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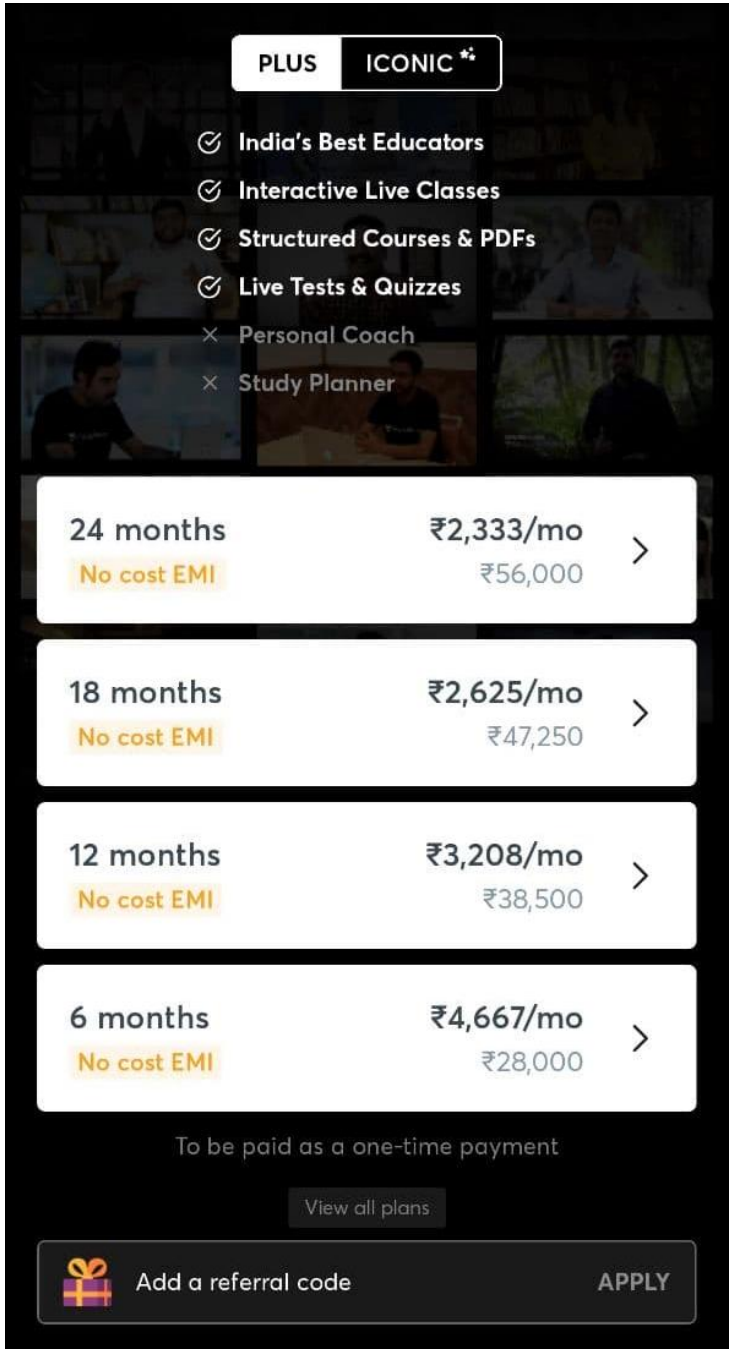

