



Orienting Yourself: The Use of Coordinates

Lecture - 02

CLASS-9TH

MATH

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Topics To Be Covered

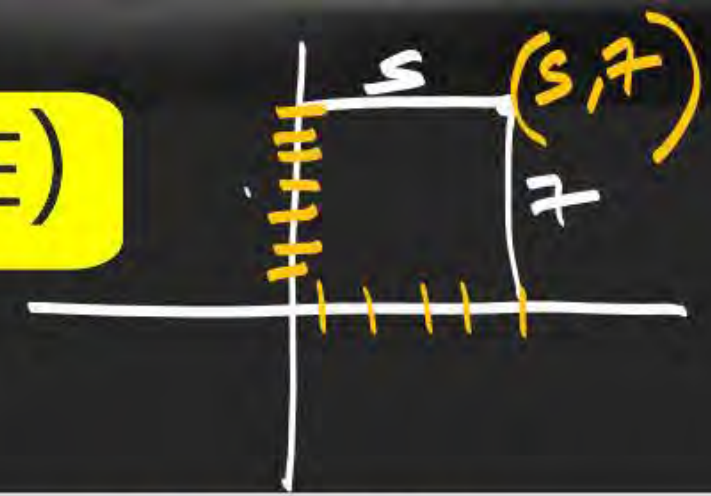
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Badhiya Questions

CARTESIAN COORDINATE SYSTEM (XY-PLANE)



COORDINATE = ADDRESS OF A POINT



IMPORTANT DEFINITIONS

x-coordinate (abscissa) = The perpendicular distance of a point from the Y-axis.

Y-coordinate (ordinate) = The perpendicular distance of a point from the x-axis.

THE WHOLE SYSTEM

The whole system formed by X-axis and Y-axis is called

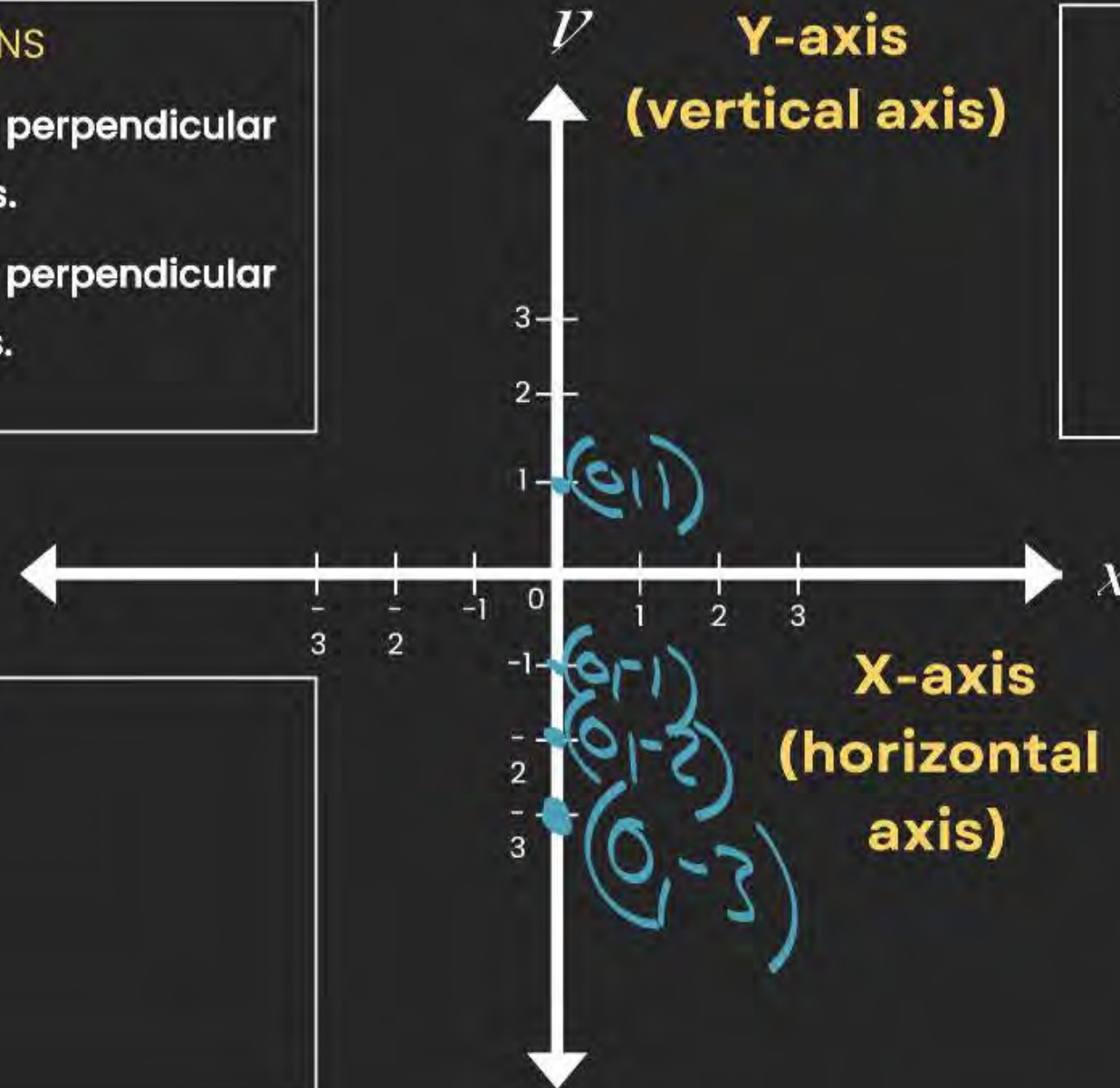
CARTESIAN SYSTEM

or

XY-PLANE

or

COORDINATE SYSTEM.



