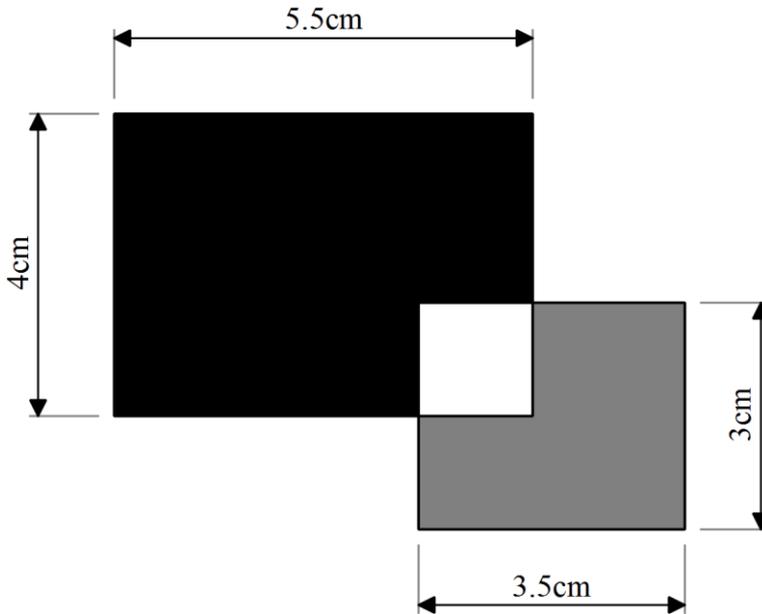
$$\begin{array}{r}
 \square \square 4 \\
 + 28 \square \\
 \hline
 637
 \end{array}$$

$$\begin{array}{r}
 7 \square 1 \\
 - \square 9 \square \\
 \hline
 496
 \end{array}$$

Q9

(Total 2 marks)

10. The shape below is made from two overlapping rectangles. One rectangle measures 5.5 cm by 4 cm. The other measures 3.5 cm by 3 cm. (The diagram is not accurately drawn)



Given that the area of the section shaded black is 19.75 cm^2 , work out the area of the section shaded grey.

Answer: cm^2 (4)

Q10

(Total 4 marks)

11. Three friends buy a bag containing a number of sweets.
Amy first takes one fifth of the sweets in the bag.
Penny and Bernadette then equally share the sweets that are remaining in the bag.

(a) What fraction of the sweets in the full bag does Penny have?

Answer: (1)

(b) If Penny has 14 sweets, how many sweets were in the bag altogether?

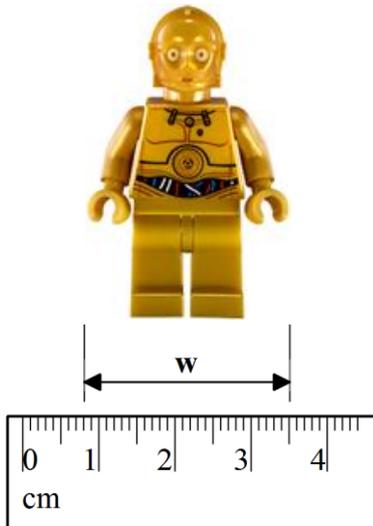


Answer: (2)

(Total 3 marks)

Q11

12. Use the ruler to work out the width, w , of the Lego mini figure in millimetres. You must show your work.



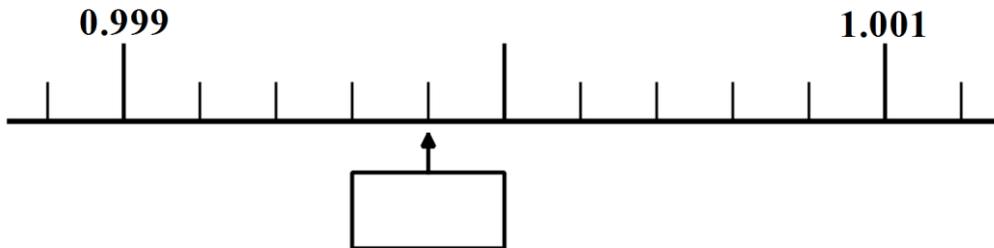
Answer: $w = \dots\dots\dots$ mm (2)

