

Unit 3 Part 2: Modelling with Graphs
5.3 Slope



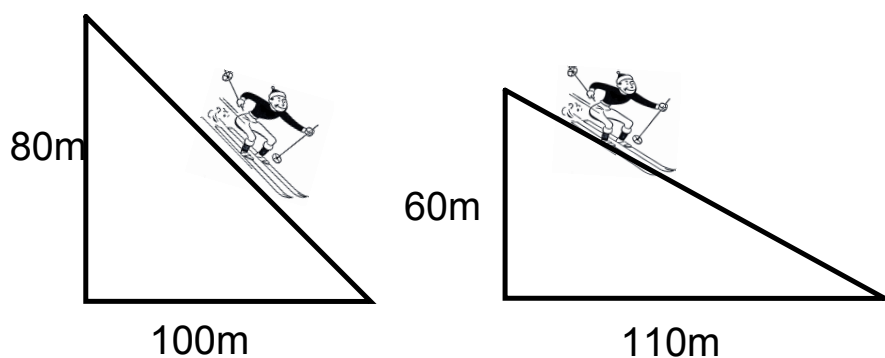
Slope

Good skiers enjoy skiing on hills with a greater slope because they can go faster. Ski runs are rated on a variety of factor, including the slope, or steepness. The steeper the ski run, the more challenging it is.



How can you determine the steepness of a hill?

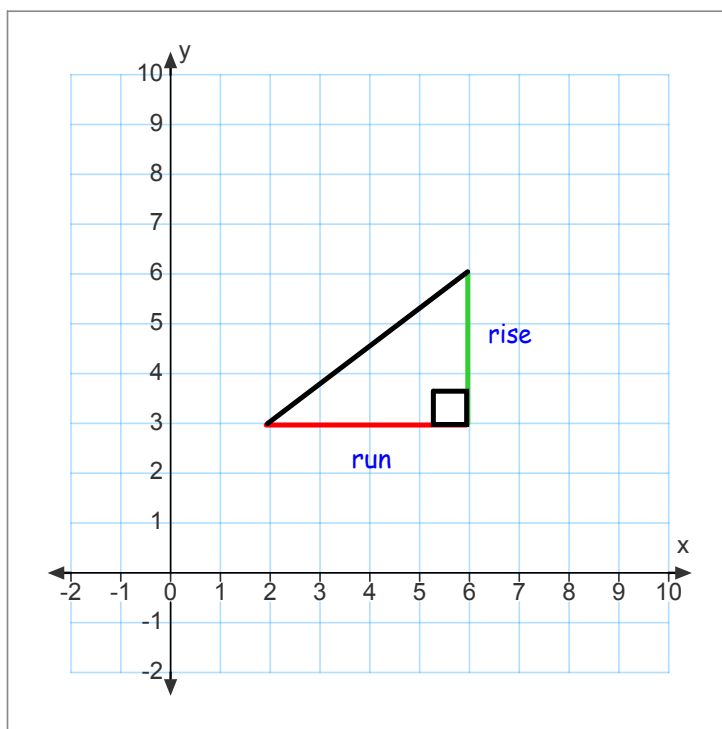
the diagrams represent ski hills



Which hill is steeper? Justify your choice mathematically.

The **slope**, m , is a measure of the steepness of a line segment. It is calculated as

$$m = \frac{\text{rise}}{\text{run}}$$

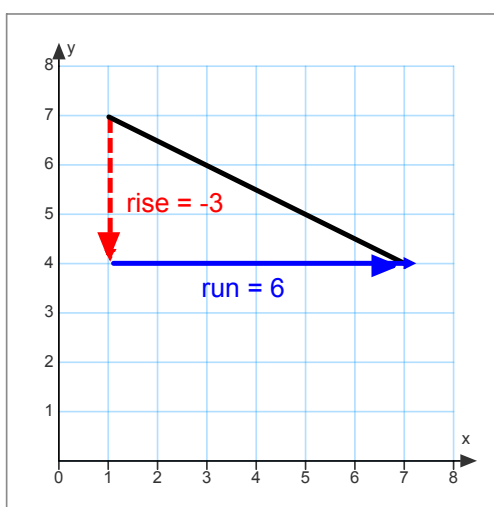
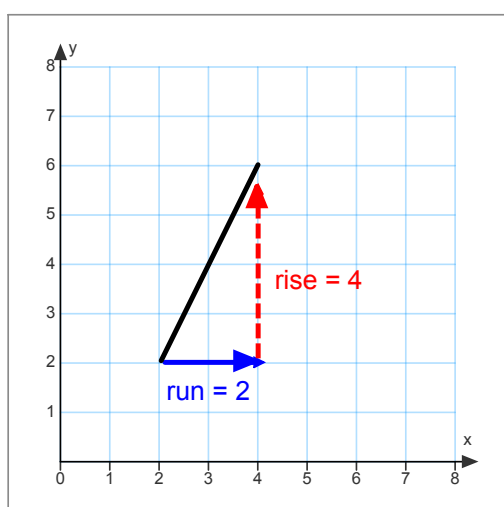


In this diagram, rise is 3 units and run is 4 units.