POINTS ON AXIS

ON Y-AXIS

General form: $(0, y)$

ON X-AXIS

General form: $(x, 0)$

Quadrant II

$(-, +)$

Quadrant I

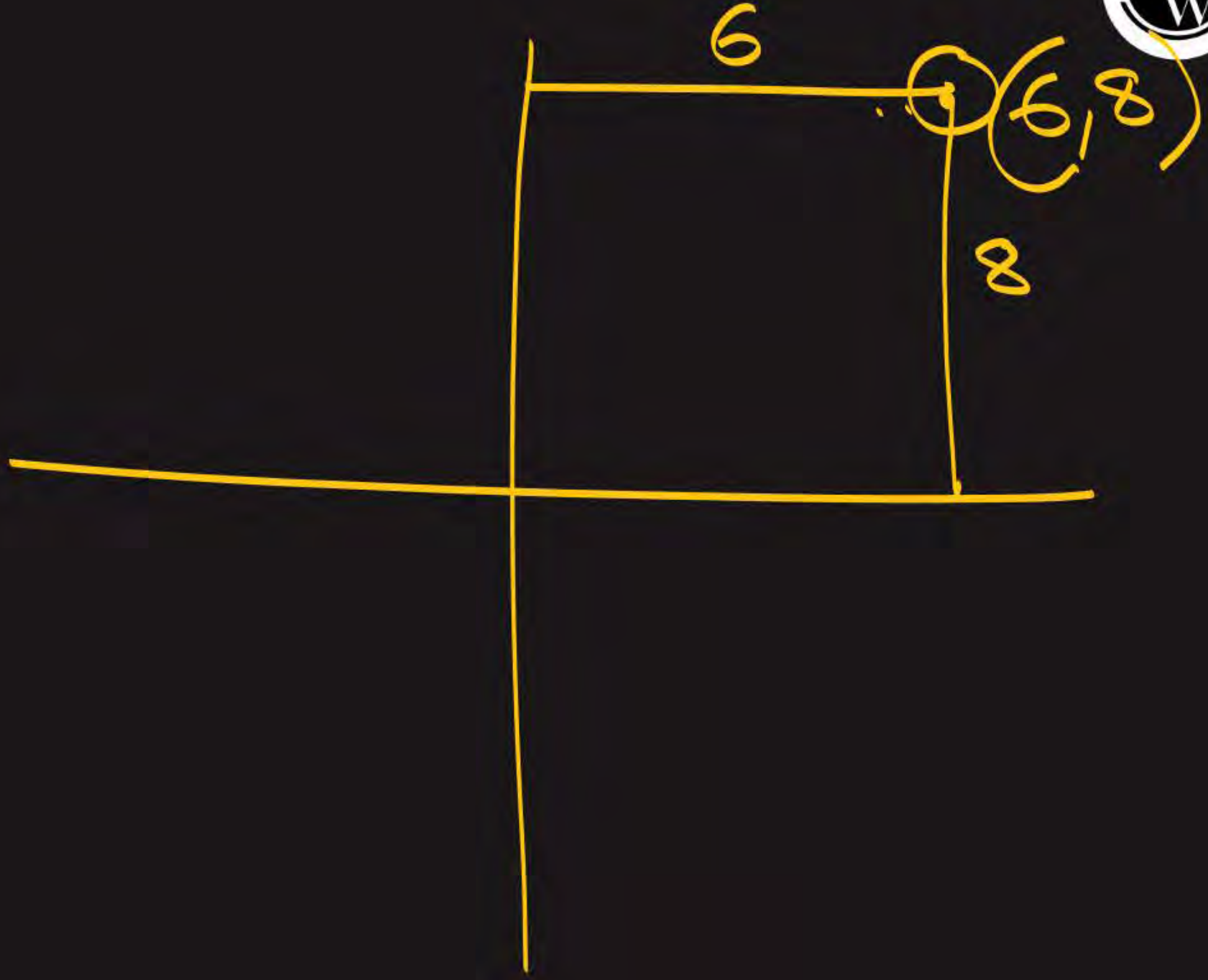
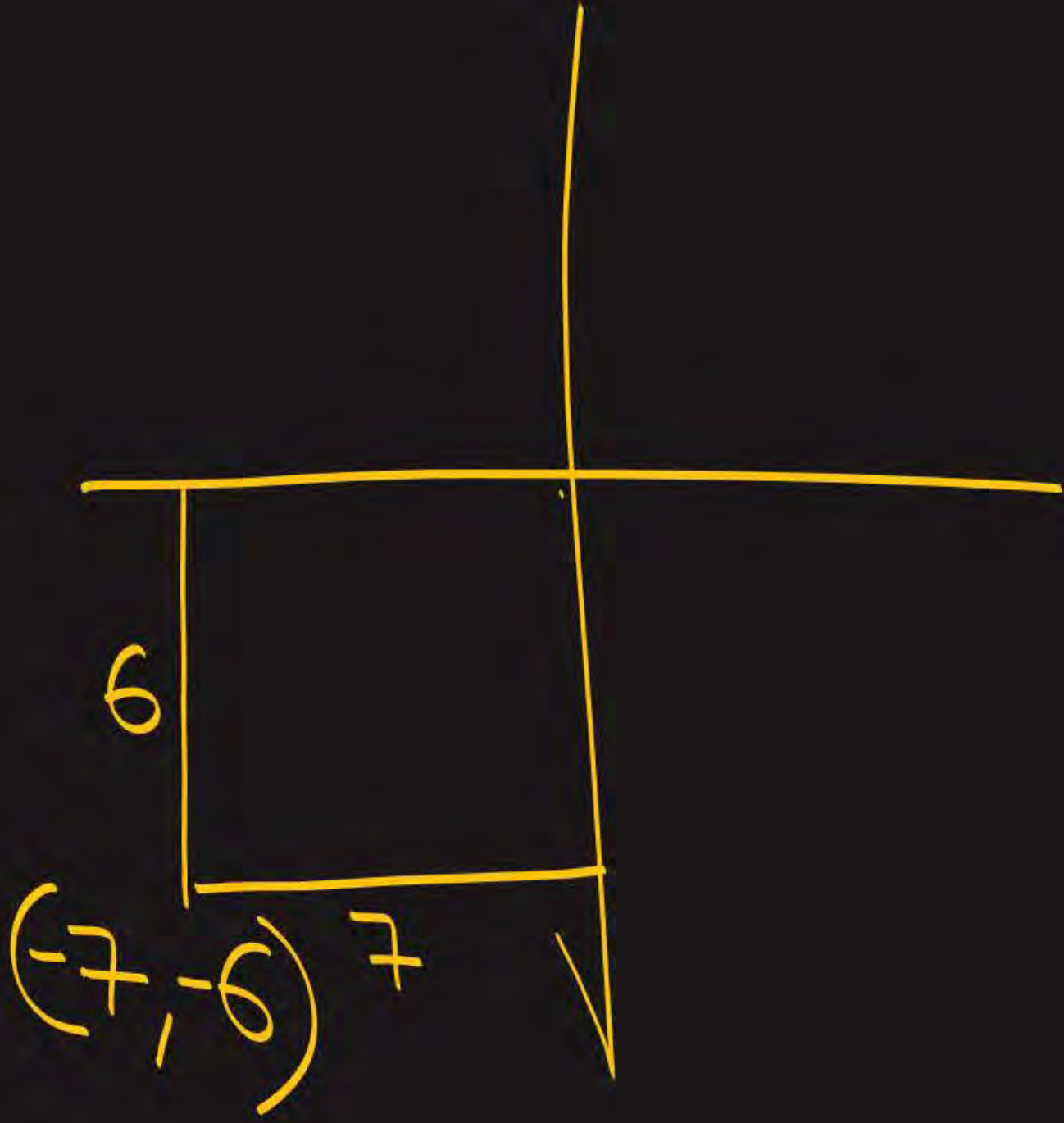
$(+, +)$

