Write an equation for the line in point/slope form and slope/intercept form that has the given condition.

6. Passes through (3,2) and is parallel to $2x - y = 4$

7. Passes through (-1,-1) and is perpendicular to $y = \frac{5}{2}x + 3$

Solution:

6. The slope of the line is $\boldsymbol{m = 2}$

In the point/slope form we have $y - y_1 = m(x - x_1)$

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

In the slope/intercept form $y = 2x + b$

If it passes through (3,2) then $2 = 2 * 3 + b \quad => \quad b = -4$

So in the slope/intercept form we have: $y = 2x - 4$

Answer: $y - 2 = 2(x - 3)$ $\qquad$ $y = 2x - 4$

7. The slope of the line is $\boldsymbol{m = -\frac{2}{5}}$ (from the condition of perpendicularity)

In the point/slope form we have $y - y_1 = m(x - x_1)$

$$y + 1 = -\frac{2}{5}(x + 1)$$

In the slope/intercept form $y = 2x + b$

If it passes through $(-1, -1)$ then $-1 = -\frac{2}{5} * (-1) + b \quad => \quad b = -\frac{7}{5} = -1\frac{2}{5}$

So in the slope/intercept form we have: $y = -\frac{2}{5}x - 1\frac{2}{5}$

Answer: $y + 1 = -\frac{2}{5}(x + 1)$ $\qquad$ $y = -\frac{2}{5}x - 1\frac{2}{5}$