

# MOUNT CARMEL INTERNATIONAL SCHOOL, AKOLA



Cambridge International

TERM END EXAM: II

Subject: Mathematics

Date: 10.04.2024

Student's Name: \_\_\_\_\_ Roll No. \_\_\_\_\_ Grade: 7

Marks: 80

Time: 120 minutes

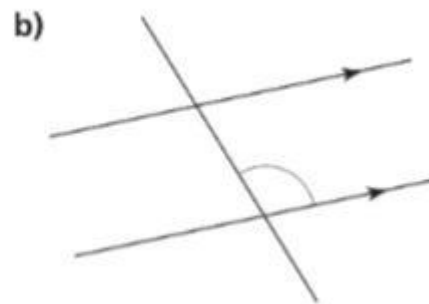
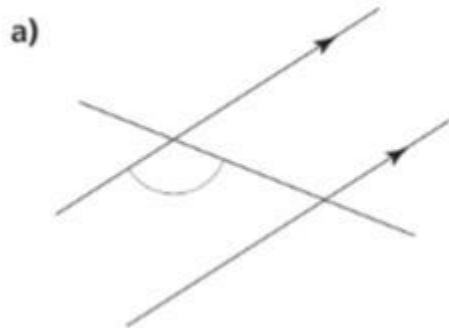
Invigilator's Sign.

1. Mark the angle described on each diagram.

(2)

a. Angle A is corresponding to the marked angle.

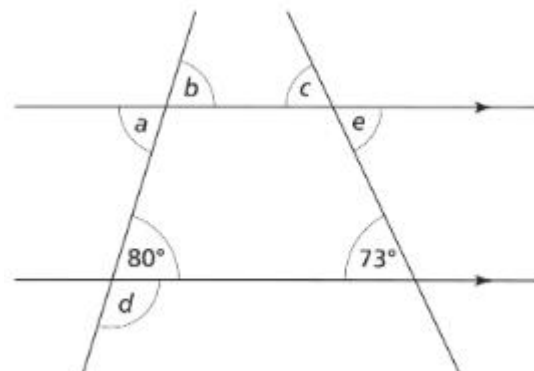
b. Angle B is alternate to the marked angle



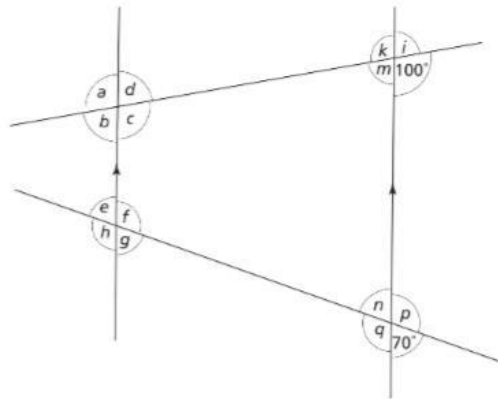
2. Write down the size of the given lettered angle.

(1)

Angle c \_\_\_\_\_



3. Jiyun looked at this diagram and said, 'Angle b is 70° and angle f is 100°.' Is he correct? (1)



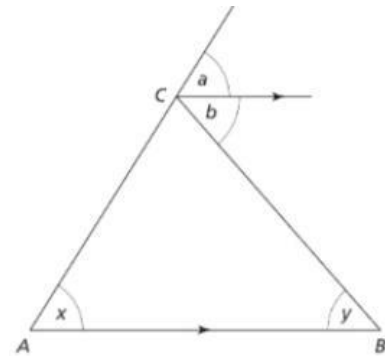
Explain your answer.

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4. Complete this proof about the exterior angle in a triangle. (2)



The exterior angle at C is  $a + b = x + y$ .

So the exterior angle at C is the sum of the interior angles at A and B.

A = x because

B = y because

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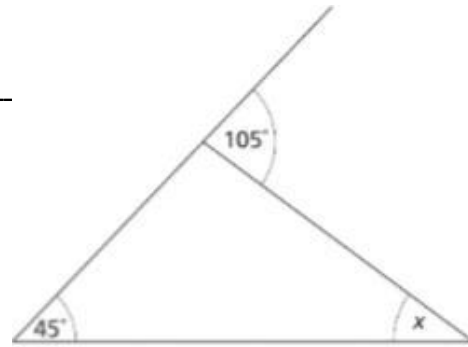


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5. Find the size of the lettered angle.