Quadrant III

$(-, -)$

Quadrant IV

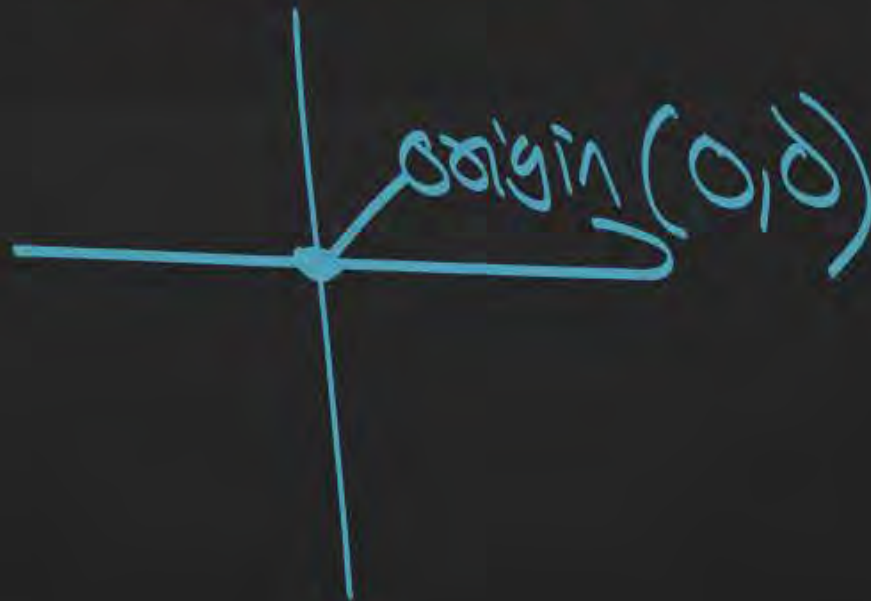
$(+, -)$



SUMMAR



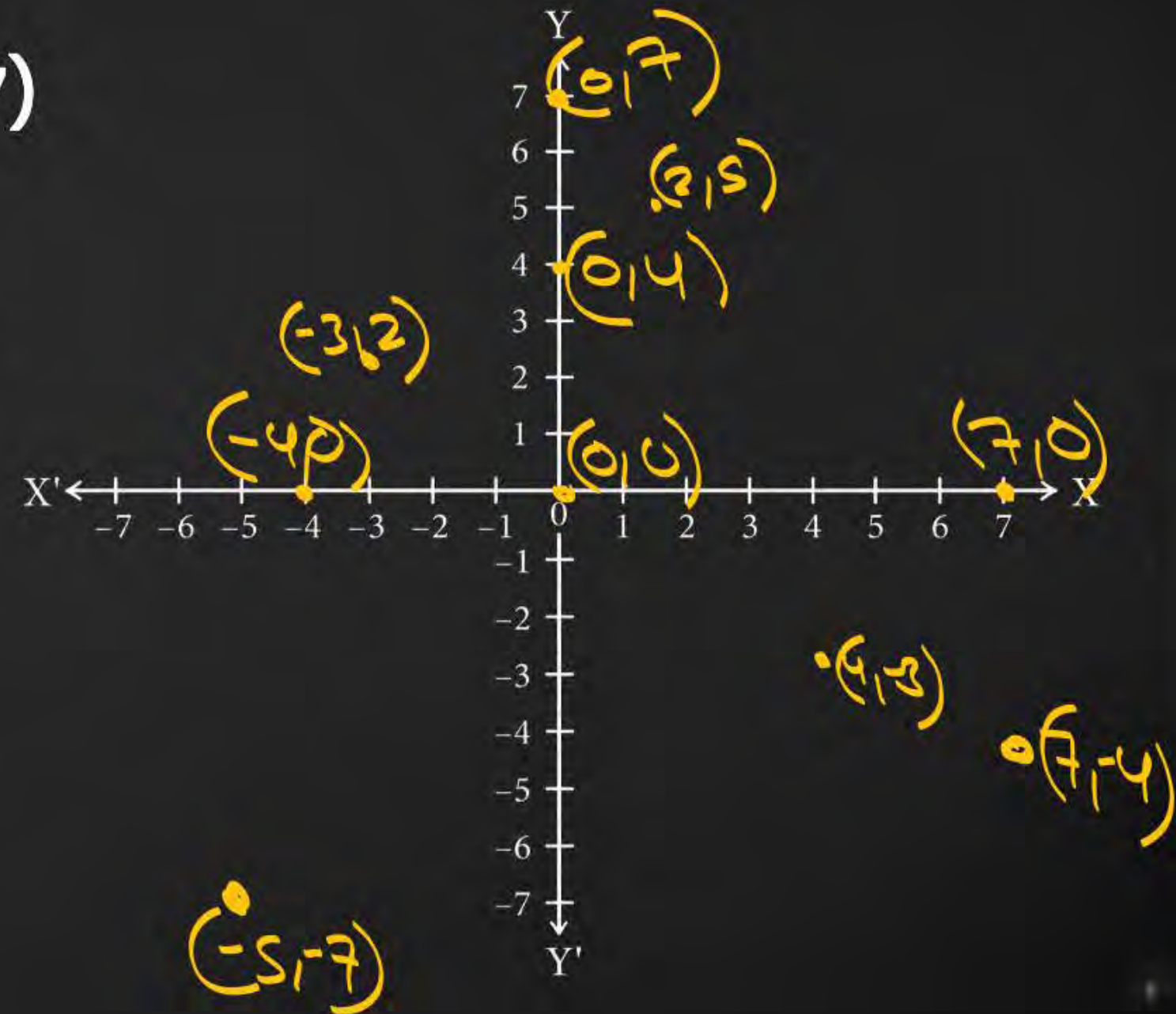
- X-AXIS (Horizontal Axis): Left is negative (-), Right is positive (+)
- Y-AXIS (Vertical Axis): Down is negative (-), Up is positive (+)
- The point where x-axis and y-axis intersect is (0, 0)



QUESTIONS

Plot the following points on the graph paper:

- | | | |
|-----------------|-----------------|------------------|
| (i) $(2, 5)$ | (ii) $(4, -3)$ | (iii) $(-5, -7)$ |
| (iv) $(7, -4)$ | (v) $(-3, 2)$ | (vi) $(7, 0)$ |
| (vii) $(-4, 0)$ | (viii) $(0, 7)$ | (ix) $(0, 4)$ |
| (x) $(0, 0)$ | | |



QUESTIONS

The point whose ordinate is 4 and which lies on Y-axis is

1 (4,0)

2 (0,4)

3 (1,4)

4 (4,2)

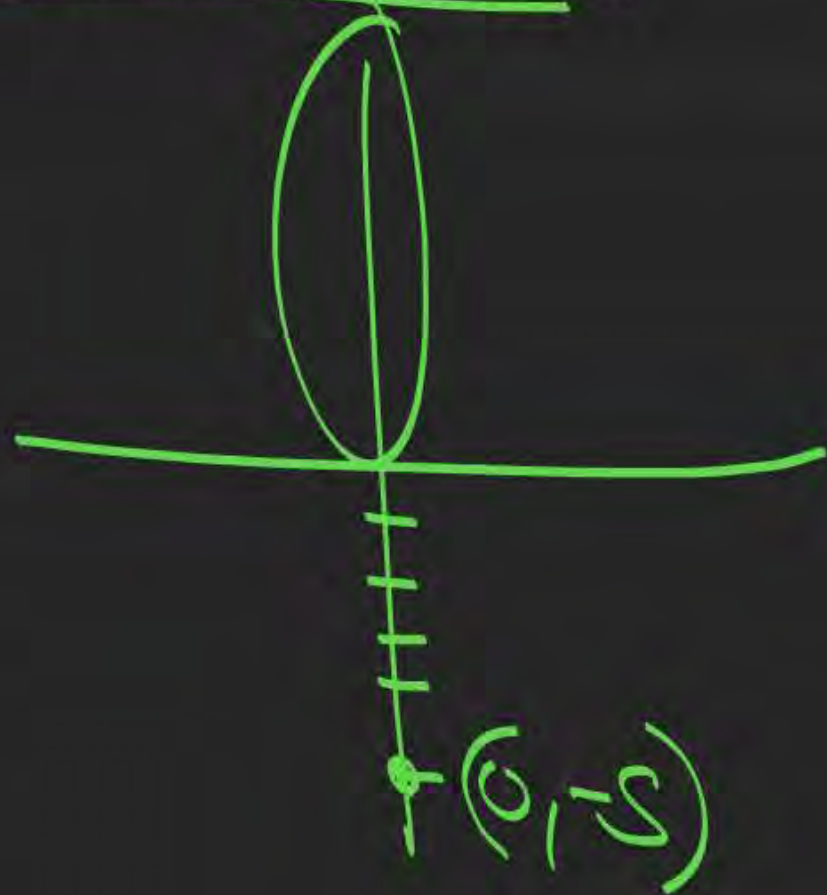
$(0,4)$

QUESTIONS

01

The point which lies on Y-axis at a distance of 5 units in the negative direction of Y-axis is

- 1 $(5,0)$
- 2 $(0,5)$
- ☒ 3 $(0,-5)$
- 4 $(-5,0)$



QUESTIONS

Find the coordinates of the point:

- Which lies on x and y axes both
- Whose ordinates is -4 and which lies on y-axis
- Whose abscissa is 5 and which lies on x-axis

$(5, 0)$

$(0, 0)$
 $(0, -4)$



QUESTIONS

If the coordinates of the two points are $P(-2, 3)$ and $Q(-3, 5)$ then
(Abscissa of P) - (Abscissa of Q) is

1 $5 = (-2) - (-3)$

$= -2 + 3$

$= 1$

2 1

3 -1

4 -2

• $R(-5, -7)$

• $X(-10, 9)$

∴ ordinate of R - abscissa of X.

