

Find the equation of the line.

<p>1. 6 units below and parallel to the x-axis</p> $\boxed{y = -6}$	<p>2. perpendicular to the x-axis and passing through (8, 1)</p> $\boxed{x = 8}$
<p>3. y-intercept of 2 and slope of 4</p> $\boxed{y = 4x + 2}$	<p>4. slope of 5 and passes through (0, -2)</p> $\boxed{y = 5x - 2}$
<p>5. parallel to <math>y = 10x - 6</math> and y-intercept of 1.</p> $\boxed{y = 10x + 1}$	<p>6. Perpendicular to <math>2y = x + 16</math> and passes through (0, -5)</p> $y = \frac{1}{2}x + 16$ $\boxed{y = -2x - 5}$
<p>7. y-intercept of 2 and perpendicular to the line containing (-4, 6) and (1, 11)</p> <p><math>x_1 y_1 \quad x_2 y_2</math></p> $m = \frac{11 - 6}{1 - (-4)} = \frac{5}{5} = 1$ $\boxed{y = -x + 2}$	<p>8. containing (2, 1) and (3, 4)</p> <p><math>x_1 y_1 \quad x_2 y_2</math></p> $m = \frac{4 - 1}{3 - 2} = \frac{3}{1} = 3$ $y - 1 = 3(x - 2)$ $y - 1 = 3x - 6$ $\boxed{y = 3x - 5}$
<p>9. containing (-6, 3) and (2, -1)</p> <p><math>x_1 y_1 \quad x_2 y_2</math></p> $m = \frac{-1 - 3}{2 - (-6)} = \frac{-4}{8} = -\frac{1}{2}$ $y - 3 = -\frac{1}{2}(x + 6)$ $y - 3 = -\frac{1}{2}x + 3$ $\boxed{y = -\frac{1}{2}x + 6}$	<p>10. containing (1, 5) and (-3, 5)</p> <p><math>x_1 y_1 \quad x_2 y_2</math></p> $m = \frac{5 - 5}{-3 - 1} = \frac{0}{-4} = 0$ <p><math>m = 0</math> (horizontal)</p> $\boxed{y = 5}$
<p>11. having x-intercept of 2 and slope of 7</p> <p>(2, 0) <math>m = 7</math></p> $y - 0 = 7(x - 2)$ $\boxed{y = 7x - 14}$	<p>12. having x-intercept of 3 and passing through (1, 8)</p> <p>(3, 0) <math>m = \frac{-8}{2} = -4</math></p> $y - 0 = -4(x - 3)$ $\boxed{y = -4x + 12}$
<p>13. passing through (-3, 6) and (-3, 10)</p> <p><math>x_1 y_1 \quad x_2 y_2</math> (undefined)</p> $m = \frac{10 - 6}{-3 - (-3)} = \frac{4}{0}$ $\boxed{x = -3}$	<p>14. passing through (8, 7) and perpendicular to <math>3y = -2x + 24</math></p> $y = -\frac{2}{3}x + 8 \quad \perp m = \frac{3}{2}$ $y - 7 = \frac{3}{2}(x - 8)$ $y - 7 = \frac{3}{2}x - 12$ $\boxed{y = \frac{3}{2}x - 5}$

15.  $\overline{CD}$  is perpendicular to  $2x + 3y = 8$ . If C has coordinates (1, 4), find the equation of  $\overline{CD}$ .

$$2x + 3y = 8$$

$$3y = -2x + 8$$

$$y = -\frac{2}{3}x + \frac{8}{3}$$

$$\perp m = \frac{3}{2} \quad y - 4 = \frac{3}{2}(x - 1)$$

$$y - 4 = \frac{3}{2}x - \frac{3}{2}$$

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

16. If P = (-2, 5) and R = (0, 9), find the equation of the perpendicular bisector of  $\overline{PR}$ .

$$\text{midpoint PR } \left(\frac{-2+0}{2}, \frac{5+9}{2}\right) \rightarrow (-1, 7)$$

$$\text{Slope PR} = \frac{4}{2} = 2$$

$$y - 7 = 2(x + 1)$$

$$y - 7 = 2x + 2$$

$$\boxed{y = 2x + 9}$$

Given A(2, 1), B(16, 3), and C(4, 12):

17. Find the equation of a line through C parallel to  $\overline{AB}$ .

$$\text{Slope of } \overline{AB} = \frac{1}{7} \quad C(4, 12)$$

$$y - 12 = \frac{1}{7}(x - 4)$$

$$y - 12 = \frac{1}{7}x - \frac{4}{7}$$

$$\boxed{y = \frac{1}{7}x + \frac{80}{7}}$$

18. Find the equation of the perpendicular bisector of  $\overline{AB}$ .

$$\text{midpoint } \overline{AB} (9, 2)$$

$$m \perp \overline{AB} = -7$$

$$y - 2 = -7(x - 9)$$

$$y - 2 = -7x + 63$$

$$\boxed{y = -7x + 65}$$

19. Find the slope of the line joining the midpoints of  $\overline{AC}$  and  $\overline{BC}$ .

$$\text{mid } \overline{AC} (3, 6.5)$$

$$\text{mid } \overline{BC} (10, 7.5)$$

$$m = \frac{1}{7}$$

$$\boxed{y - \frac{13.5}{2} = \frac{1}{7}(x - 3)}$$

pls form 7