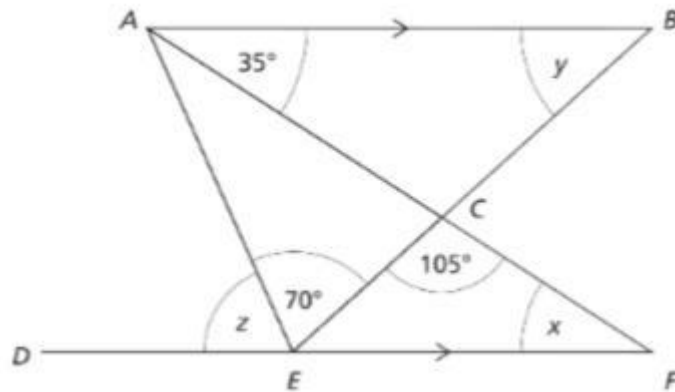
(1)

\_\_\_\_\_



6. AB and DF are parallel lines. Find the size of the angles marked  $x$ ,  $y$  and  $z$ . Give geometrical reasons for each answer.

(2)



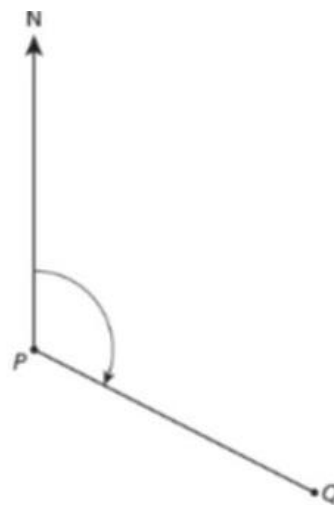
$x =$  \_\_\_\_\_ because \_\_\_\_\_

$z =$  \_\_\_\_\_ because \_\_\_\_\_

7. Measure the bearing of  $Q$  from  $P$ .

(1)

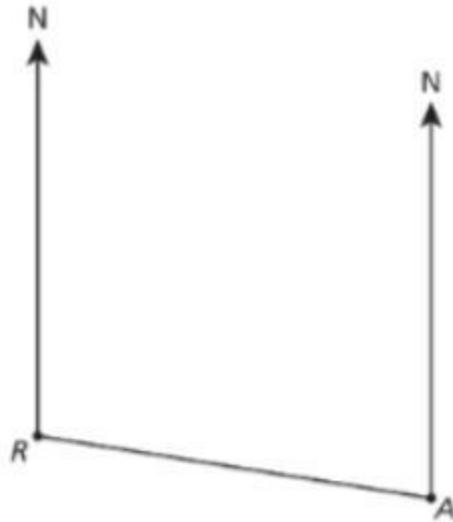
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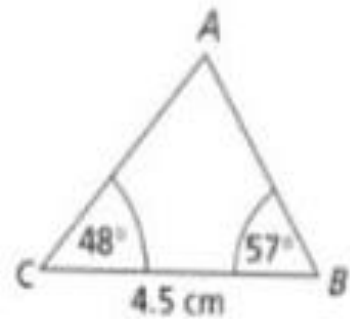
8. The diagram shows the position of an airport (A) and a railway station (R). (1)

a. A plane leaves the airport and flies on a bearing of  $050^\circ$ .

Draw the path of the plane on the diagram.



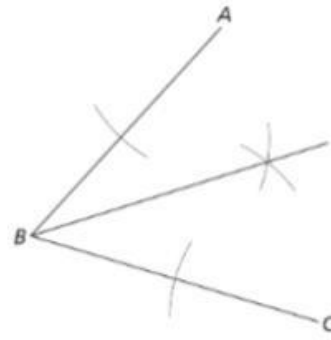
9. The diagram shows a sketch of triangle ABC. Draw the triangle accurately. (2)



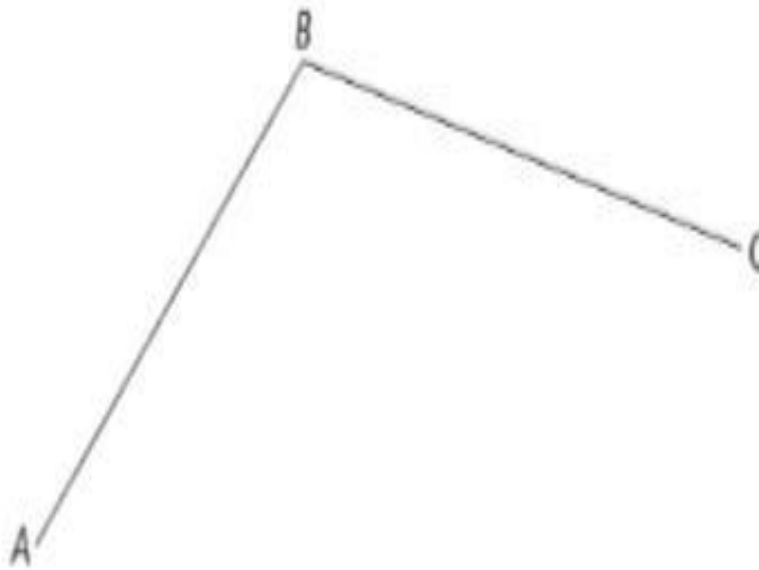
10. Marcus tries to bisect angle ABC. Explain the mistake Marcus has made. (1)