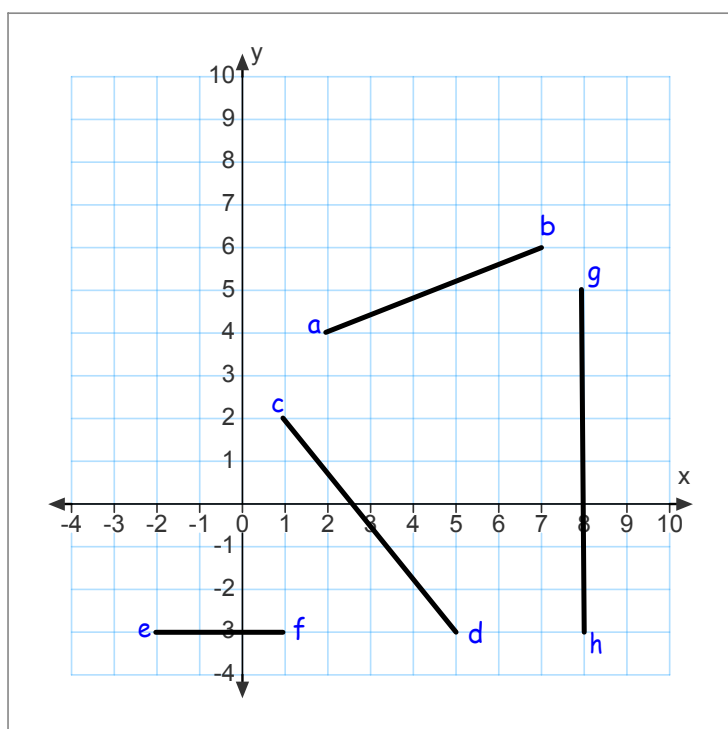
$$m = \frac{\text{rise}}{\text{run}}$$

$$m = \frac{3}{4}$$

We always move from left to right when determining slope:

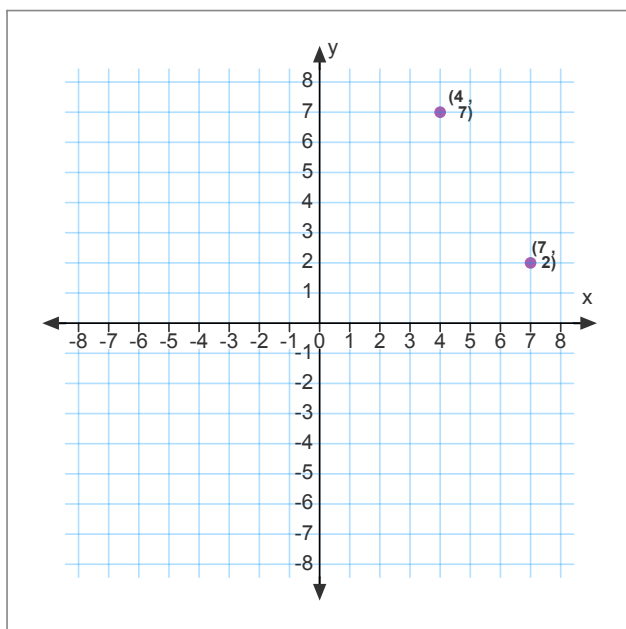


- A line segment rising from left to right always has a positive slope.
- A line segment falling from left to right always has a negative slope.



Calculate the slope of each line segment.

Ex. A line segment has one endpoint, A(4,7) and a slope of $-\frac{5}{3}$. Find the coordinates of another possible endpoint B.



Since $-\frac{5}{3}$ is the slope, we know that rise is -5 and run is 3..

We can start at A(4, 7) and go down 5 and right 3. Another point would be (7, 2).

Can you find another possible endpoint?

Ex. A line segment has end points $(-6,3)$ and $(5,-4)$, what is the slope of this line?
What is the equation of this line?