

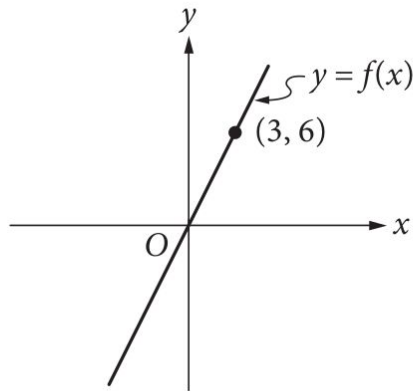


Lines and Slopes

In the SAT Exam, lines and slopes are very common questions. The test taker needs to be able to efficiently solve these kinds of questions, both in Sections 3 and 4.

Let's take a look at a sample problem.

Problem:



In the xy -plane above, a point (not shown) with coordinates (s, t) lies on the graph of the linear function f . If s and t are positive integers, what is the ratio of t to s ?

- A) 1 to 3
- B) 1 to 2
- C) 2 to 1
- D) 3 to 1

We see that the points $(3,6)$ and $(0,0)$ are given in the above graph. With these, we can determine the gradient (slope) of the line, m using the formula $\frac{y_2 - y_1}{x_2 - x_1}$.

When we substitute into this formula, we find

$$m = \frac{6-0}{3-0} = \frac{6}{3} = 2$$

Because the line passes through the Origin, the y -intercept would be 0. SO, the equation of the line would be $y = 2x$.

Substituting the point (s,t) into this equation gives us the ratio of t to s as

$$t = 2s$$

Or, a ratio of 1 to 2. Option **B** is the correct answer.