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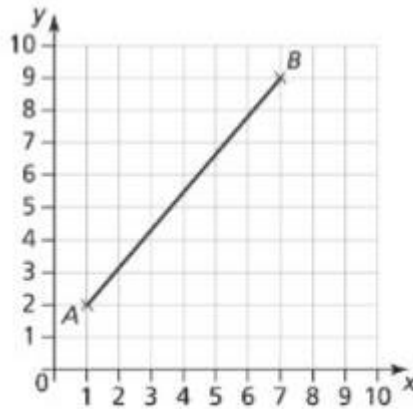
11. The diagram shows line segments AB and BC. (3)



- Construct the perpendicular bisector of line segment AB. Label the midpoint, M, of AB.
- Construct the perpendicular bisector of line segment BC. Label the midpoint, N, of BC.
- Find the midpoint of line segment MN using compasses. Label this point P.

12. Mark the midpoint of the line segment with a cross and write down its coordinates. (1)

A (1, 2) B (7, 9)



Midpoint (.....)

13. The vector translating shape A to shape B is  $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$  (2)

Decide whether each statement is true or false.

a. The image B is congruent to A.

**T**

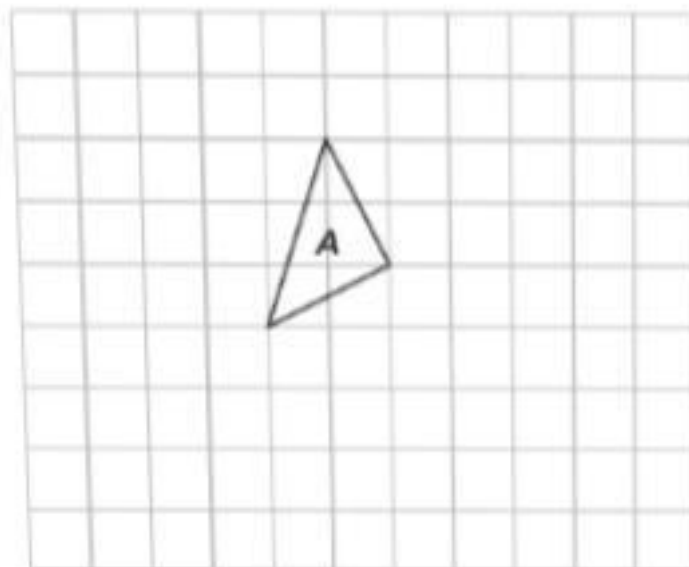
**F**

b. The image of the vertex (2, 1) is (6, -3).

c. The vector translating B to A is  $\begin{pmatrix} -4 \\ 2 \end{pmatrix}$

14. Draw the image of triangle A after the given transformation. (1)

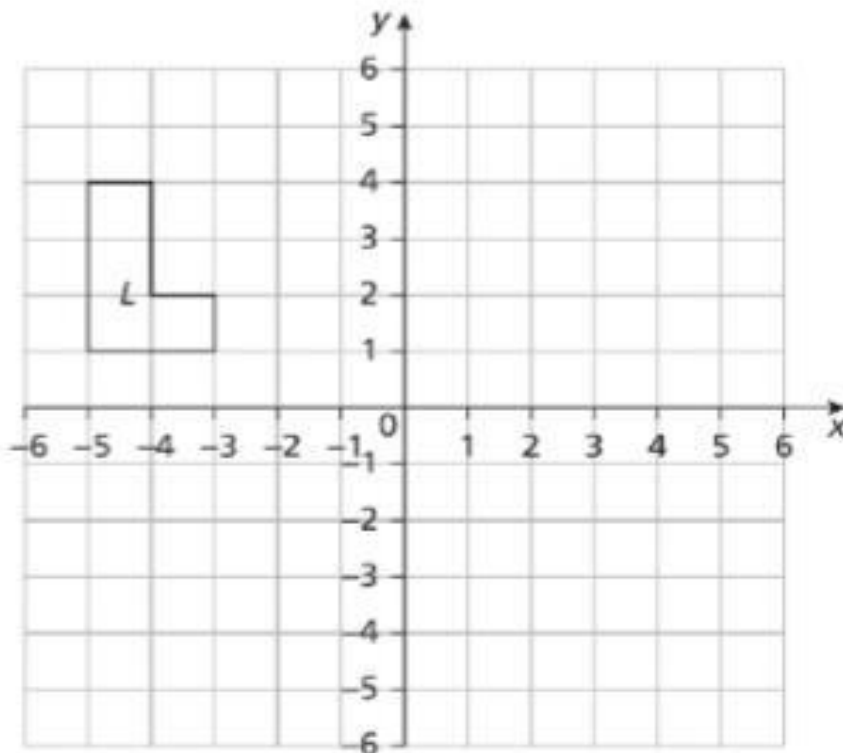
- Translation with vector (4 -3). Label the image R.



