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0580/32

February/March 2019

2 hours

Additional Materials: Electronic calculator
Tracing paper (optional)

Geometrical instruments

READ THESE INSTRUCTIONS FIRST

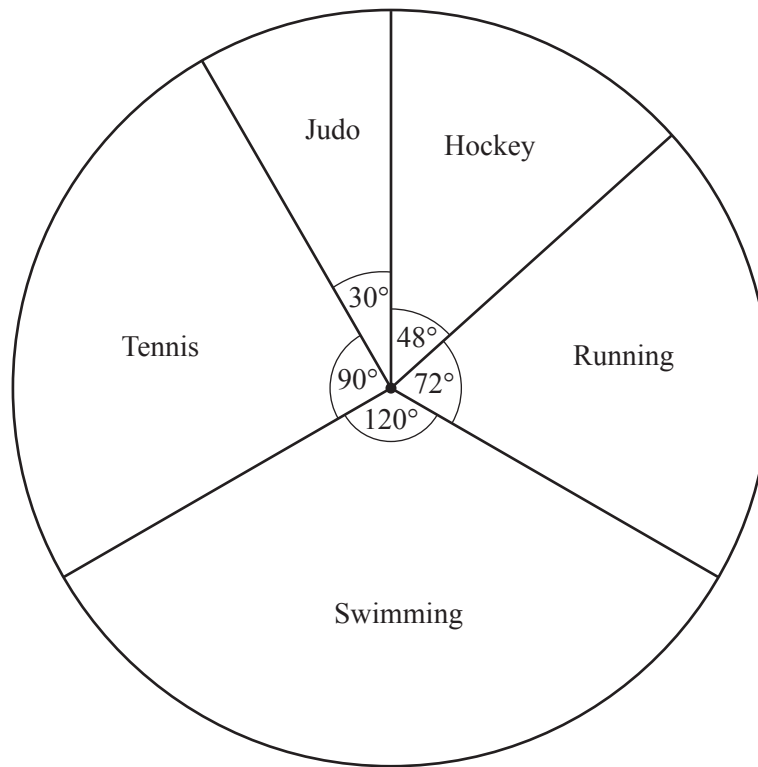
DO **NOT** WRITE IN ANY BARCODES.

For π , use either your calculator value or 3.142.

The total of the marks for this paper is 104.

This document consists of **19** printed pages and **1** blank page.

- 1 (a) 60 boys are asked to name their favourite sport.
The results are shown in the pie chart.

