6.5 Slope

The slope of a line is the ratio of rise over run. It tells you how steep a line is. The symbol for slope is \( m \).

You can determine the slope in 2 ways.

1) Count the grid lines.

\[
\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{1}{2}
\]

\text{slope} = \frac{\text{rise}}{\text{run}} = \frac{2}{4} = \frac{1}{2}

What is the slope of this line?

- Positive slope
- Negative slope
- Zero slope
- Undefined slope \((\Theta)\)

2) Using the slope formula

\[
\frac{\text{rise}}{\text{run}} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - (-1)}{3 - (-2)} = \frac{3}{5}
\]

Do this: Given the coordinates of two points on a line, find
Do this given the coordinates of two points on a line, find its slope:
A) $(-4, 7)$ and $(6, 4)$  B) $(0, 3)$ and $(7, 3)$

**Applications**

\[
\text{slope} = \frac{\text{rise}}{\text{run}}
\]

What is the slope?

\[
\text{rise} = 2, \quad \text{run} = 6, \quad \text{slope} = \frac{2}{6} = \frac{1}{3}
\]

**EX 1**

Sohil ran $100\text{m}$ in $12\text{s}$, then he continued to run $400\text{m}$ in $70\text{s}$. Determine his average rate of change. (speed)

Answer in metres per seconds = \[
\frac{\text{metres}}{\text{seconds}} = \frac{\text{rise}}{\text{run}} = \frac{400 - 100}{70 - 12} = \frac{300}{58} = 5.17 \text{ m/s}
\]

Write Coordinates: $\begin{cases} (12, 100) & (70, 400) \\ X_1, Y_1 & X_2, Y_2 \end{cases}$

\[
m = \frac{Y_2 - Y_1}{X_2 - X_1} = \frac{400 - 100}{70 - 12} = \frac{300}{58} = 5.17 \text{ m/s}
\]

Assignment: Pg 325 1-3 odd letters, 5, 8, 9, 13.