## 6.11 Classwork: Point-slope form of a linear equation HSG.GPE.B.6

**Point-slope form:** $(y - y_1) = m(x - x_1)$

1. Write the linear equation $y - 1 = 2(x - 3)$ in the form $y = mx + b$.
   (a) What is the slope of the line?

   (b) Name a point on the line as an ordered pair.

   (c) Rewrite the equation of the line in the form $y = mx + b$.

   (d) What is the $y$-intercept of the line?

2. A line has a slope of $\frac{3}{4}$ and passes through the point $(8, 3)$.
   (a) Write the equation of the line in the form $(y - y_1) = m(x - x_1)$.

   (b) Rewrite the equation of the line in the form $y = mx + b$.

3. Find the slope of the line through the points $(1, 3)$ and $(5, 4)$.

4. Given two points $R(7, 5)$ and $S(4, 9)$.
   (a) Write down the distance formula.

   (b) What is the length of $\overline{RS}$?

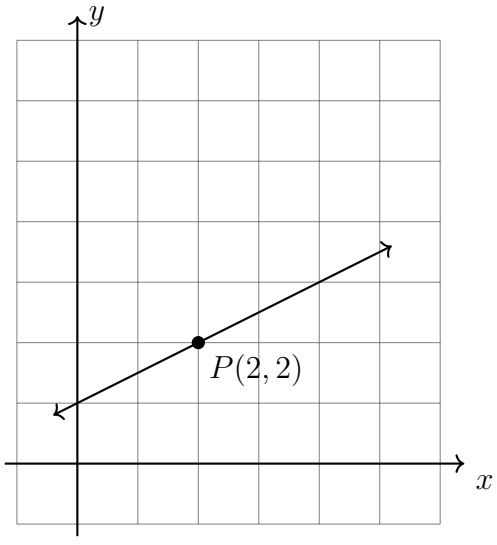
5. Given two points $T(2, 3)$ and $U(10, 11)$.
   (a) Write down the midpoint formula.

   (b) What is the midpoint of $\overline{TU}$?

6. A line through $P(2, 2)$ is plotted on the graph below.
   (a) Write down the equation of the line.

   (b) What slope would be perpendicular to the line?

   (c) Write down the equation of a perpendicular line through $P$ and plot it on the graph.



7. A line has a gradient (slope) of $\frac{3}{4}$ and passes through the point $(8, 3)$. Find the equation of the line in the form $y = mx + b$.

8. A line has a gradient (slope) of $\frac{2}{3}$ and passes through the point $(9, 3)$. Find the equation of the line in the form $y = mx + b$.

9. A line has a gradient (slope) of $\frac{4}{3}$ and passes through the point $(9, 13)$. Find the equation of the line in the form $y = mx + b$.

10. Find the equation of the line through the points $(1, 3)$ and $(5, 4)$.