(Total 2 marks)

Q12

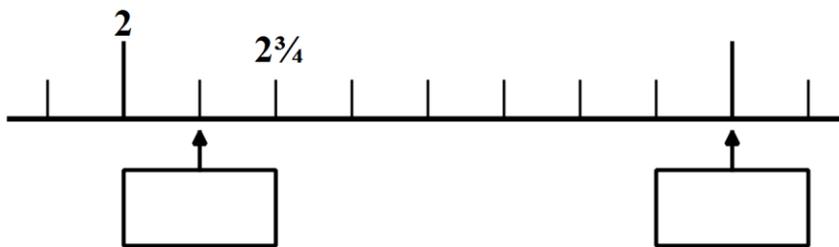
13. Here are parts of two different number lines.
Write in each box the number indicated by the arrow.

(a)



(1)

(b)



(2)

(Total 3 marks)

Q13

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14. Which of the following fractions is closest in value to $\frac{1}{4}$?

$$\frac{11}{40} \quad \frac{16}{60} \quad \frac{21}{80} \quad \frac{26}{100} \quad \frac{31}{120}$$

Answer: (2)

Q14

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(Total 2 marks)

15. Leonard and Howard are running directly towards each other. They start from the points A and B respectively at the same time. Leonard runs at 2.5 meters per second, and Howard runs at 4 meters per second. If they meet after 8 minutes, how far apart are the points A and B?



Answer: m (3)
(Total 3 marks)

Q15

16. (a) The temperature in Nicosia on Sunday morning was 3 °C. On Monday morning, the temperature was 8 degrees colder. What was the temperature on Monday morning?

Answer:°C (1)

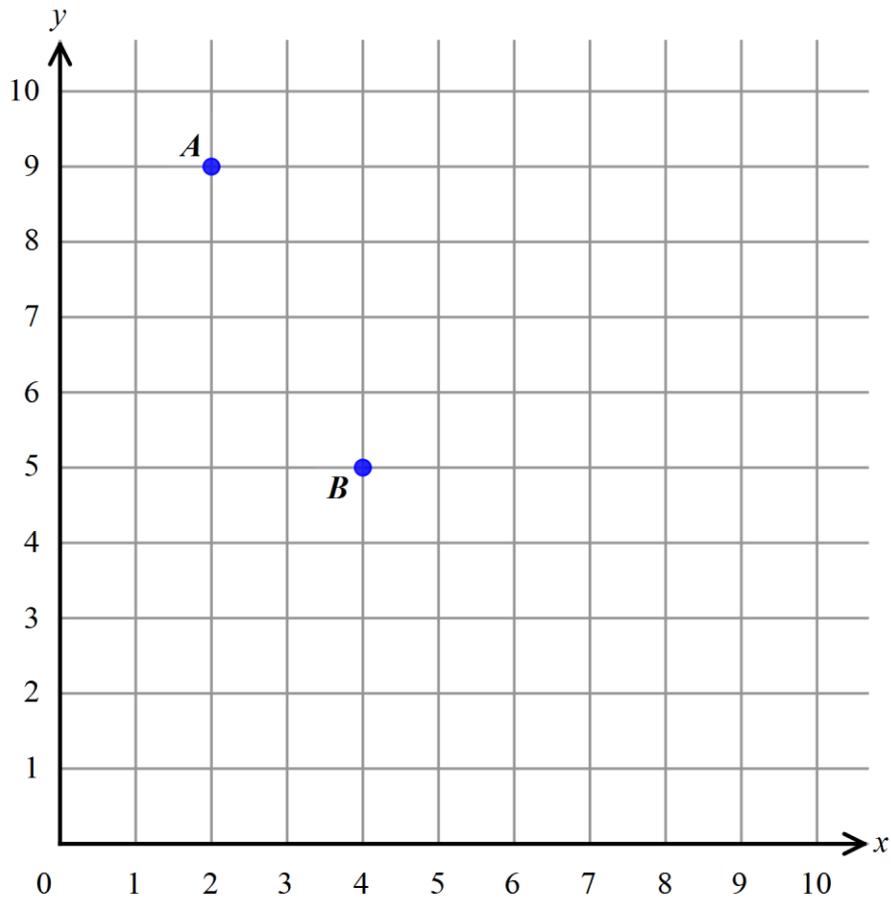
- (b) Abigail gets up at 0640 in the morning. 25 minutes later she starts her breakfast, which takes 12 minutes to finish. She then leaves for school. Her journey takes 33 minutes in total. She arrives 5 minutes late for registration. At what time is registration?