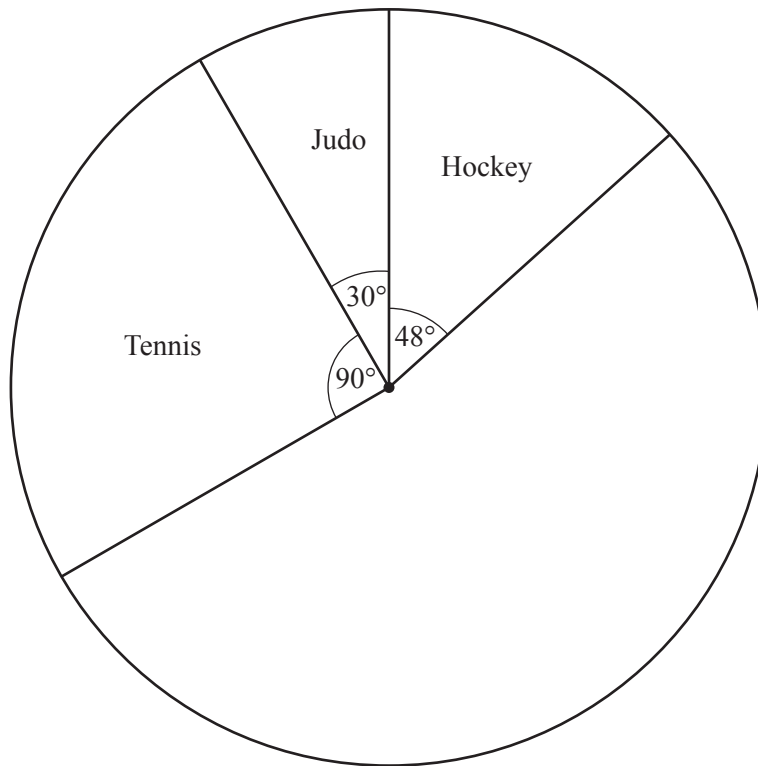


- (i) Write down the most popular sport.
..... [1]
- (ii) Write down the fraction of boys who choose Running.
..... [1]
- (iii) Work out how many boys choose Judo.
..... [2]
- (iv) One of the boys is chosen at random.
Work out the probability that his favourite sport is **not** Judo.
..... [1]
- (v) Complete this statement.
Three times as many boys choose than choose [1]

- (b) Two of the boys in **part (a)** then change their choice from Running to Swimming.

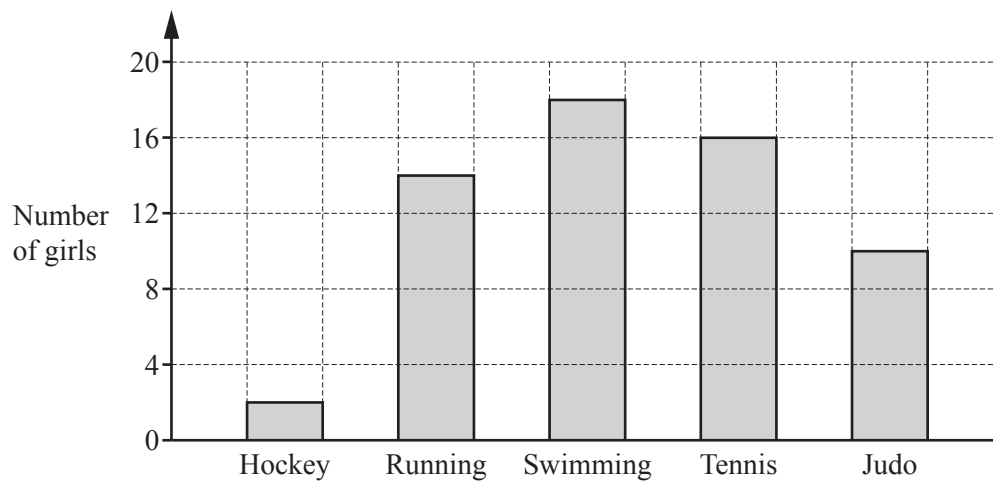
Complete the pie chart after this change.

The Tennis, Judo and Hockey sectors have been drawn for you.



- (c) 60 girls are asked to name their favourite sport. Their results are shown in the bar chart below.

[2]

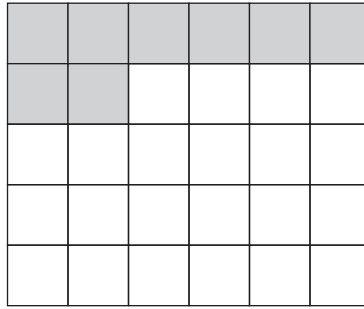


Using your pie chart in **part (b)** and the bar chart above, write down one similarity and one difference between the girls' results and the boys' results.

Similarity

Difference [2]

2 (a)



Write down the fraction of the rectangle that is shaded.
Give your answer in its simplest form.

..... [2]

(b) Write down a fraction that is equivalent to $\frac{7}{12}$.

..... [1]

(c) Write down a fraction that completes this calculation.

$$\frac{13}{11} \times \frac{\text{.....}}{\text{.....}} = 1$$

[1]

(d) Find a fraction that makes this statement true.

$$\frac{7}{9} < \frac{\text{.....}}{\text{.....}} < \frac{8}{9}$$

[1]

(e) Write these numbers in order, starting with the smallest.

$$5.7 \times 10^{-1}$$

$$\frac{4}{7}$$

$$\sqrt{0.33}$$

$$57.2\%$$

..... < < < [2]
smallest

- 3 (a) Maia shares \$3000 between her three children.
She gives the eldest child \$1200, the second eldest child \$1000 and the rest to the youngest child.