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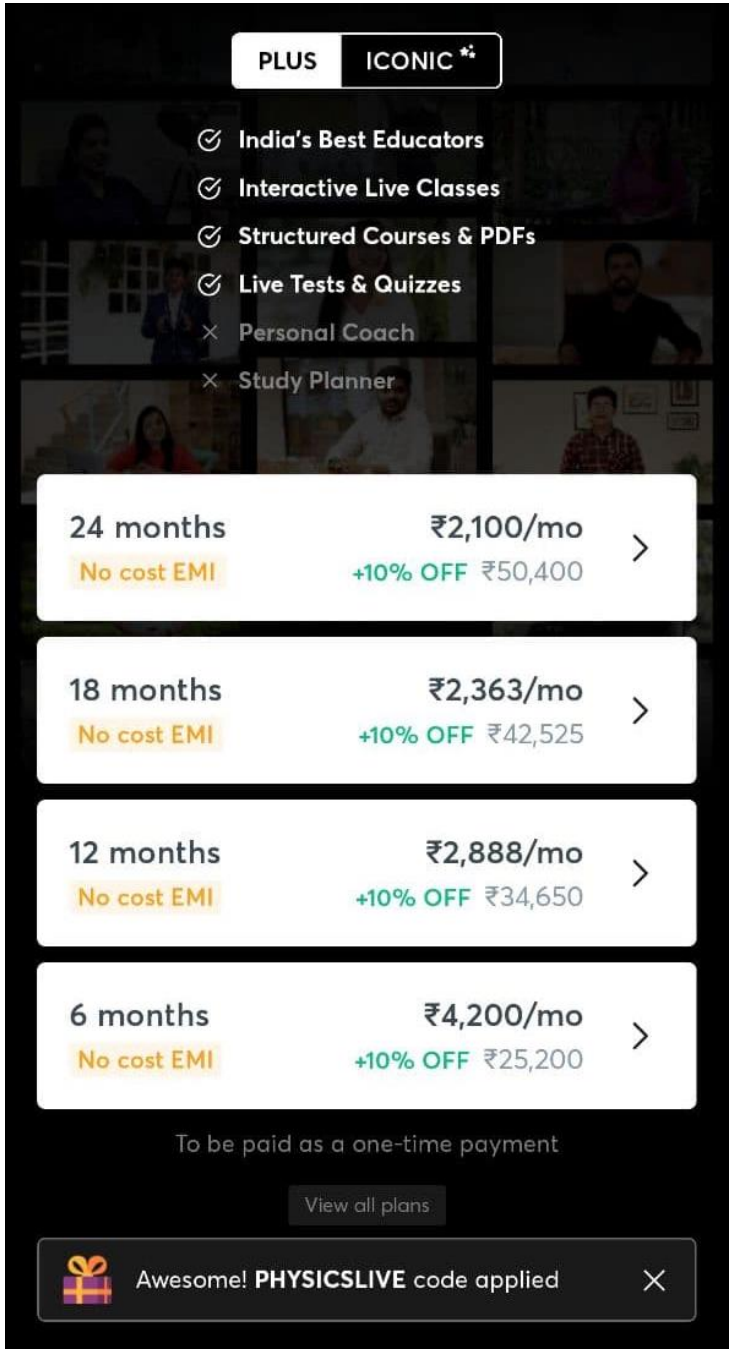

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JEE Main
Physics DPP

DPP-2 Basic Math: Geometry (Straight Line)

By Physicsaholics Team

Q) Distance between points (1,3) & (-3,6)?

(a) 5
(b) 3
(c) 4
(d) None of these

Ans. a

$A(1, 3)$, $B(-3, 6)$

(x_1, y_1) (x_2, y_2)

$$AB = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$AB = \sqrt{(-3-1)^2 + (6-3)^2}$$

$$= \sqrt{4^2 + 3^2}$$

$$= \sqrt{5^2}$$

$$\boxed{AB = 5 \text{ unit}}$$

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Q) Coordinates of the point which divides the distance between the points A(0,2) & B(4,0) in the ratio 1:2 is?

(a) $\left(\frac{1}{3}, \frac{2}{3}\right)$

(b) $\left(-\frac{4}{3}, -\frac{4}{3}\right)$

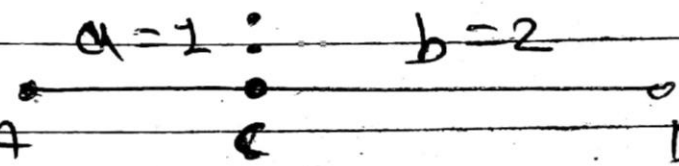
(c) $\left(\frac{4}{3}, \frac{4}{3}\right)$

(d) $\left(-\frac{1}{3}, -\frac{1}{3}\right)$

Ans. c

$A(0,2) : (x_1, y_1)$

$B(4,0) : (x_2, y_2)$



(x_1, y_1) (x, y) $(x_2, y_2) = (4,0)$

$(0,2)$

$$x = \frac{ax_2 + bx_1}{a+b} = \frac{1(4) + 2(0)}{3}$$

$$x = \frac{4}{3}$$

$$y = \frac{ay_2 + by_1}{a+b} = \frac{(1)(0) + 2(2)}{3}$$

$$y = \frac{4}{3}$$

$$\boxed{C : (x, y) \equiv \left(\frac{4}{3}, \frac{4}{3}\right)}$$

Q) Find the gradient of line $3x + 5y - 2 = 0$?

(a) $-\frac{3}{5}$

(b) $-\frac{5}{3}$

(c) -3

(d) 5

Ans. a

$$3x + 5y - 2 = 0$$

$$5y = -3x + 2$$

$$y = \frac{-3}{5}x + \frac{2}{5}$$

By comparing with line eq:

$$y = mx + c$$

$$\boxed{\text{Slope} = m = \frac{-3}{5}}$$

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Q) Find out the slope of line which is passing through the points (5,0) & (-2,6)?

