



MATHS

BOOKS - SWAN PUBLICATION

VISUALISING SOLID SHAPES

Do This

1. Tabulate the number of faces, edges and vertices from the following polyhedrons. (Here 'V' stands for the number of vertices, 'F' stands

for number of faces, and 'E' stands for number of edges).

Solid	F	V	E	F+V	E+2
Cuboid					
Triangular pyramid					
Triangular prism					
Pyramid with square base					
Prism with square base					

What do you infer from the last two columns?

In each case, do you find $F + V = E + 2$ i.e.,

$F + V - E = 2$? This relationship is called

Euler's formula. In fact this formula is true for

any polyhedron.



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2. Match the following

1. Earthworm	(i) Pioneer species
2. Succession	(ii) Detritivore
3. Ecosystem service	(iii) Natality
4. Population growth	(iv) Pollination



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Thick Discuss And Write

1. What happens to a stone tied to the end of a string and whirled in a circle if the string suddenly breaks?


















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Exercise 10 1

1. For each of the given solid, the two views are given. Match for each solid the corresponding top and front views. This first one is done for

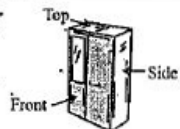
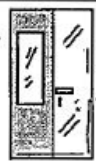

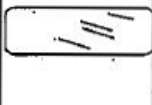
you.





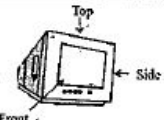
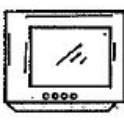


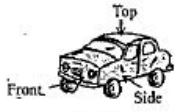


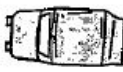
	Object		Side View	Top View
(a)	 A bottle	(i)		(i) 
(b)	 A weight	(ii)		(ii) 
(c)	 A flask	(iii)		(iii) 
(d)	 Cup and Saucer	(iv)		(iv) 
(e)	 Container	(v)		(v) 



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2. For each of the given solid, the three views are given. Identify for each solid the corresponding top, front and side views.

	Object	(i)	(ii)	(iii)
(a)	 <p>An almirah</p>			

(b)	 <p>A Match box</p>			
(c)	 <p>A Television</p>			
(d)	 <p>A car</p>			



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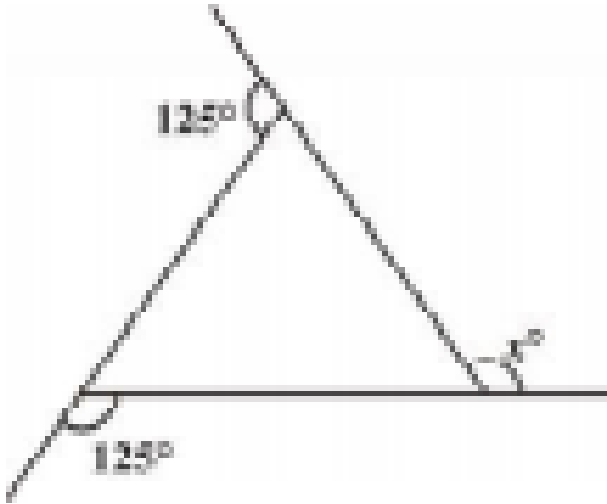
3. For each given solid, identify the top view, front view and side view.

	Object	(i)	(ii)	(iii)
(a)				
(b)				
(c)				
(d)				
(e)				



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4. Find x in the following figures.



(a)



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5. Now look at another map drawn by his sister , ten years old Meena , to show the route her house to her school .

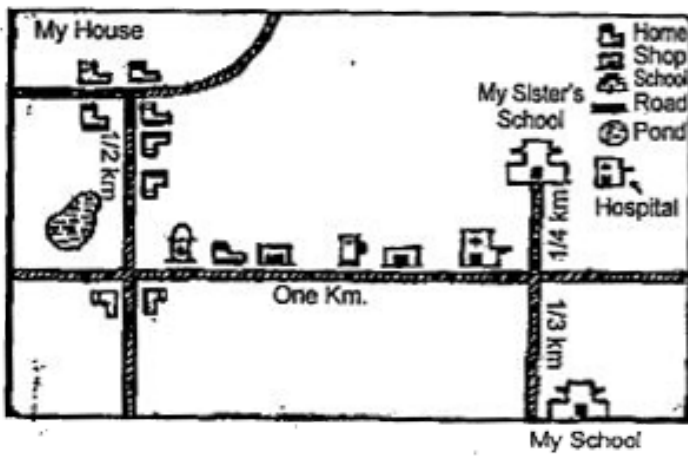
This map is different symbols for different landmarks. Secondly , longer line segments have been drawn for shorter distances ,i.e., she has drawn the map to a scale .