Write this information as a ratio in its simplest form.

..... : : [2]
eldest youngest

- (b) Yani's house is for sale.
She decides to reduce the selling price of \$240 000 by 15%.

Calculate the new selling price.

\$ [2]

- (c) Hawa invests \$750 at a rate of 3.5% per year compound interest.

Calculate the value of his investment at the end of 3 years.

\$ [3]

4 A car park has 880 parking spaces.

(a) Some of the spaces are reserved.

The ratio of reserved spaces : not reserved spaces = 1 : 10.

Work out the number of spaces that are not reserved.

..... [2]

(b) 25% of the 880 spaces are on the top floor.

Work out the number of spaces that are on the top floor.

..... [1]

(c) At 06 00 one morning, $\frac{1}{40}$ of the 880 spaces are filled.

By 06 30, no cars have left the car park but another $\frac{1}{5}$ of the 880 spaces are filled.

Work out the fraction of the 880 spaces that are empty at 06 30.

..... [3]

- (d) The cost of each visit to the car park is shown in the table.

Length of visit	Cost (\$)
Up to 20 minutes	Free
More than 20 minutes and up to 2 hours	2.50
More than 2 hours and up to 4 hours	4.50
More than 4 hours and up to 8 hours	8.50
More than 8 hours and up to 24 hours	12.00

- (i) Samarth arrives at 11 40 and leaves at 15 30.

Find the cost of his visit.

\$ [1]

- (ii) Radhika leaves the car park at 17 50 and pays \$8.50 .

- (a) Work out the earliest time she could have arrived at the car park.

..... [1]

- (b) Work out the change she receives from a \$20 note.

\$ [1]

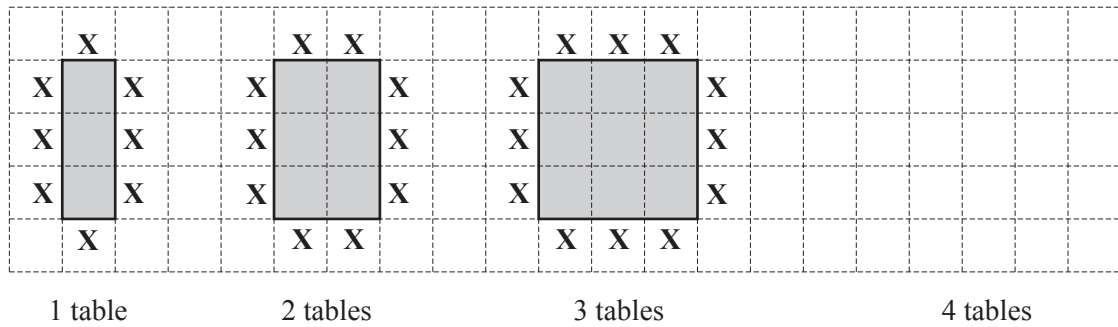
- (iii) Dhruv bought a weekly car park ticket for \$26.
That week, he visited the car park four times.
These are the lengths of time he parked his car for.

17 minutes $6\frac{1}{2}$ hours 11 hours $9\frac{1}{4}$ hours

Work out how much he saved by buying a weekly ticket.

\$ [3]

- 5 Mrs Verma has a restaurant.
 In the restaurant each table has 8 chairs.
 Sometimes she puts tables together.
 The diagrams show how the tables are put together and the position of each chair (X).



The pattern of tables and chairs forms a sequence.

- (a) Draw the diagram for 4 tables. [1]
- (b) Complete the table. [2]

Number of tables (t)	1	2	3	4	5	6
Number of chairs (c)	8	10	12			

- (c) Find a formula for the number of chairs, c , in terms of the number of tables, t .

$$c = \dots\dots\dots [2]$$

- (d) 18 tables are put together in this way.