Answer: (2)
(Total 3 marks)

Q16

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



Point **A** has coordinates (2, 9), **B** (4, 5) and **C** (9, 5).

- (a) On the grid above, plot and label point **C**. (1)
- (b) Find the area of the triangle **ABC**.

Answer:cm² (2)

- (c) At what coordinates should a 4th point, **D**, be placed so that the shape **ABCD** is a parallelogram?

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

(Total 4 marks)

Q17

18.

(a) Calculate the value of $3428 \times 836 + 3428 \times 162 + 3428 \times 2$.

Answer: (2)

There are patterns made by some of the multiples of 37.

$$3 \times 37 = 111$$

$$6 \times 37 = 222$$

$$9 \times 37 = 333 \text{ and so on}$$

Use these results to work out:

(b) 15×37

Answer: (1)

(c) 24×37

Answer: (1)

(d) 26×37

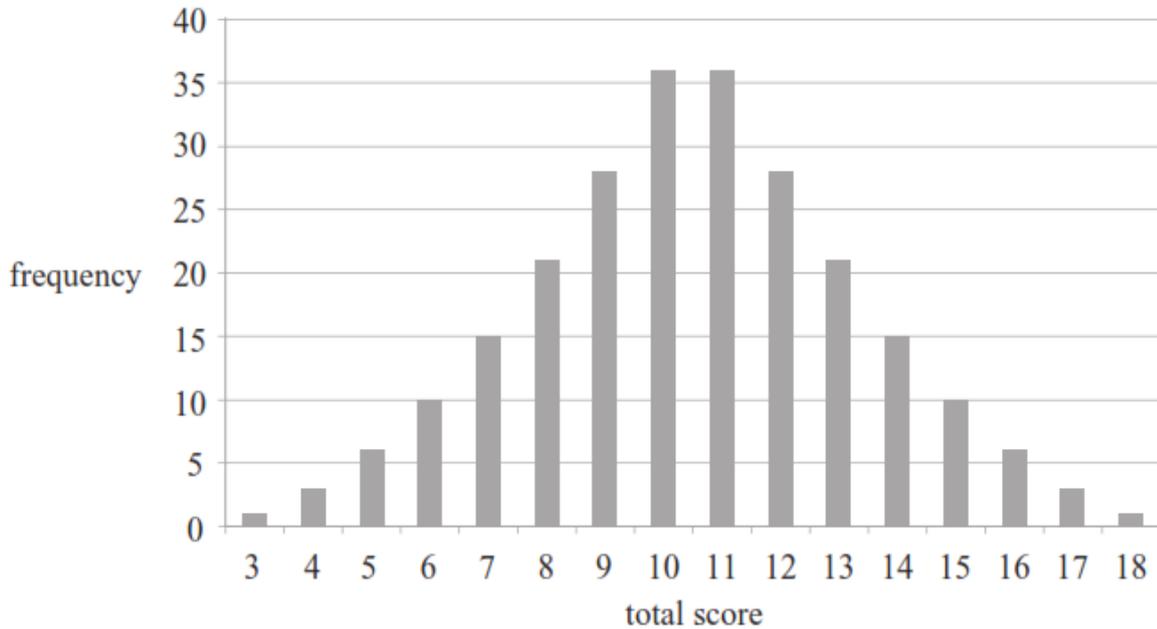
Answer: (2)