15. Draw the image of shape L under each transformation.

(1)

- Reflect L in the line  $y = -1$ . Label the image M.



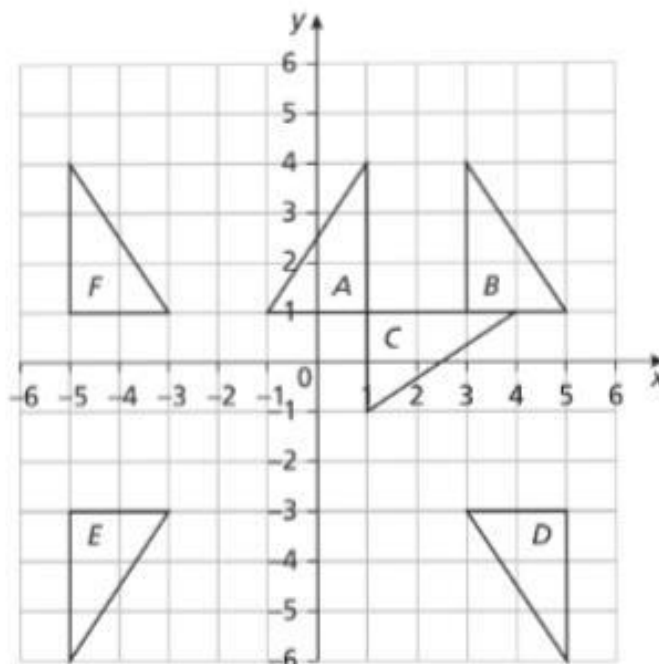
16. The diagram shows six triangles, A, B, C, D, E and F.

(2)

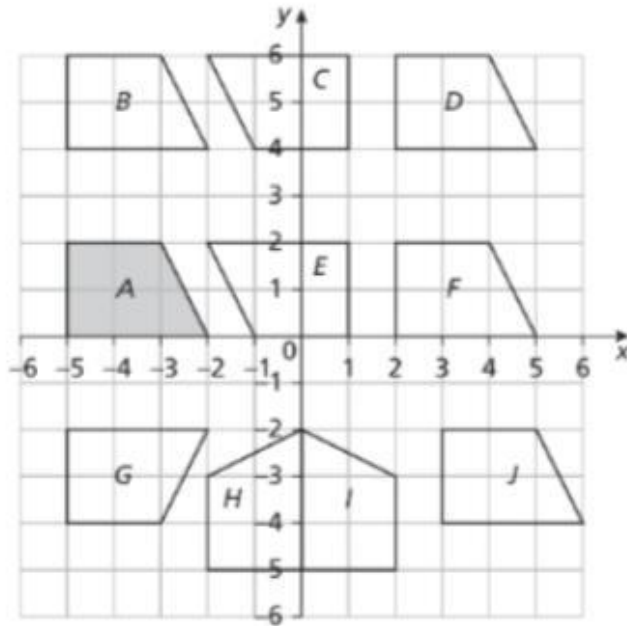
a. State the triangles that are a reflection of triangle A. \_\_\_\_\_

b. State the equation of the mirror line of the following reflections:

i) A to C \_\_\_\_\_



17. Write down the letter of the shape that is the image of trapezium A under each transformation. (3)



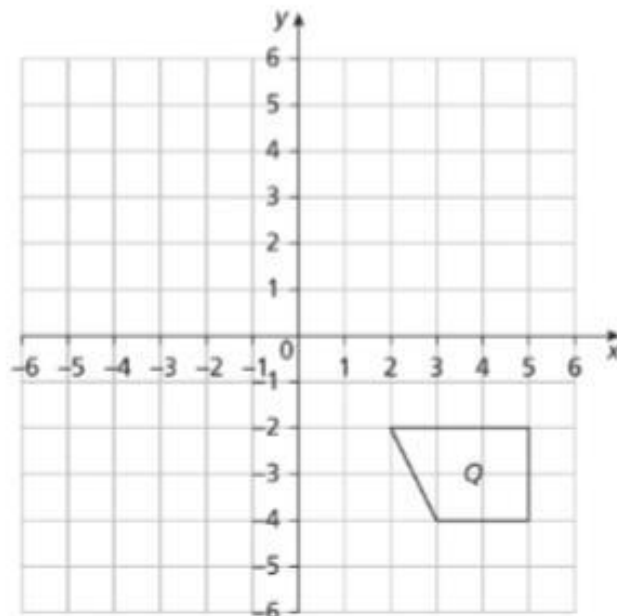
a. Translation under vector  $\begin{pmatrix} 7 \\ 4 \end{pmatrix}$  \_\_\_\_\_

b. Rotation by  $180^\circ$  about point  $(-2, 1)$  \_\_\_\_\_

c. Reflection in the line  $y = -1$  \_\_\_\_\_

18. Draw the image of quadrilateral Q under the given transformation. (2)

- Rotate Q by  $180^\circ$ , centre  $(1, -4)$ . Label the image C.

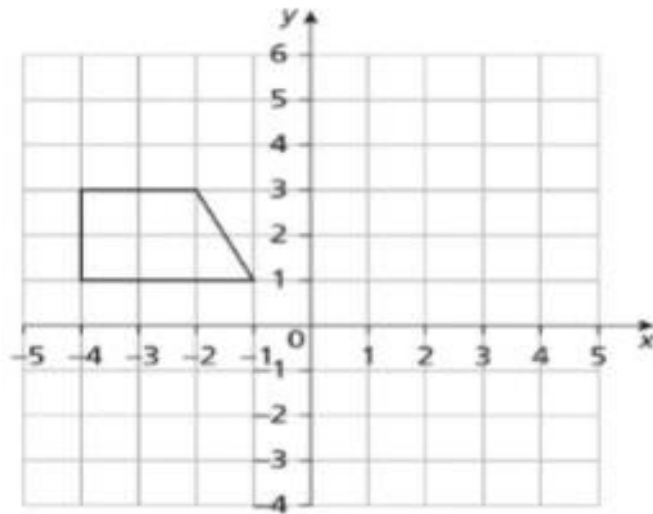




19. Enlarge the shape from the given centre of enlargement by the given scale factor.

Centre of enlargement  $(-4, 5)$ , scale factor 2.

(2)



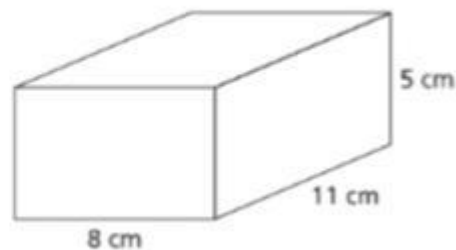
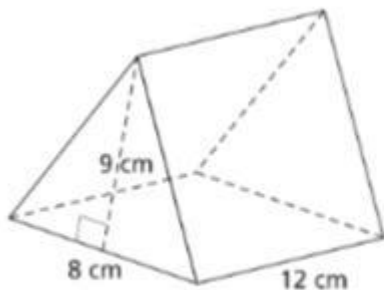
20. On Monday, Ben drives 255 miles. On Tuesday he drives 433 km. Approximately how much further does he drive on Tuesday than on Monday? Give your answer in kilometers.

(2)

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21. Georgia looks at the prism and cuboid below. She says that the volume of the cuboid is  $8 \text{ cm}^3$  greater than the volume of the prism. Is she correct? Show how you know. (2)

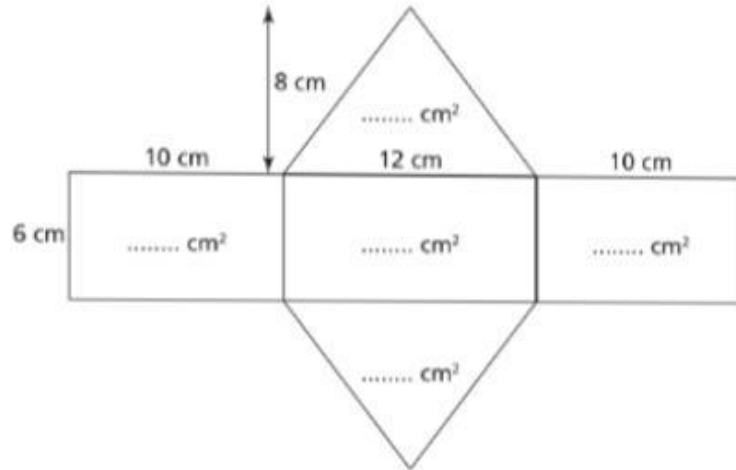


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22. Each part shows the net of a solid shape. Work out the surface area of the solid. (3)