$= (-7) - (-10)$

$= -7 + 10 = 3$

QUESTIONS

Which of the following statements are correct?

(Give reason)

- ☒ a) A point on the x-axis has y-coordinate = 0
- ☒ b) A point on the y-axis has x-coordinate = 0
- ☐ c) A point (0, 0) lies in the first quadrant
- ☒ d) A point can lie on both axes

QUESTIONS

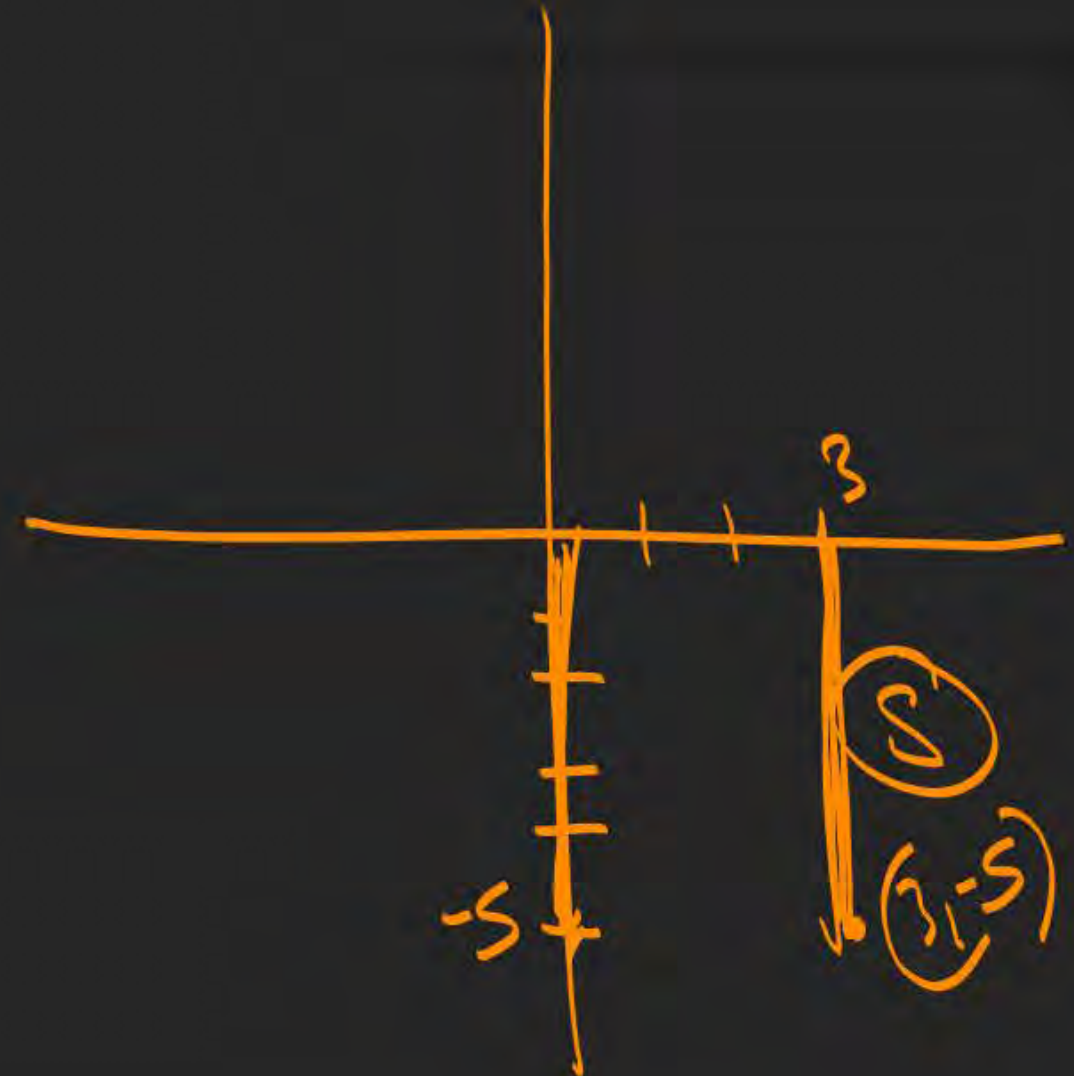
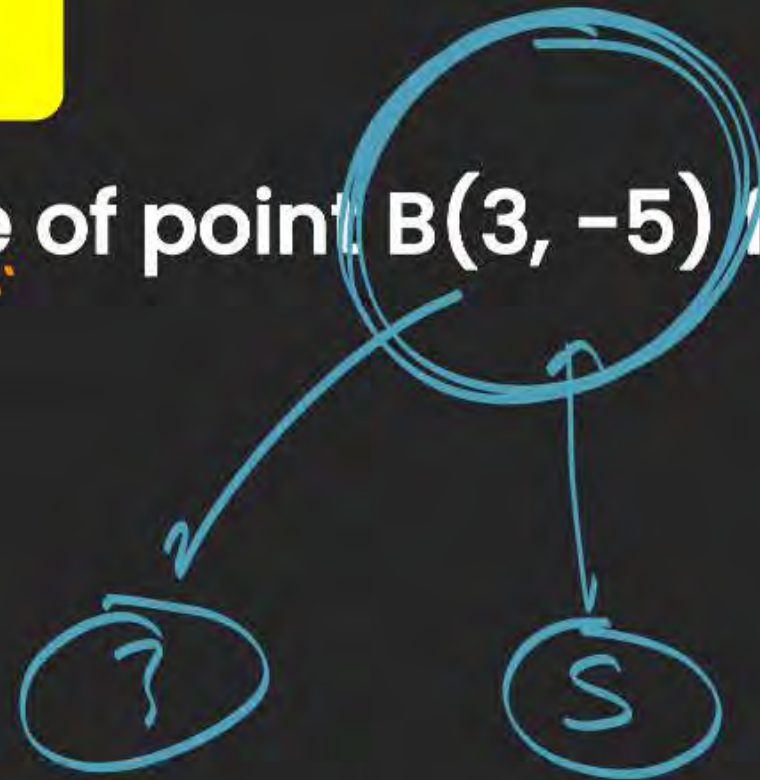
Find the distance of point $B(3, -5)$ from X-axis.

1 3

2 5

3 4

4 8



QUESTIONS

Find the distance of point C(8, 9) from Y-axis

1 7

2 8

3 9

4 1

$$|-8| = 8$$

$$|-15| = 15$$

$$Q R(-8, -7)$$

$$Y\text{-axis say distance} = |-8| = 8$$

$$X\text{-axis say distance} = |-7| = 7$$

absolute value

#CTR

y-axis seq distance = $|x\text{-coordinate}|$
x-axis seq distance = $|y\text{-coordinate}|$

Q $(-7, -6)$

y-axis seq distance = $|-7| = 7$

QUESTIONS

The point $A(a, b)$ lies in II quadrant. Find which of a or b is greater?