(Total 6 marks)

Q18

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19. Di rolls three dice and adds the numbers showing on the top faces. She repeats this 240 times, and draws a bar chart of her results, which is shown below.



(a) Which two totals occur most often?

Answer: and (1)

(b) How many times did Di roll a sum which is a square number?

Answer: (2)

(Total 3 marks)

Q19

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20. Find:

(a) 33% of 150

Answer: (2)

(b) $\frac{5}{8}$ of 136

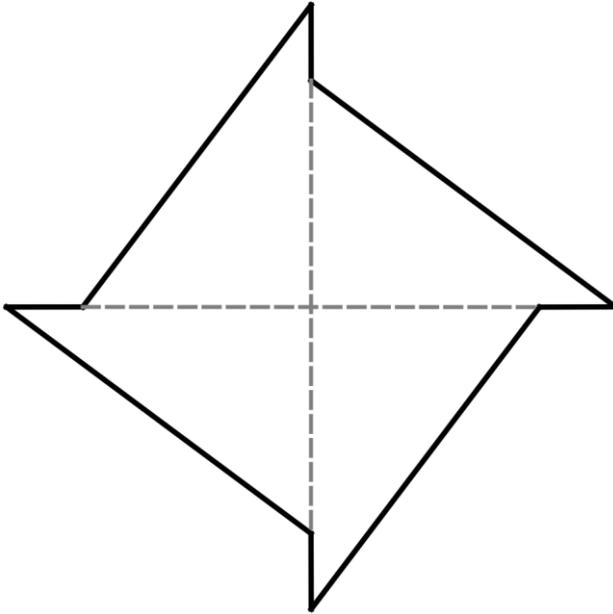
Answer: (2)

(Total 4 marks)

Q20

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21. The diagram shows four triangles, each with sides of lengths 3 cm, 4 cm and 5 cm. What is the perimeter of this shape?
 (The diagram is not accurately drawn)

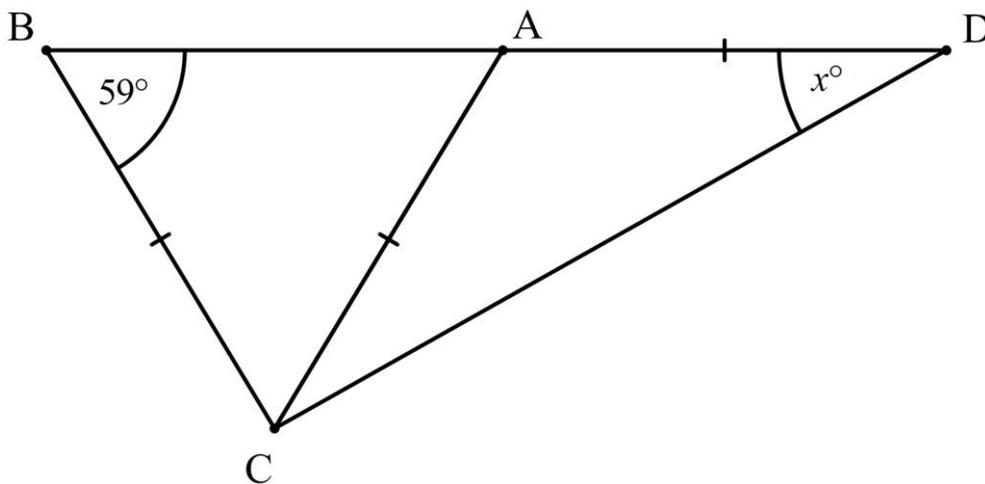


Answer:cm (3)