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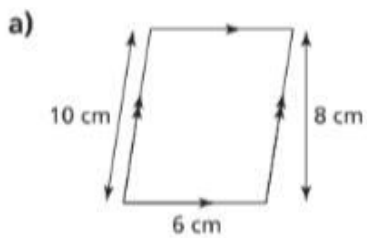


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23. Calculate the area of each shape. (2)



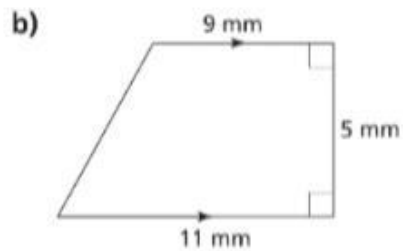

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24. Work out the volume of the given triangular prism. (2)

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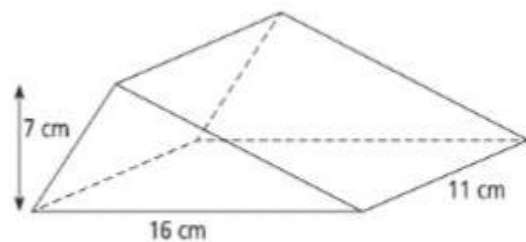
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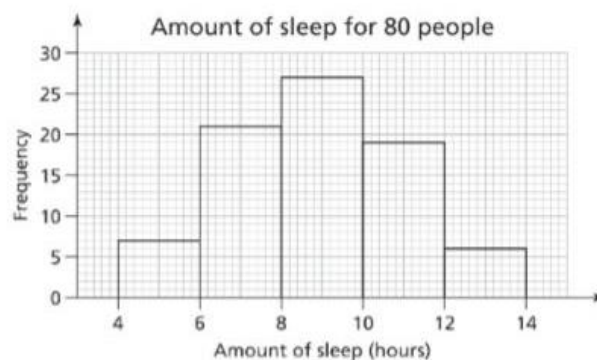


25. The table shows the number of teachers employed by 90 schools. Complete the frequency diagram for this set of data. (2)

