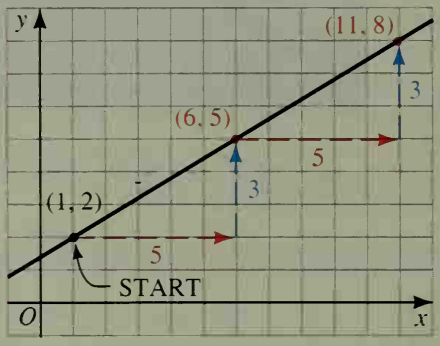
Example 2 Sketch each line described, showing several points on the line.

a. The line passes through (1, 2) and has slope $\frac{3}{5}$.

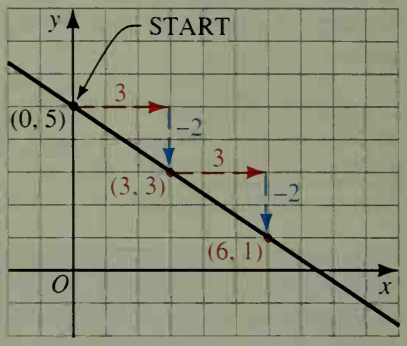
b. The line passes through (0, 5) and has slope $-\frac{2}{3}$.

Solution

a. Since $\frac{\text{change in } y}{\text{change in } x} = \frac{3}{5}$, every horizontal change of 5 units is matched by a vertical change of 3 units. Start at (1, 2), move 5 units to the right and 3 units up.



b. Since $\frac{\text{change in } y}{\text{change in } x} = -\frac{2}{3} = \frac{-2}{3}$, every horizontal change of 3 units is matched by a vertical change of 2 units. Start at (0, 5), move 3 units to the right and 2 units down.



The examples above and the diagrams below illustrate the following facts.

Lines with positive slope rise to the right.

Lines with negative slope fall to the right.

The greater the absolute value of a line's slope, the steeper the line.