Hw

EUCLID'S GEOMETRY

Exercise - 5.1

1. Which of the following statements are true & which are false? Give reasons for your answer

i) False
Reason: If we mark a point O on the surface of a paper. Using pencil and and scale, we can draw infinite number of straight lines passing through O.

ii) False
Reason: In the following figure, there are many

iii) True
Reason: The postulate 2 says that "A terminated line can be produced indefinitely."

iv) True
Reason: Superimposing the region of one circle on the other, we find them coinciding. So, their centres and boundaries coincide.
Thus, their radii will coincide or equal

2. i) Parallel lines :-

Two lines l and m in a plane are said to be parallel, if they have no common point & we write them as $l \parallel m$.

ii) Perpendicular lines :-

Two lines p and q lying in the same plane are said to be perpendicular if they form 90° & we write it as $p \perp q$

iii) Line segment :-

A line segment is a part of line & having a definite length. It has two end points

iv) Radius of a Circle :-

The distance from the centre of the circle to the circumference is called radius.

v) Square :-

A qudrilateral in which, 4 angles & sides are equal and angles measures 90°.

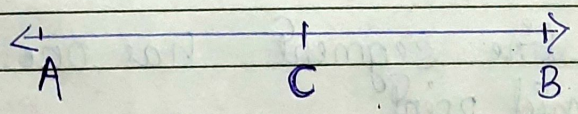
3. Yes, these postulates contain any undefi-ed terms such as Point and Line. Also these postulates are consistent because they deal with two different situation as;

i) says that given two points A & B, there is a point C lying on the line in between them. Whereas

ii) says that, given points A & B, you can take is a point C not lying on the line through A and B.

No these postulates don't follows from Euclid's postulates, they follows from the Axiom, "Given two distinct points, there is a unique line that passes through them."

4. We have,



$AC = BC$ (Given)

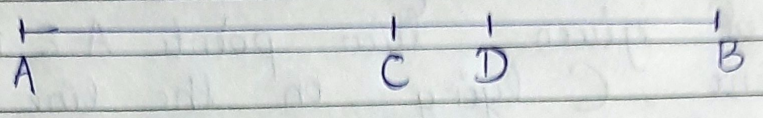
$\therefore$ $AC + AC = BC + AC$

[If equals added to equals then wholes are equal]

or $2AC = AB$

$\Rightarrow AC = \frac{AB}{2}$

5. Let the given line AB is having two mid points 'C' & 'D'



$AC = \frac{AB}{2}$ ..... (i)

and $AD = \frac{AB}{2}$ ..... (ii)

Subtracting (i) from (ii), we have

$AD - AC = \frac{AB}{2} - \frac{AB}{2}$

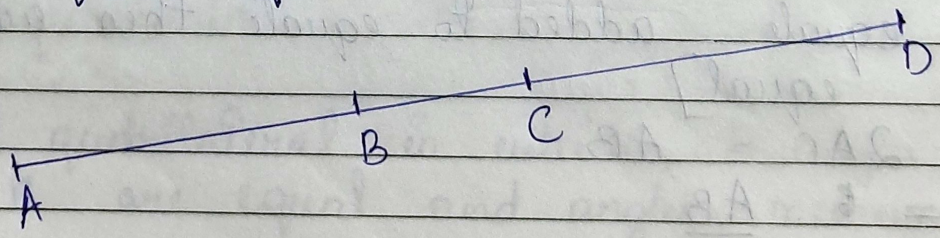
$\Rightarrow AD - AC = 0$

$\Rightarrow CD = 0$

$\therefore$ C & D coincide

Thus every line segment has one & only one mid point

6. ~~In fig. If A~~



Given $AC = BD$

$\Rightarrow AB + BC = BC + CD$

Subtracting BC from both side we get

$AB + BC - BC = BC + CD - BC$

[When equals are subtracted from equals, remainders are equal]

$\Rightarrow AB = CD$

7. As this statement is true for all situations. Hence, it's considered as 'universal truth'

Exercise 5.2

1. We can write Euclid's fifth postulate as 'Two distinct intersecting lines cannot be parallel