

Challenge: Skills and Applications

For use with pages 300–306

In Exercises 1–8, write an equation in point-slope form of the line that passes through the given points.

- | | |
|---|---|
| 1. $(\frac{1}{2}, -4), (2, 11)$ | 2. $(8, 3), (-\frac{1}{3}, -2)$ |
| 3. $(-0.5, 0.9), (-3.3, -0.5)$ | 4. $(3.2, -1.4), (2.4, 1.8)$ |
| 5. $(\frac{3}{2}, -\frac{1}{3}), (-\frac{2}{3}, 4)$ | 6. $(5, -4), (\frac{1}{2}, -\frac{1}{4})$ |
| 7. $(p, q), (-p, 2q)$ | 8. $(2p, -q), (p, p - q)$ |

In Exercises 9–12, use the following information.

A line passes through the point $(6, 3)$ and has slope $-\frac{5}{2}$.

- Write an equation of the line in point-slope form.
- For the given point $(6, 3)$, the x -coordinate is twice the y -coordinate. Find a point on the line for which the y -coordinate is twice the x -coordinate. Explain your method.
- Find a point on the line for which the two coordinates are opposites.
- Find a point on the line for which the sum of the two coordinates is 15.

In Exercises 13–15, use the following information.

Hiking up a mountain, Zahara looked at a topographical map and saw that at 1:00 P.M. her elevation was 5620 feet above sea level. By 2:30 P.M. she had reached an elevation of 6040 feet above sea level.

- Write an equation in point-slope form that gives Zahara's elevation y , at a time x hours after noon.
- If Zahara continues at the same rate, what elevation can she expect to reach by 5:00 P.M.?
- Use the model from Exercise 13 to find Zahara's elevation at 10:00 A.M.