1 a

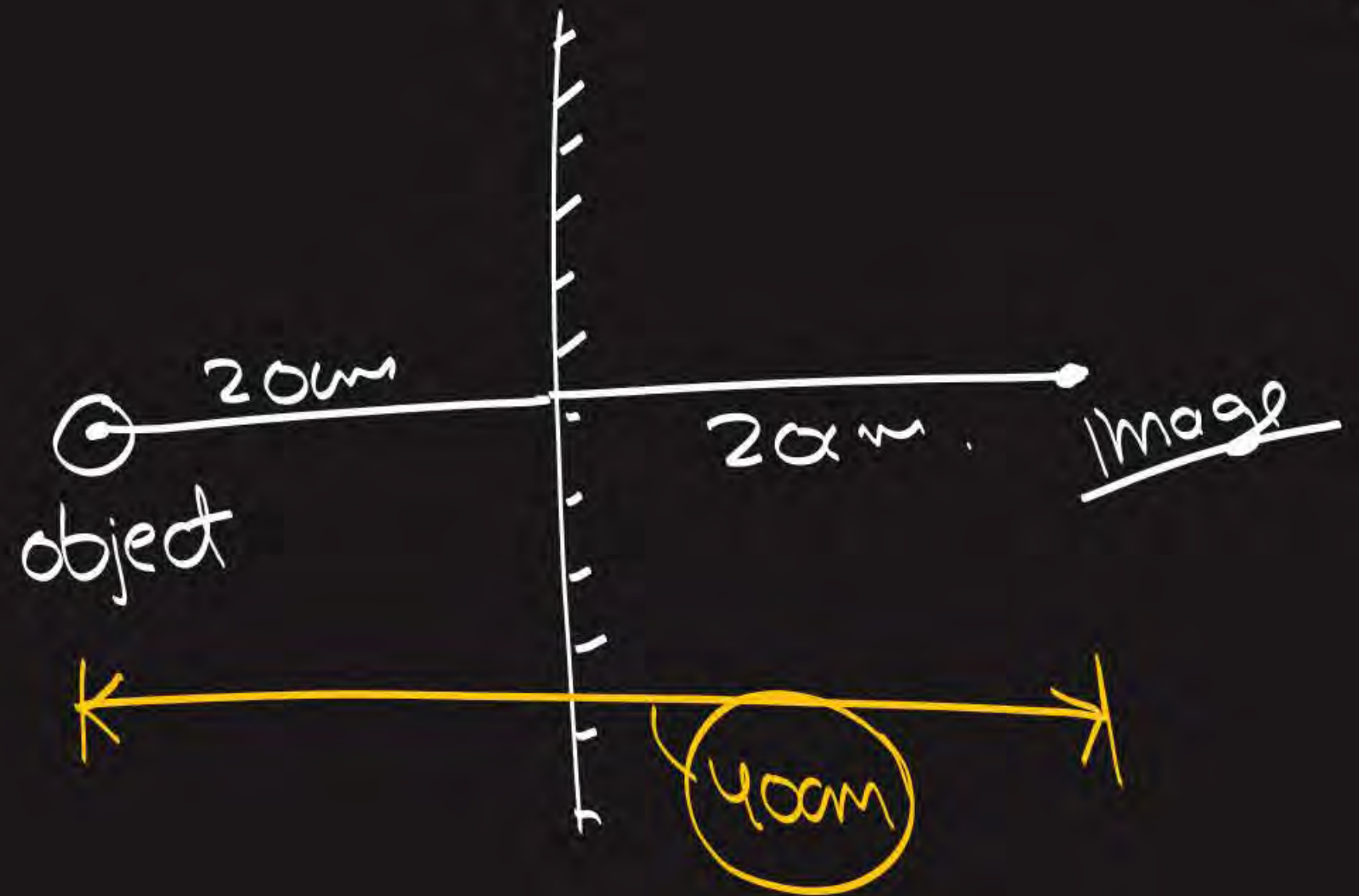
2 b

3 both are equal

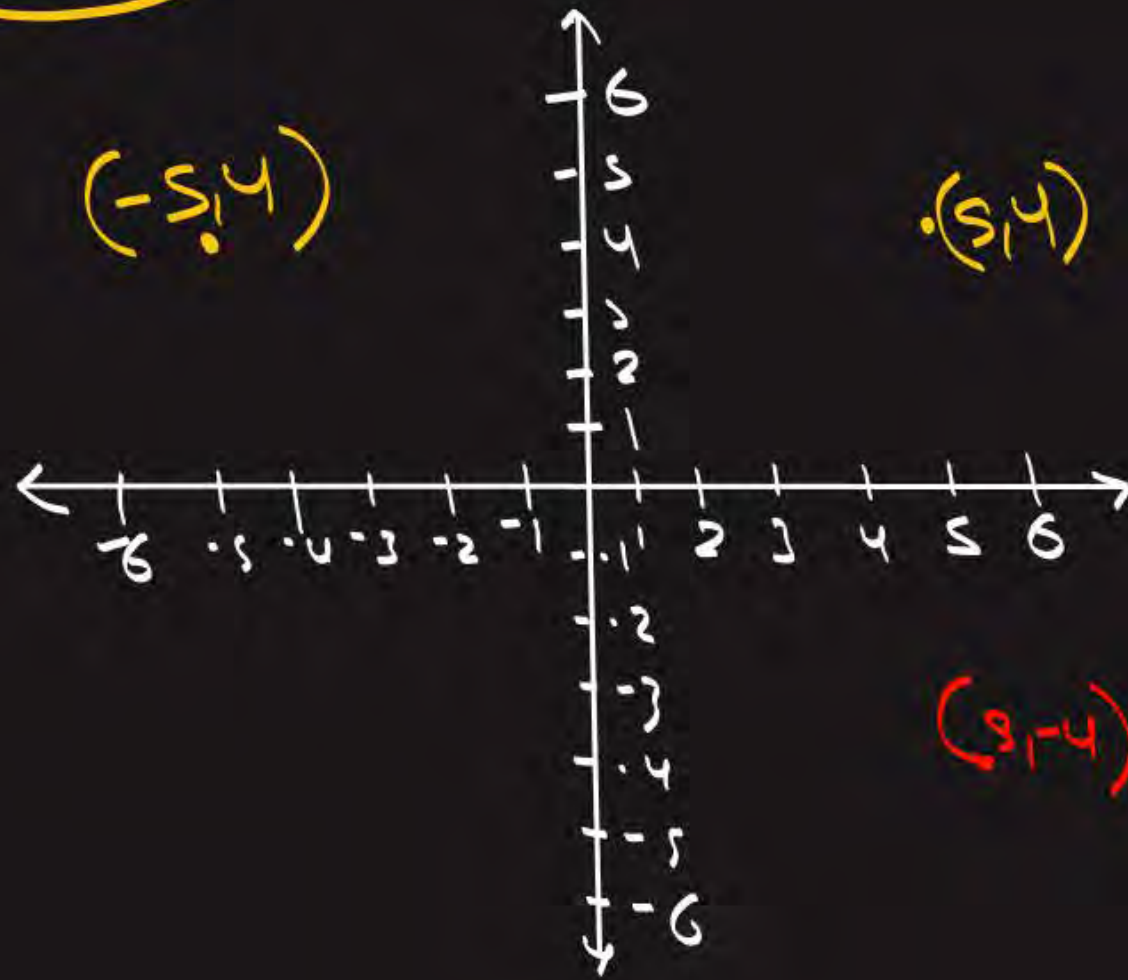
4 $a \neq b$



$$\begin{aligned} a &= -ve \\ b &= +ve \end{aligned}$$

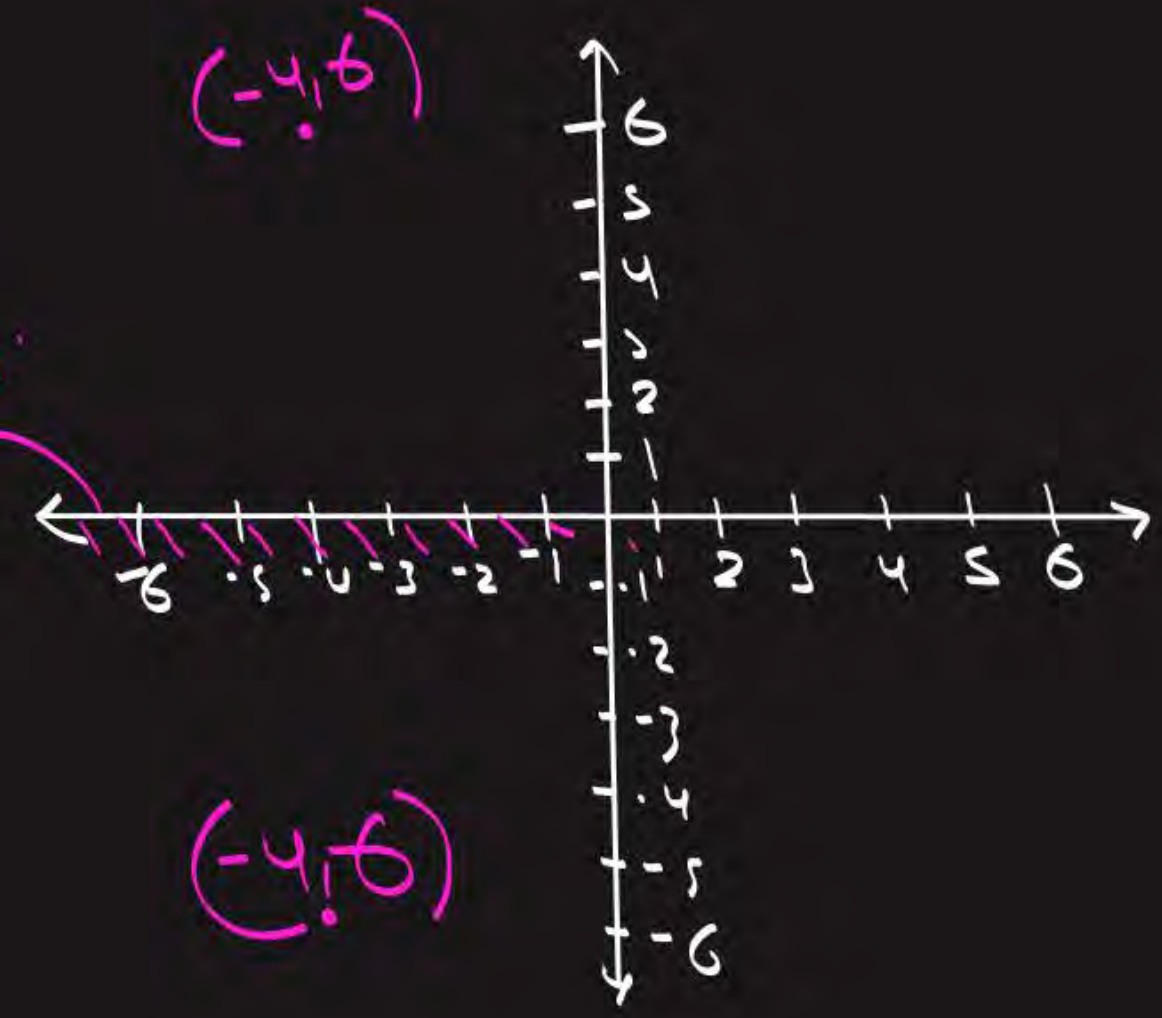


#CTR



Q11

midpoint



QUESTIONS



