



# MATHS

## BOOKS - PATHFINDER MATHS

### (BENGALI ENGLISH)

## STRAIGHT LINE

### Question Bank

1. Find the equation of the straight line which is perpendicular to  $y=x$  and passes through

(3,2).



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2. Find the inclination of the straight line passing through the point  $(-3,6)$  and the midpoint of the line joining the point  $(4,-5)$  and  $(-2,9)$ .



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3. The slope of a line through  $A(1,1)$  is 1. Find the point of the line at a distance  $5\sqrt{2}$  from A.



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4. If the straight line  $x+y+1=0$  is changed into the form  $x \cos a + y \sin a = p$ , then find the value of  $a$ .



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5. The straight line

$x + y + 1 + \lambda(2x - y - 1) = 0$  is  $\perp$  to

$2x+3y-8=0$ , find the value of  $\lambda$ .



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6. The line  $\frac{x}{a} - \frac{y}{b} = 1$  cuts the x-axis at P.

Find the equation of the line through p and perpendicular to the given line.



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7. Find the value of  $\lambda$  for which the lines  $3x+4y=5$ ,  $5x+4y=4$  and  $\lambda x + 4y = 6$  meet at a point.



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8. If sum of the slopes of the lines  $x^2 + kxy - 3y^2 = 0$  is twice the product of the slopes, then find the value of  $k$ .



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9. Find the condition for which the lines joining the origin to the points of intersection of the line  $y = mx + c$  and the circle  $x^2 + y^2 = a^2$  will be mutually  $\perp$



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10. Find the condition by which the bisectors of the lines  $x^2 - 2pxy - y^2 = 0$  be  $x^2 - 2qxy - y^2 = 0$ .



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11. Find the equation of the line passing through (1,1) and parallel to the line  $2x-3y+5=0$ .



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12. Find the equation of the line passing through the point (2,3) and  $\perp$  to the straight line  $4x-3y=10$ .



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**13.** Find the number of lines that are parallel to  $2x+6y-7=0$  and have an intercept 10 between the co-ordinate axis.



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**14.** If the lines  $4x+3y=1$ ,  $y=x+5$  and  $5y+bx=3$  are concurrent, then find the value of  $b$ .



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**15.** A straight line is such that the portion of it intercepted between the axes is bisected at the point  $(x_1, y_1)$ . Prove that its equation is

$$\frac{x}{2x_1} + \frac{y}{2y_1} = 1.$$

or  $\frac{x}{x_1} + \frac{y}{y_1} = 2$



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**16.** A straight line passes through  $(1,1)$  and portion of the line intercept between the axes

is divided at this point in the ratio 3:4. Find the equation of the line.



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17. If  $p$  is the length of perpendicular from the origin to the line whose intercepts on the axes are  $a$  and  $b$ , then show that  $\frac{1}{p^2} = \frac{1}{a^2} + \frac{1}{b^2}$ .



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**18.** Find the angle between the lines joining the points  $(0,0)$   $(2,3)$  and  $(2,-2),(3,5)$ .



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**19.** Find the equation of the line which has y-intercept 4 units and is parallel to the line  $2x-3y-7=0$ . Find the point where it cuts the x-axis.



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**20.** Prove that the lines  $2x-3y-7=0$ ,  $3x-4y-13=0$  and  $8x-11y-33=0$  are concurrent.



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**21.** Find the distance between the lines  $9x+40y-20=0$  and  $9x+40y+103=0$ .



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**22.** Find the equation of a line through the intersection of the lines  $2x+3y-2=0$  and  $x-2y+1=0$  and having x-intercept equal to 3.



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**23.** A straight line drawn through the point  $P(\sqrt{3}, 2)$  making angle of  $30^\circ$  with x-axis. Determine the length of the line measured from this point where it meets the line

$\sqrt{3}x - 4y + 8 = 0$ . Also find equation of the line through P.



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**24.** If A (11,9) and B(5,7) are two points on a line. Find the coordinates of the points which are at a distance 10 units from the mid points of AB on the y-axis.



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25. Find the equation-of the bisector of the obtused angle between the straight lines  $x-2y+4=0$  and  $4x-3y+2=0$ .



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