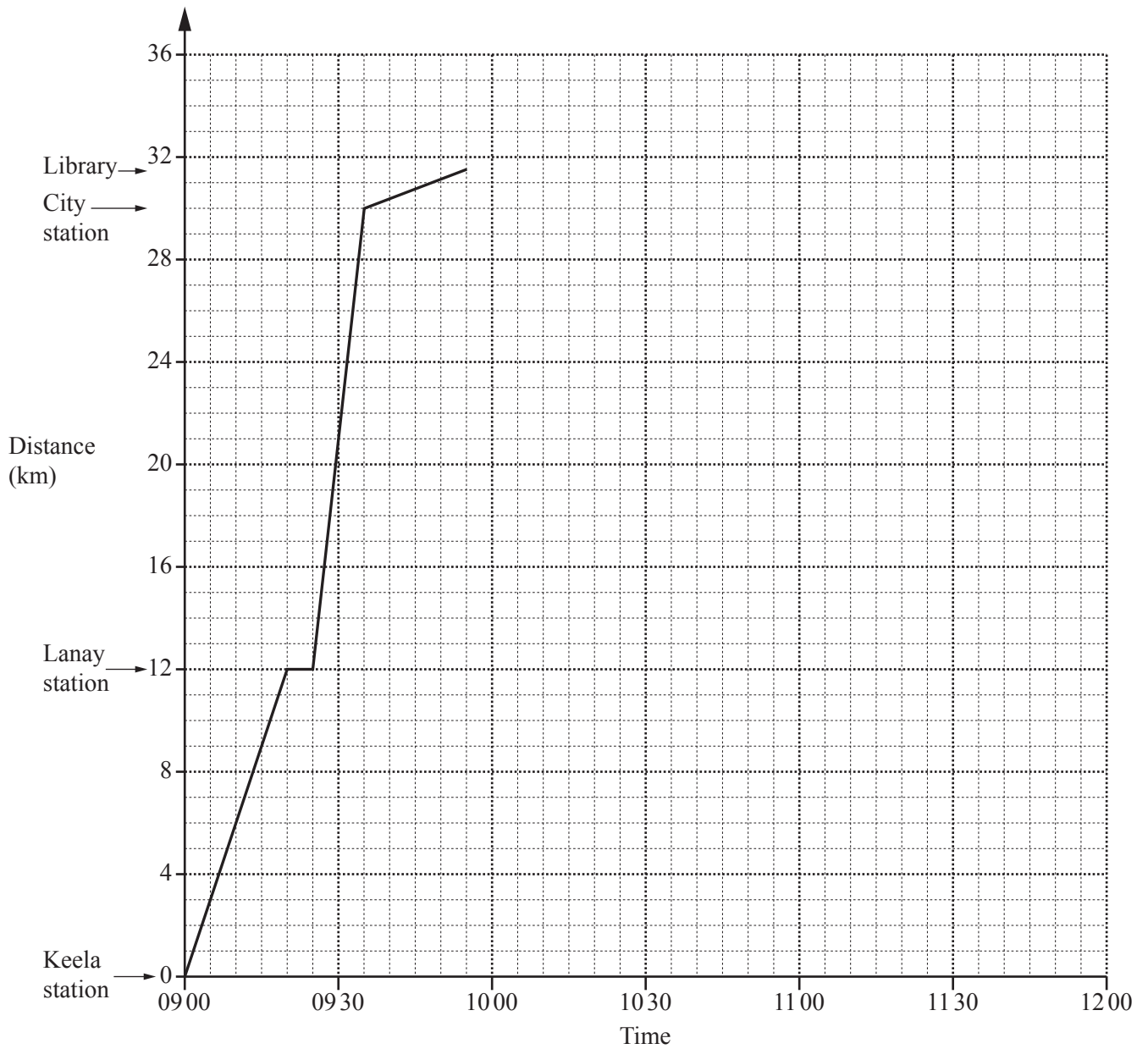
Work out the number of chairs needed.

..... [2]

- (e) Work out the number of tables, put together in this way, when 80 chairs are needed.

..... [2]

- 6 Mr Patel is travelling by train to the city.
He is going to the library.



The travel graph shows his journey from Keela station to the library.