The reflection of the point $P(-4, 5)$ in y-axis has the coordinates:

$(-4, 5)$

$(4, 5)$



1

$(-4, -5)$

2

$(4, 5)$

3

$(4, -5)$

4

$(5, -4)$

$(4-1.5)$

2.5
units.



$(0, 1.5)$

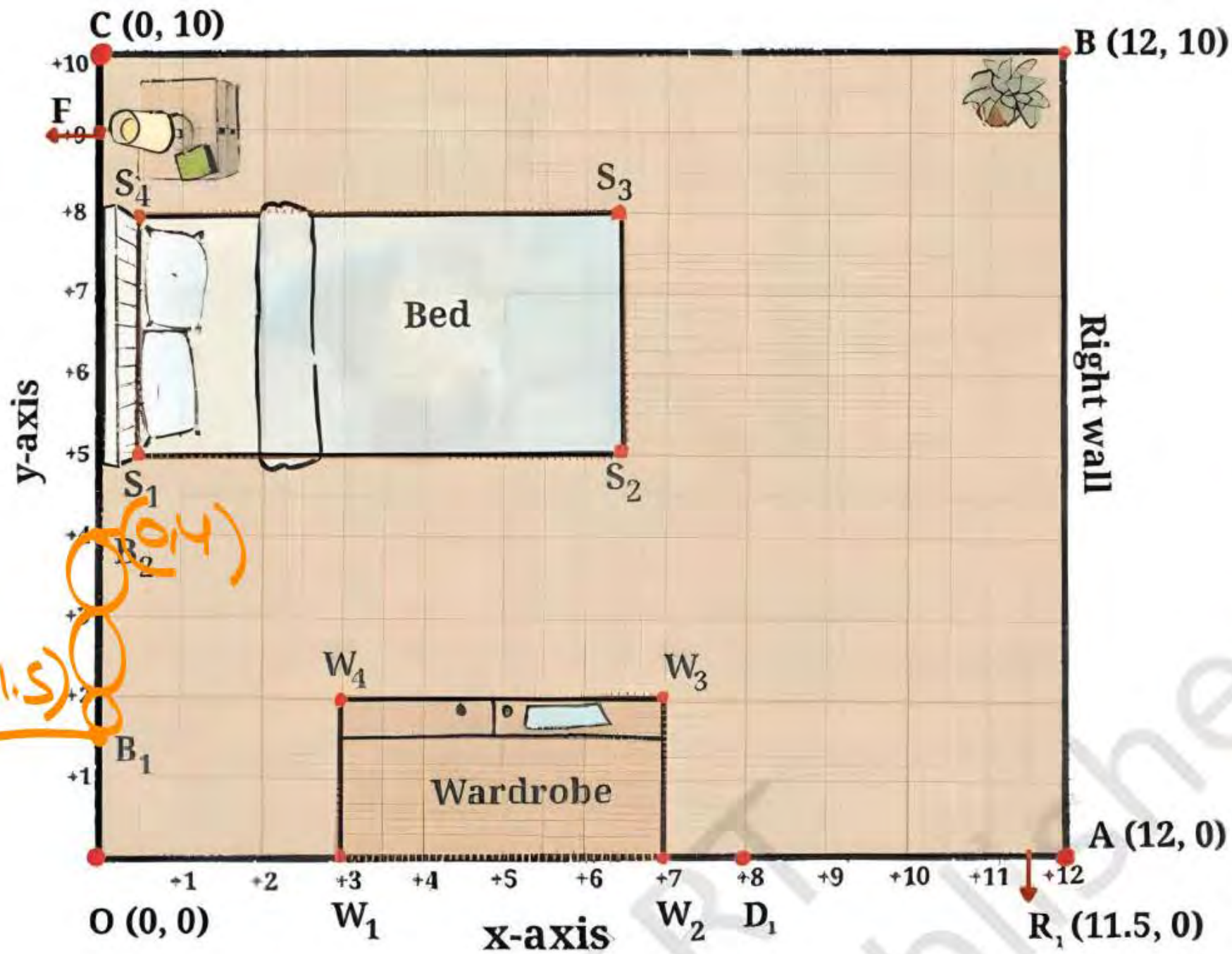


Fig. 1.3

1 unit = 1 Feet

1 Feet = 12 inches

3.5 Feet = 42 inches

Wheelchair = (24-27)
inches.