Number of teachers	Number of schools
0-9	9
10-19	16
20-29	37
30-39	18
40-49	10

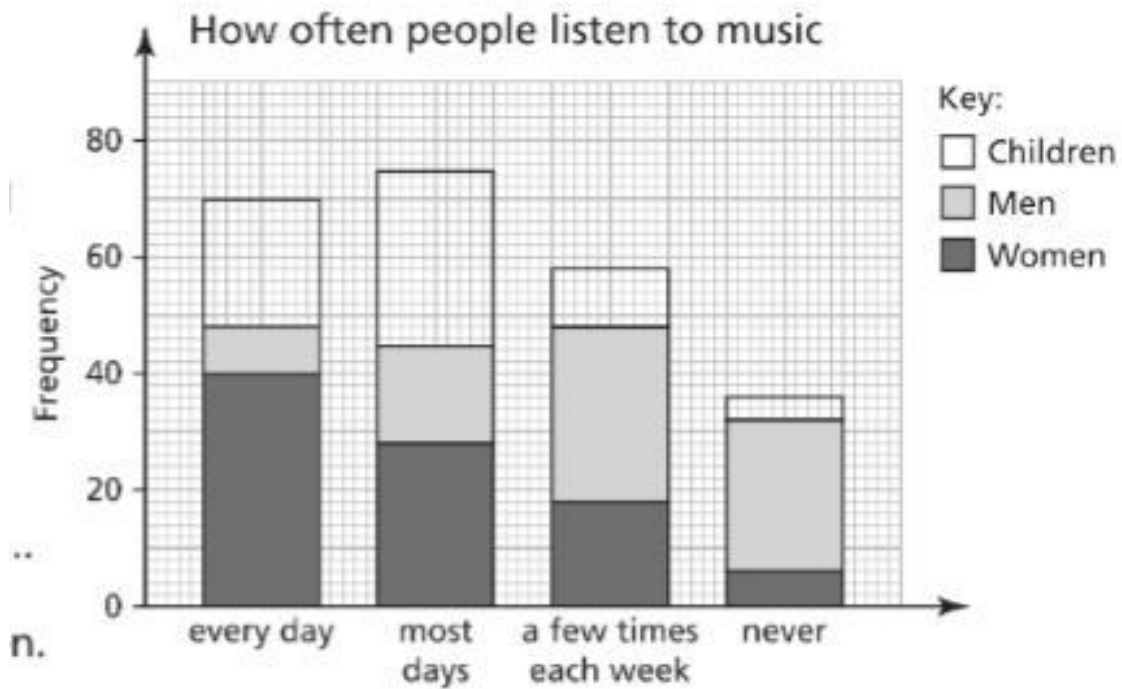


26. The frequency diagram shows the amount of sleep (in hours) of a group of 80 people. (3)



- a) How many people slept for between 6 and 10 hours? \_\_\_\_\_
- b) How many more people slept for 6-8 hours than for 4-6 hours? \_\_\_\_\_
- c) Caroline slept for  $14 \frac{1}{2}$  hours last night. How can you tell she was not one of the 80 people? \_\_\_\_\_  
\_\_\_\_\_

27. In a survey, some men, women and children were asked how often they listened to music. The results are shown in the compound bar chart. (3)



a) Find the total number of women who took part in the survey. \_\_\_\_\_

b) Circle the modal response for children.

Every day

Most days

Every day

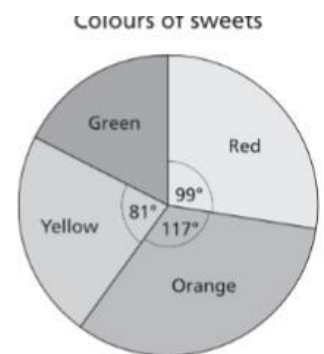
A few times each week

Never

c) Find the number of men who said they never listen to music. \_\_\_\_\_

28. The pie chart shows the colours of sweets in a packet. There are 600 sweets in the packet. What is the size of the angle for green sweets? (1)

\_\_\_\_\_



\_\_\_\_\_

29. Here are the marks that 22 students scored in a test.

(3)

34 32 25 30 8 15 17 24 21 34 36 32  
36 22 21 29 42 18 22 19 15 39

- Draw a stem-and-leaf diagram to show the information.
- Find the median mark.
- Find the range of the marks.

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30. The pie charts show how Max and Nadia spend their monthly pay.

(2)

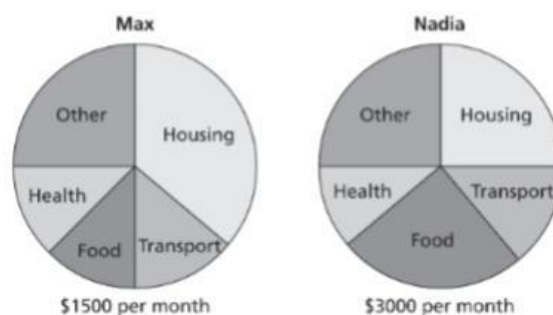
State if these statements are true or false. (T / F)

Max spends a greater proportion of his monthly pay on housing than Nadia.

Nadia spends a smaller proportion of her monthly pay on food than Max.

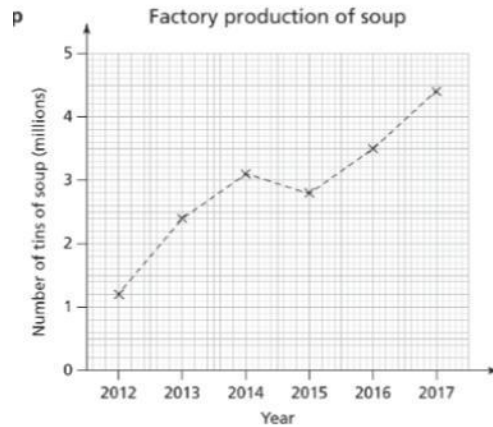
Max spends more money per month on health than Nadia.

Nadia uses more money per month for other things than Max.





33. The diagram shows the number of tins of soup a factory produced from 2012 to 2017. (3)



- a. In which year did the factory produce 2.4 million tins of soup? \_\_\_\_\_
- b. Between which two years did production decreased? \_\_\_\_\_
- c. Describe the trend in the number of tins of soup produced.