- (a) Write down the total time it takes Mr Patel to travel from Keela station to the library.

..... min [1]

- (b) Work out the speed of the train between Lanay station and City station in km/h.

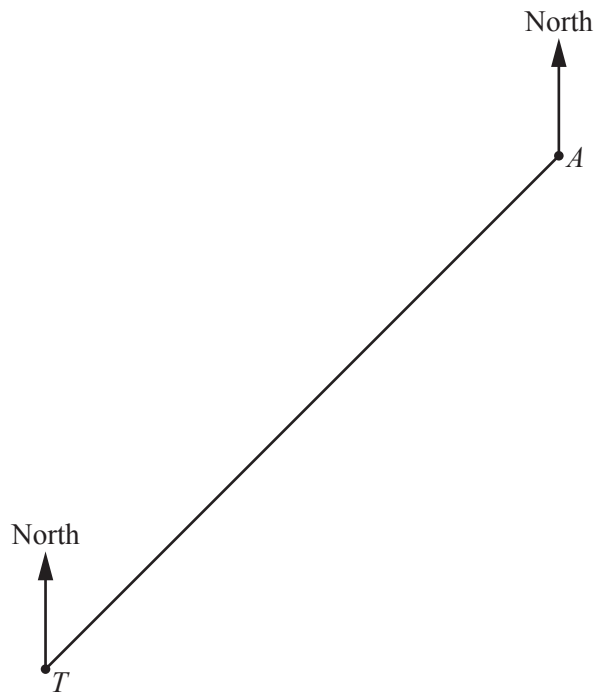
..... km/h [2]

- (c) Use the following information to complete the travel graph for Mr Patel.

- He spends 35 minutes at the library.
- He walks back to City station at the same constant speed he walked to the library.
- The train takes 20 minutes to travel from City station to Lanay station.
- The train stops for 10 minutes at Lanay station.
- The train travels at a constant speed of 48 km/h from Lanay station to Keela station.

[4]

- 7 The scale drawing shows the positions of an airport (A) and a train station (T) on a map. The scale is 1 centimetre represents 2 kilometres.



Scale: 1 cm to 2 km

- (a) Work out the actual distance, in kilometres, of the train station from the airport.

..... km [2]

- (b) Measure the bearing of the airport from the train station.

..... [1]

- (c) There is a straight road that is equidistant from T and A .

Using a straight edge and compasses only, construct the position of the road on the map.
Show all your construction arcs. [2]

- (d) Krishna's house is

- on a bearing of 203° from the airport
- and
- 8.8 km from the train station.

On the map, mark the two possible positions of Krishna's house.
Label each of these points K .

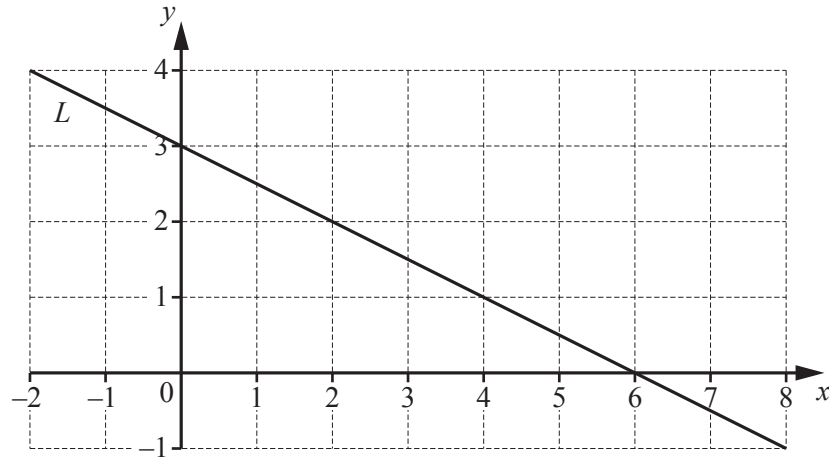
[4]

- (e) The bus station is not shown on the map.
The bearing of the bus station from the train station is 318° .

Work out the bearing of the train station from the bus station.