QUESTIONS

Referring to Fig. answer the following questions:

(i) If D1 R1 represents the door to Reiaan's room, how far is the door from the left wall (the y-axis) of the room? How far is the door from the x-axis?

axis?

→ 0 units

8 units

(ii) What are the coordinates of D1? - (8, 0)

3.5 units

(iii) If R1 is the point (11.5, 0), how wide is the door? Do you think this is a comfortable width for the room door? if a person in a wheelchair wants

to enter the room, will he/she be able to do so easily? Yes.

(iv) If B1 (0, 1.5) and B2 (0, 4) represent the ends of the bathroom door,

is the bathroom door narrower or wider than the room door?

→ Bathroom door is narrower.

Think and Reflect

1. What is the x-coordinate of a point on the y-axis?
2. Is there a similar generalisation for a point on the x-axis?
3. Does point Q (y, x) ever coincide with point P (x, y)? Justify your answer.
4. If $x \neq y$, then $(x, y) \neq (y, x)$; and $(x, y) = (y, x)$ if and only if $x = y$. Is this claim true?

0

yes, on axis
y. coordinate = 0

T

3) (y, x) and (x, y) will only coincide when $x = y$.

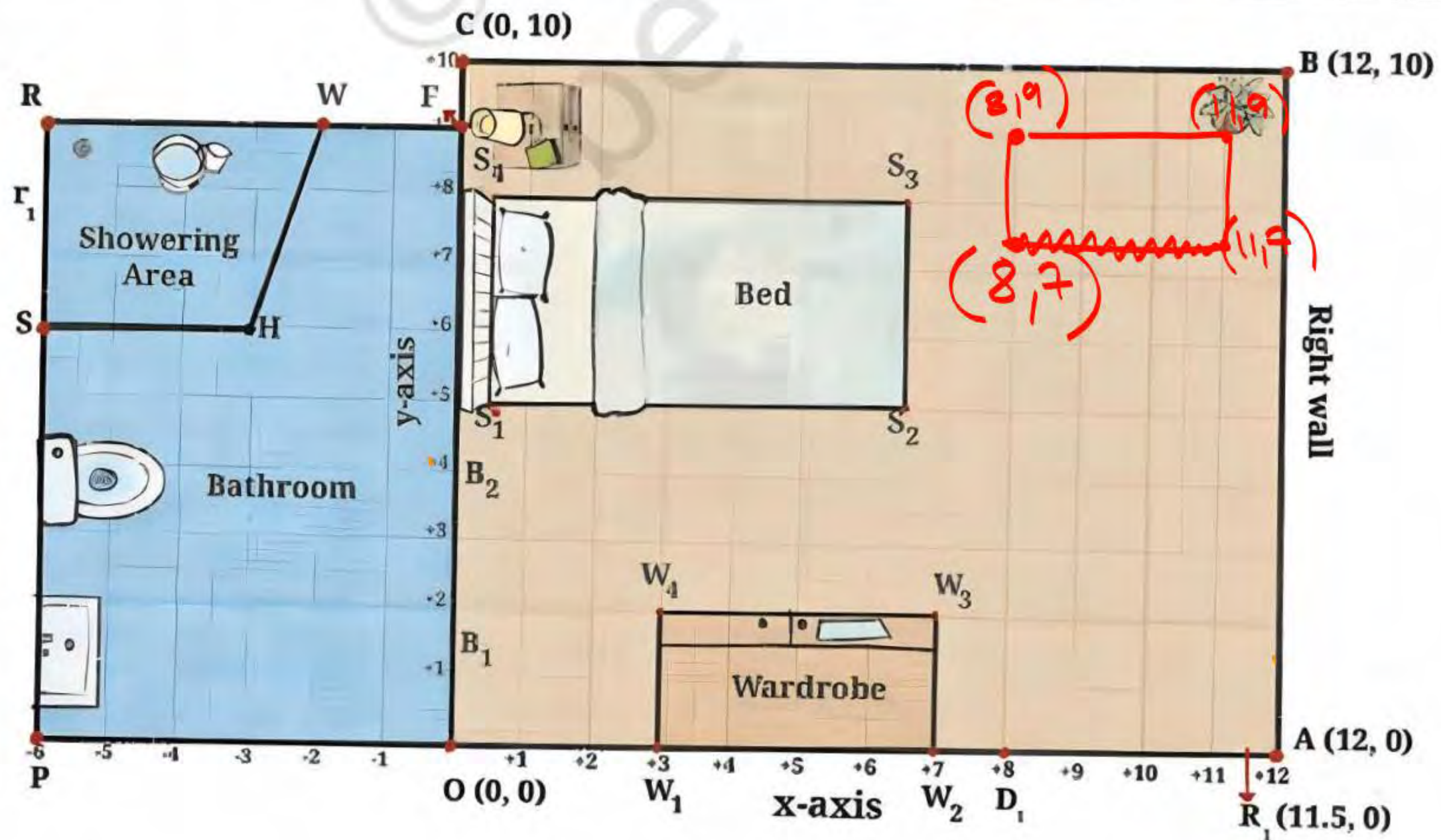


Fig. 1.5

(i) Where will the fourth foot of the table be?

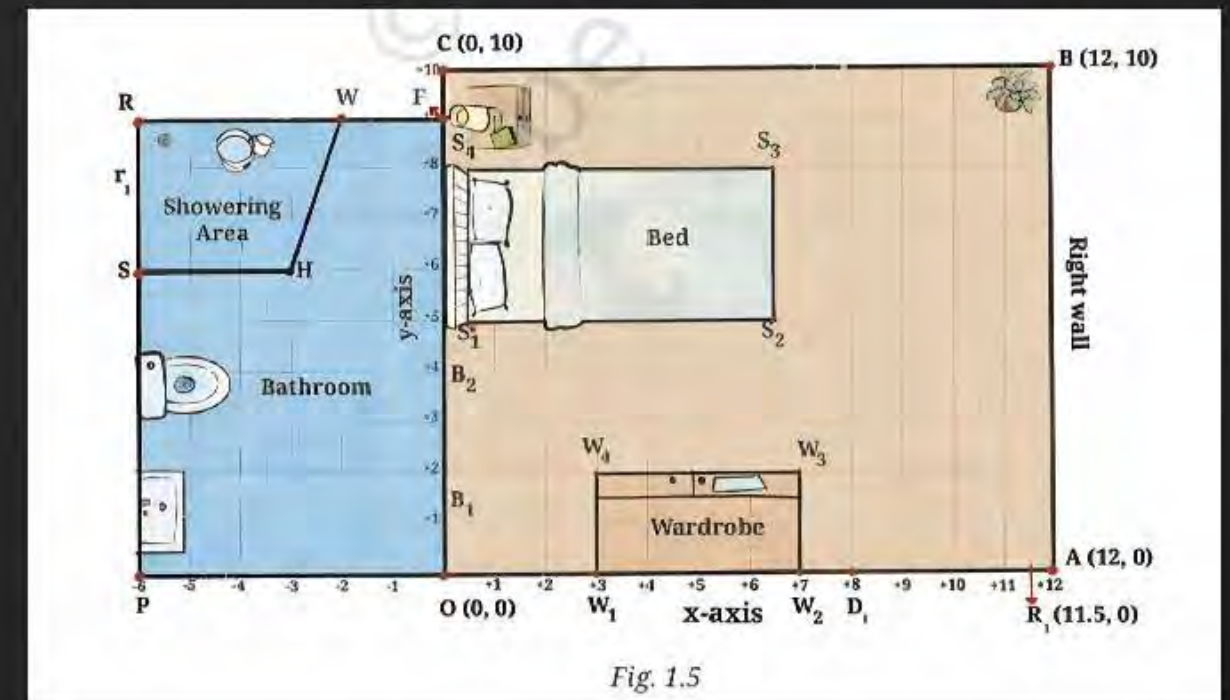
(iii) What is the width of the table? The length? Can you make out the
height of the table?