\_\_\_\_\_

\_\_\_\_\_

34. A shop sells bottles of water in three sizes: 250 ml, 500 ml and 1.5 litres. Write the ratio of the sizes of these bottles in its simplest form. (2)

\_\_\_\_\_

\_\_\_\_\_

35. Sasha and Eva mix yellow paint and blue paint to make green paint. Whose paint contains the greater proportion of blue paint? Show your working. (2)

Sasha's paint	Eva's paint
litres of yellow : litres of blue	litres of yellow : litres of blue
3 : 7	4 : 9

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

36. Mia has 1.2 kg of flour. She uses some of the flour to make bread, some to make a cake and the rest to make biscuits. She uses the flour to make each item in the ratio bread: cake: biscuits = 5:2:3. Find the amount of flour (in grams) Mia uses for each item.

Bread \_\_\_\_\_ g (2)

Cake \_\_\_\_\_ g

Biscuits \_\_\_\_\_ g

37. Tarif has blue socks and black socks.  $\frac{7}{12}$  of his socks are blue. (2)

a. What proportion of his socks are black? \_\_\_\_\_

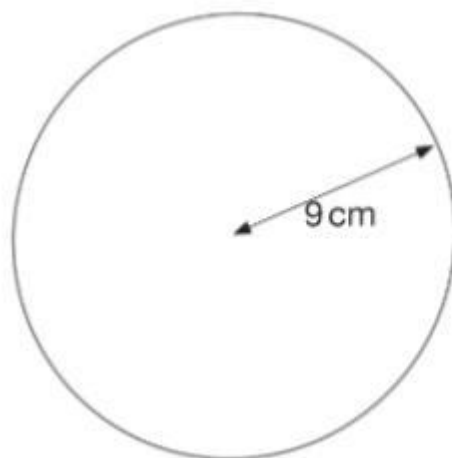
b. Write the ratio of blue socks to black socks. \_\_\_\_\_

38. A regular polygon has 16 lines of symmetry. (1)

Draw a ring around the order of rotation symmetry for the polygon.

4                      8                      16                      32

39. The radius of a circle is 9 cm. Draw a ring around the calculation that gives the circumference of the circle in centimetres. (1)



Not to scale

$$\frac{9}{\pi}$$

$$\frac{18}{\pi}$$

$$\pi \times 9$$

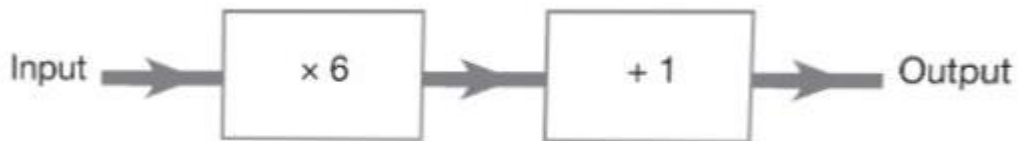
$$\pi \times 18$$



40. Tick (✓) to show if each statement is true or false. (1)

	T	F
All rectangles are squares.	<input type="checkbox"/>	<input type="checkbox"/>
All squares are parallelograms.	<input type="checkbox"/>	<input type="checkbox"/>
All parallelograms are trapeziums.	<input type="checkbox"/>	<input type="checkbox"/>

41. Here is a function machine. (1)



Draw a ring around the output when the input is 4

25                  30                  0.5                  11

42. Draw a ring around the value of  $6 - 1\frac{3}{5}$  (1)

$5\frac{3}{5}$                    $5\frac{2}{5}$                    $4\frac{3}{5}$                    $4\frac{2}{5}$

43. A coat costs \$400. The cost increases by 20%. Draw a ring around the increase in cost of the coat. (1)

\$20                  \$40                  \$80                  \$100

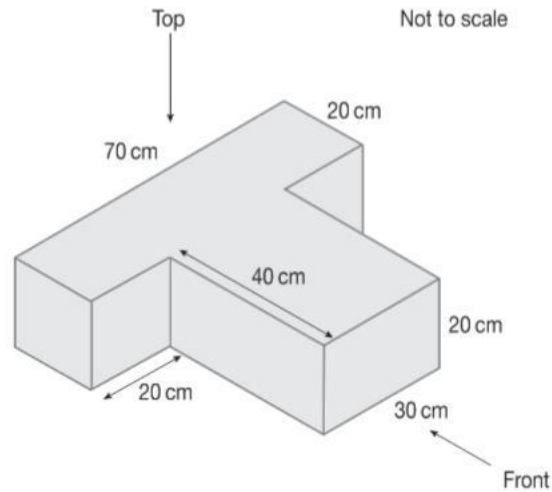
44. A sequence has nth term rule  $40 - 3n$  Find the 8<sup>th</sup> term in the sequence. (1)

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45. The diagram shows a prism made from joining together two cuboids. (2)



A scale drawing of the plan view of the prism is shown below. Draw the front elevation of the prism using the same scale.



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