..... [2]

8 (a)



Line L is drawn on the grid.

Find the equation of line L .

Give your answer in the form $y = mx + c$.

$y = \dots\dots\dots$ [3]

(b) The points $(9, a)$ and $(b, 3)$ lie on the line $y = \frac{2}{3}x - 7$.

Work out the value of

(i) a ,

$a = \dots\dots\dots$ [2]

(ii) b .

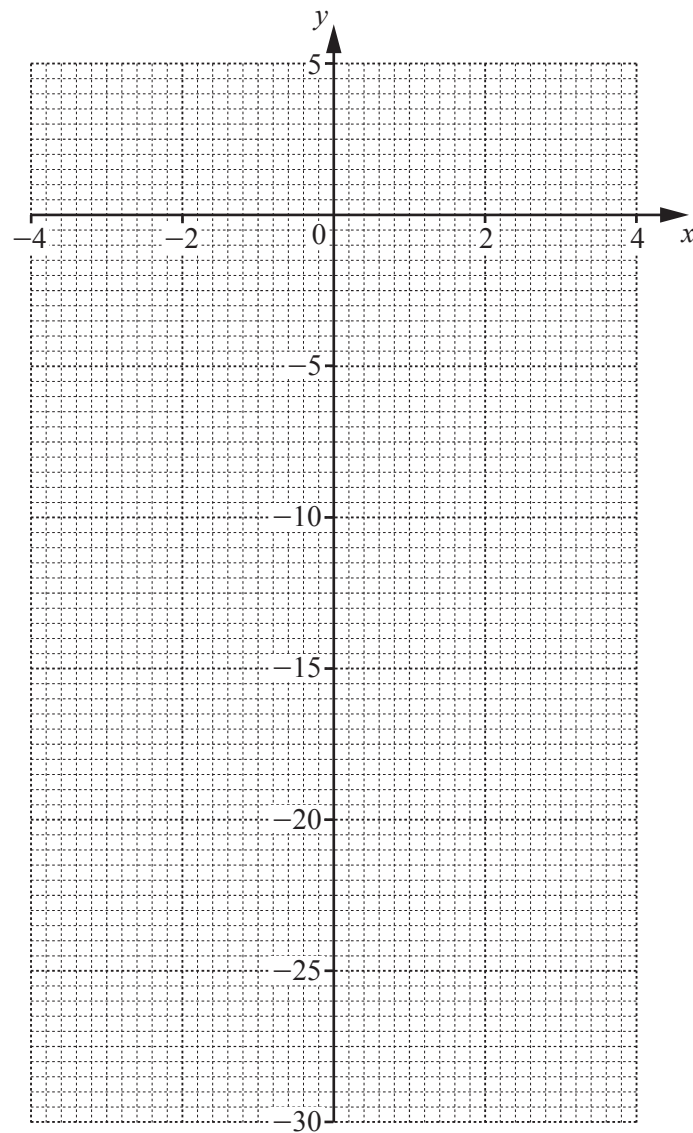
$b = \dots\dots\dots$ [2]

- (c) (i) Complete the table of values for $y = x(3 - x)$.

x	-4	-2	-1	0	1	2	4
y		-10		0	2		-4

[3]

- (ii) On the grid, draw the graph of $y = x(3 - x)$ for $-4 \leq x \leq 4$.

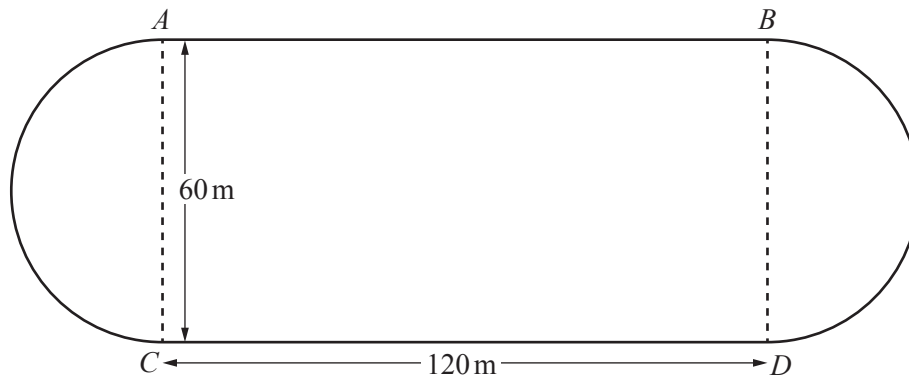


[4]

- (iii) Write down the co-ordinates of the highest point of the graph for $-4 \leq x \leq 4$.