Now , you can answer the following questions

:

How far is Raghav's school from his residence

?



Whose school is nearer to the house , raghav's or Meena's ?

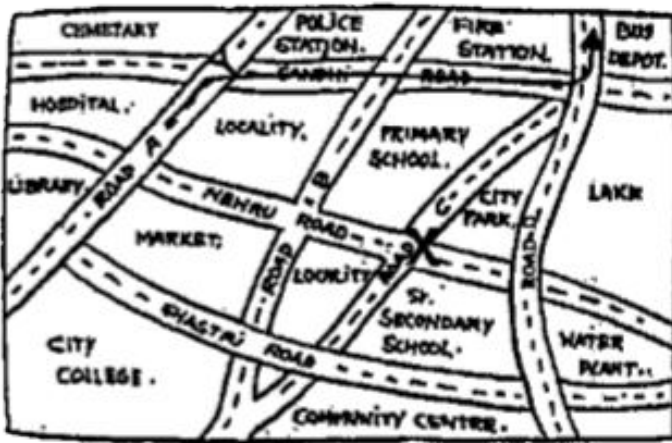
Which are the important landmarks on the route ?



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Exercise 10 2

1. Look at the given map of city .



(a) Colour the maps as follows: Blue water , red -fire station , orange -library , yellow - schools , Green -park , Pink -college , purple - Hospital ,brown -Cemetery .

(b) Mark a green 'X' at the intersection of Road 'C' and nehru Road , Green - park ,Pink College ,

purple - Hospital ,brown -Cemetery .

(c) In a red , draw a short street route from Library to the bus depot .

(d) Which is further east , the city park or the market ?

(e) Which is further south, the primary school or the Sr. Secondary School ?



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2. Draw a map of your class room using proper scale and symbol for different objects.



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3. Draw a map of your school compound using proper scale and symbols for various features like play ground main building, garden etc.



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4. Draw a map giving instructions to your friend so that she reaches your house without any difficulty.



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Exercise 10 3

1. Can a polyhedron have for its faces: 3 triangles?



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2. Can a polyhedron have for its faces: 4 triangles?



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3. Can a polyhedron have for its faces: a square and four triangles?



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4. Is it possible to have a polyhedron with any given number of faces? (Hint: Think of a pyramid).



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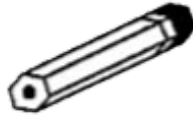
5. Which are prisms among the following ?

(i)



A nail

(ii)



Unsharpened pencil

(iii)



A table weight

(iv)



A box



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6. How are prisms and cylinders alike?



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7. How are pyramids and cones alike?



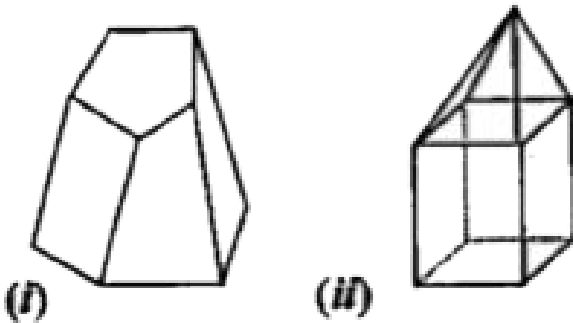
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8. Is a square prism same as a cube? Explain.



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9. Verify Euler's formula for these solids .



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10. Using Euler's formula find the unknown.

Faces	?	5	20
Vertices	6	?	12
Edges	12	9	?

$$F = ?, V = 6, E = 12$$



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11. Can a polyhedron have 10 faces, 20 edges and 15 vertices?



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