(Total 3 marks)

Q21

22. In the diagram below, $AC = BC = AD$. Calculate the value of angle x .
 (The diagram is not accurately drawn)



$x = \dots\dots\dots^\circ$ (3)

(Total 3 marks)

Q22

23. Credit cards use “check digits” to detect errors when people type in the number. The last digit is chosen so that the sum of the all the digits is a multiple of 11. For example, in the credit card number below

1234 5678 9012 3357

the last digit is seven because the total of the first fifteen numbers is 59. Seven more makes 66 which is divisible by 11.

Find the missing digit in the following credit card number.

8421 4902 7130 811X



Answer: X = (2)

(Total 2 marks)

Q23

24.

- (a) Write **one** number which satisfies **all three** of these statements:
 It is a multiple of 3.
 It is a multiple of 8.
 It ends in ‘2’.

Answer: (2)

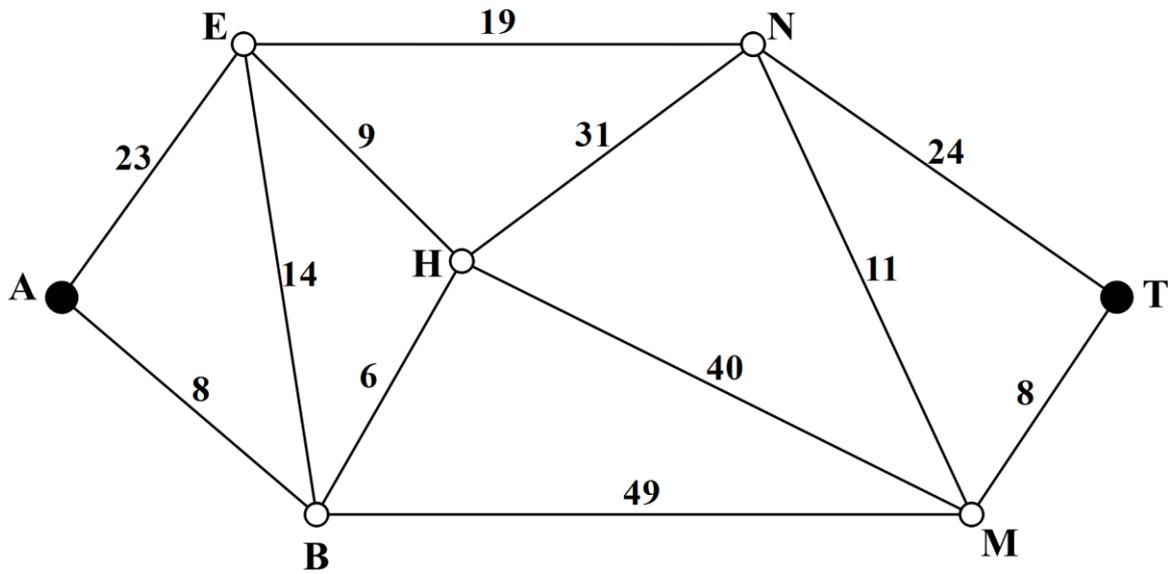
- (b) Two whole numbers are each between 40 and 60.
 Their product is 2385.
 Which are these two numbers?

Answer: and (2)

(Total 4 marks)

Q24

25. The diagram below shows seven train stations, labelled A to T, and the times, in minutes, taken to travel between stations.



- (a) Assuming that no time is added to the journey when a train passes through a station, work out the route that takes the shortest time to travel from A to T. You should list the stations in order. You must also state the total time needed for this route. Your route **does not** need to pass through every station.

Answer: (1)

..... minutes (1)

In reality, each time the train passes through a station, 4 minutes are added to the journey time.

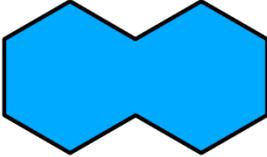
- (b) Work out the shortest time taken to travel by train from A to T. Your route **does not** need to pass through every station.