(.....,) [1]

- 9 The diagram shows a rectangle and two semicircles with diameters AC and BD .
 This diagram is a scale drawing of a running track.
 $AC = BD = 60\text{ m}$
 $AB = CD = 120\text{ m}$



- (a) (i) Complete the statement.

1 centimetre represents metres. [2]

- (ii) Work out the total length of the running track in metres.

..... m [3]

- (iii) Shreva walks at 1.4 m/s .

Work out how long it will take her to walk once around the track.
 Give your answer in minutes and seconds, correct to the nearest second.

..... minutes seconds [3]

(b) Talan completes one lap of the track every 80 seconds.

(i) Work out how many laps he can complete in one hour.

..... [2]

(ii) Naima completes one lap of the track every 88 seconds.

Talan and Naima start running from point *A* on the track at the same time.

They each complete a number of laps of the track.

Work out the smallest number of laps they each complete before they are both at point *A* again at the same time.

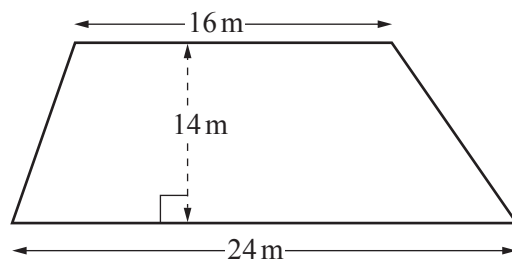
Talan completes laps and Naima completes laps. [3]

- 10 (a) Using a straight edge and compasses only, construct the equilateral triangle ABC .
The base AB has been drawn for you.



[2]

(b)

NOT TO
SCALE

Calculate the area of this trapezium.

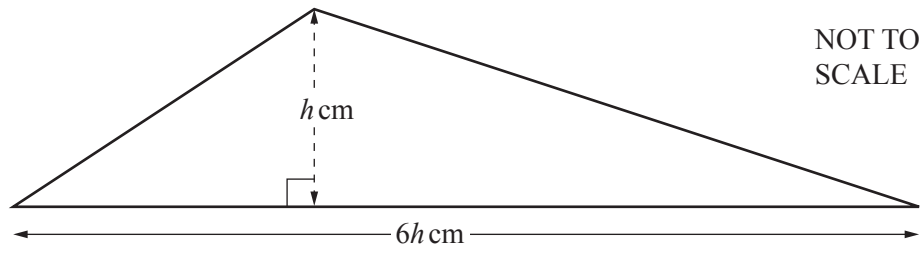
..... m^2 [2]

- (c) Each interior angle of a regular polygon is 162° .

Calculate the number of sides of the polygon.

..... [3]

(d)

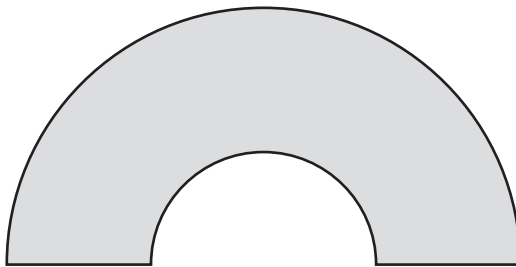


The area of this triangle is 363 cm^2 .

Calculate the value of h .

$h = \dots\dots\dots$ [3]

(e)



This shape is drawn using two semicircles that have the same centre.

The large semicircle has radius 7 cm .

The small semicircle has radius 3 cm .

Calculate the area of the shape.

$\dots\dots\dots \text{ cm}^2$ [3]

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