(a) $\frac{6}{7}$

(b) $-\frac{6}{7}$

(c) 6

(d) -6

Ans. b

$A(5, 0) : (x_1, y_1)$

$B(-2, 6) : (x_2, y_2)$

Slope of line: m

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{6 - 0}{-2 - 5} = \frac{6}{-7}$$

$$\boxed{m = \frac{-6}{7}}$$

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Q) Find out the equation of line which is passing through the points (3,1) & (2,-1)?

(a) $x - 3y - 2 = 0$

(b) $x - y = 0$

(c) $y - 2x + 5 = 0$

(d) $2y - x + 5 = 0$

Ans. c

$A(3,1) : (x_1, y_1)$

$B(2,-1) : (x_2, y_2)$

slope of line $= m$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1-1}{2-3} = \frac{-2}{-1}$$

$$m = 2$$

Now eq^n of line :-

$$(y - y_1) = m(x - x_1)$$

$$(y - 1) = 2(x - 3)$$

$$\boxed{y - 2x + 5 = 0}$$

Q) Point of intersection of lines $3x + 2y - 1 = 0$ & $y = x + 2$?

(a) $\left(-\frac{3}{5}, \frac{7}{5}\right)$

(b) $\left(\frac{3}{5}, \frac{7}{5}\right)$

(c) $\left(\frac{3}{5}, -\frac{7}{5}\right)$

(d) $\left(-\frac{3}{5}, -\frac{7}{5}\right)$

Ans. a

$l_1 : 3x + 2y - 1 = 0$

$l_2 : y = x + 2$

Put value of y from l_2 into l_1

$$3x + 2(x+2) - 1 = 0$$

$$3x + 2x + 4 - 1 = 0$$

$$5x + 3 = 0$$

$$x = -\frac{3}{5}$$

Put value of x, in eq^n l_2

$$y = -\frac{3}{5} + 2 = \frac{7}{5}$$

$$\therefore \boxed{(x, y) \equiv \left(-\frac{3}{5}, \frac{7}{5}\right)}$$

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Q) Find out the ‘x’ intercept of line $2x + 4y - 7 = 0$?

(a) $\frac{2}{7}$

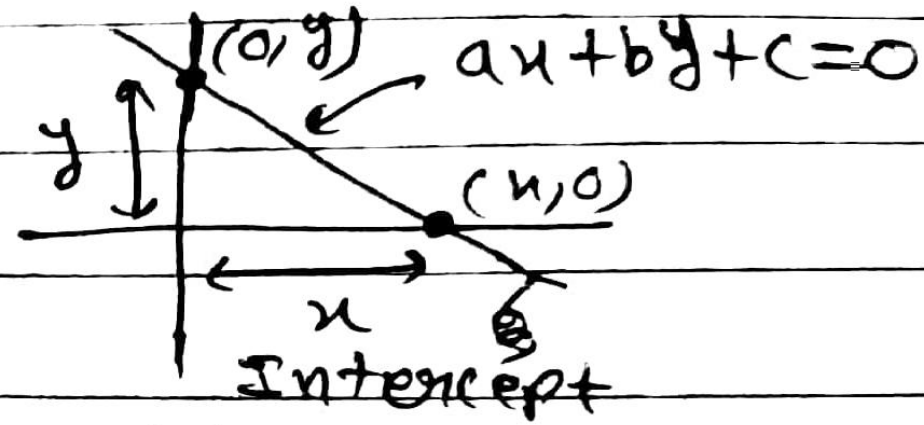
(b) $\frac{1}{7}$

(c) $\frac{7}{2}$

(d) 7

Ans. c

$2x + 4y - 7 = 0$



x - intercept, where, $y = 0$

$\therefore \quad 2x + 4(0) - 7 = 0$

$$\boxed{x = \frac{7}{2}}$$

Q) Two straight line $y = m_1x + c_1$ & $y = m_2x + c_2$ are parallel, if:

(a) $m_1 = -m_2$

(b) $m_1m_2 = -1$

(c) $m_1m_2 = 0$

(d) $m_1 = m_2$

Ans. d

$y = m_1 x + c_1$

$y = m_2 x + c_2$

will be parallel if their slope are same

$\therefore$ $\boxed{m_1 = m_2}$

Q) Which of the following is not an equation of straight line?

(a) $y = 3x + 2$

(b) $x - 5y - 1 = 0$

(c) $x = 3y + 2$

(d) None of these

Ans. d

linear relation between x & y is always a straight line

$\therefore$ (a) $y = 3x + 2$

(b) $x - 5y - 1 = 0$

(c) $x = 3y + 2$

All are equations of straight line.

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Chalo Niklo