QUESTIONS



(B) If the bathroom door has a hinge at B_1 and opens into the bedroom, will it hit the wardrobe? Are there any changes you would suggest if the door is made wider?

#GIPU



QUESTIONS

(C) Look at Reiaan's bathroom.

#GPH

- (i) What are the coordinates of the four corners O, F, R, and P of the bathroom?
- (ii) What is the shape of the showering area SHWR in Reiaan's bathroom? Write the coordinates of the four corners.
- (iii) Mark off a 3 ft x 2 ft space for the washbasin and a 2 ft x 3 ft space for the toilet. Write the coordinates of the corners of these spaces.

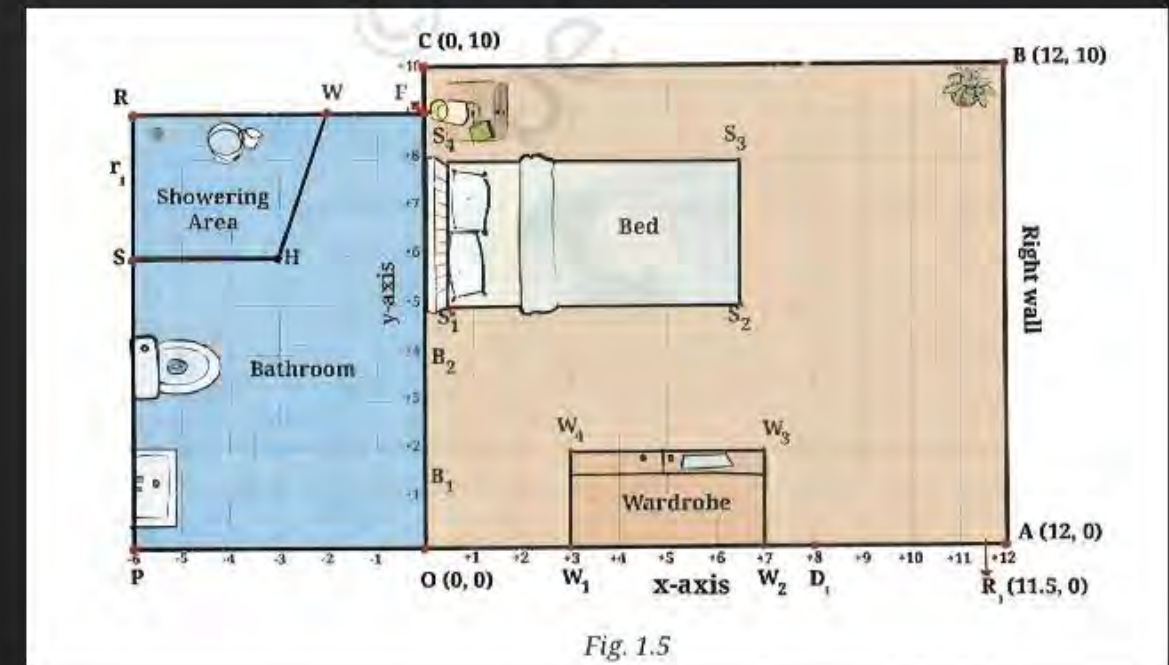


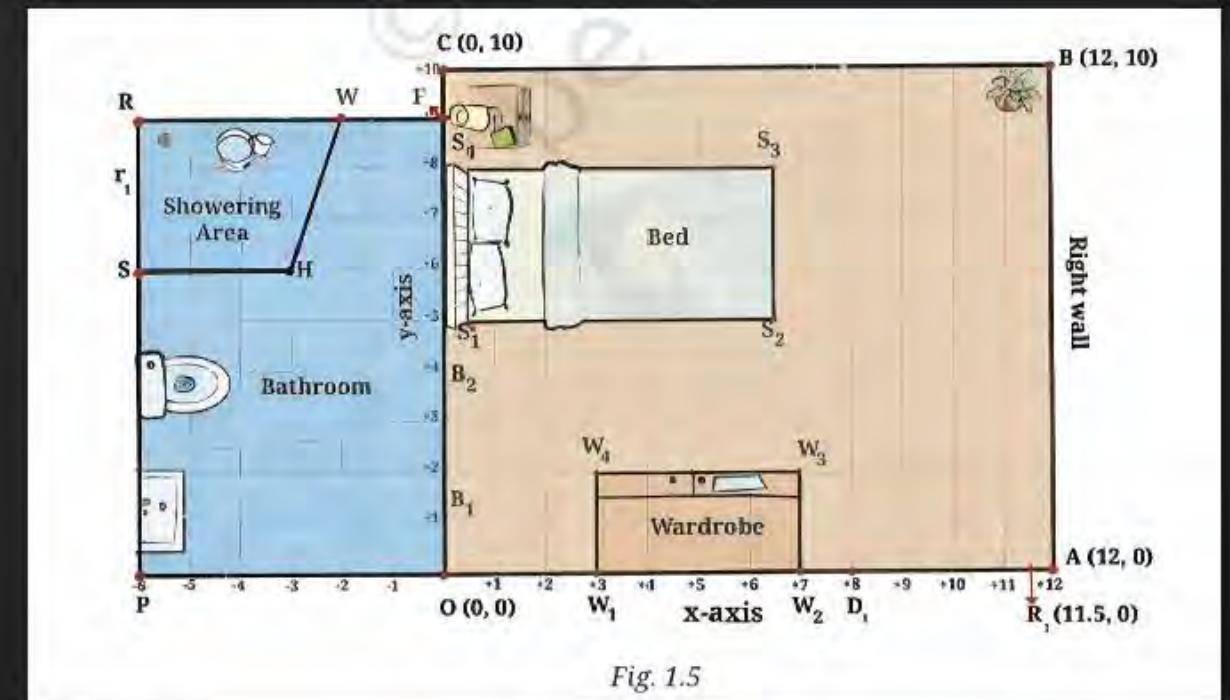
Fig. 1.5

QUESTIONS

(D) Other rooms in the house:

- (i) Reiaan's room door leads from the dining room which has the length 18 ft and width 15 ft. The length of the dining room extends from point P to point A. Sketch the dining room and mark the coordinates of its corners.
- (ii) Place a rectangular 5 ft x 3 ft dining table precisely in the centre of the dining room. Write down the coordinates of the feet of the table.

#G14



Thank You !

- *Work Hard.*
- *Dream big.*
- *Never give up.*