Answer: minutes (2)

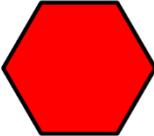
Q25

(Total 4 marks)

26. The following question is on pattern blocks.

(a) If  -  = 1, then  = ?

Answer: (2)

(b) If  ×  = 32, then  = ?

Answer: (2)

(Total 4 marks)

Q26

27. The LEGO set ‘Ultimate Collector's Millennium Falcon’ has 5197 pieces.

(a) Round this number to the nearest ten.

Answer: (1)

In July 2007 it cost \$500 (US dollars) to buy the set.

(b) Calculate its price in euro if during that period, \$1 was equivalent to €0.72.

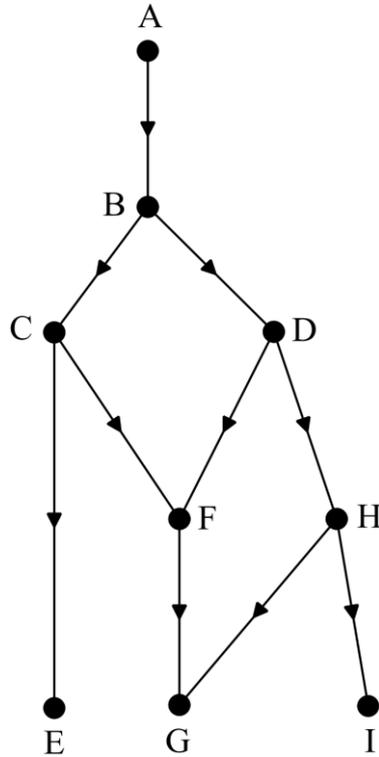


Answer: € (2)

(Total 3 marks)

Q27

28. Some marbles are released through this network from **A**. At each of the junctions, half of the marbles flow in each direction, unless there is only one direction to follow.



(a) What fraction of the marbles goes through junction **H**?

Answer: (2)

(b) If 144 marbles are released through the network, how many reach **G**?

Answer: (2)

(Total 4 marks)

Q28

29. Belinda ate $\frac{5}{8}$ of a bar of chocolate. 48 grams of chocolate remained. What was the original mass of the chocolate bar?



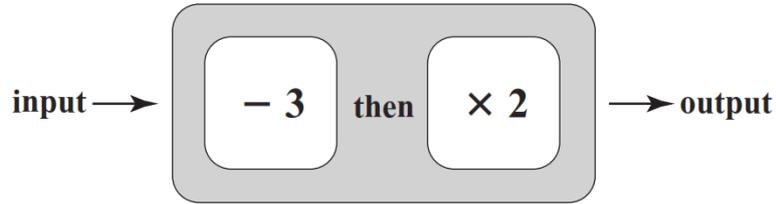
Answer: g (2)

(Total 2 marks)

Q29

30.

(a) Amy has the two-stage number machine shown below.



Complete the table of input and output numbers for Amy's machine.

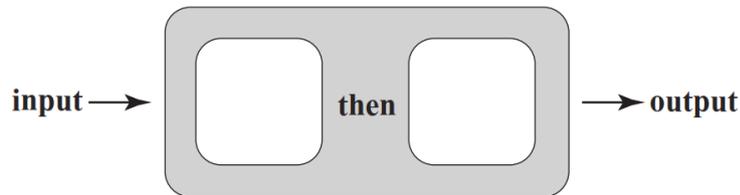
input	output
3	0
5	4
8	
	12

(2)

(b) Hannah has a different number machine which has produced the following table of input and output numbers.

input	output
0	1
1	4
3	10
6	19

Unfortunately the labels have fallen off Hannah's machine. Write suitable labels on the diagram below.



(2)

(Total 4 marks)

Q30

END

TOTAL FOR PAPER: 100 MARKS