A Developmental Beginning and Connection for Proportion, Similarity, Slope, and Tangent (Trig)

Dr. Stan Hartzler   Archer City High School

Directions to students:

　　　Find the point named in the chart on the slanted line. Count the number of segments down to the base line.   Write that number in the top of the fraction.

　　　Next, go back to the same point on the slanted line. Now count the number of segments needed to go to the side line. Write that number in the bottom of the fraction.

Point name →	Point K		Point L		Point M		Point N	
$\dfrac{\text{Distance down from...}}{\text{Distance across from...}}$ =	____	=	____	=	____	=	____	=
	⇩		⇩		⇩			
	groups of 2		groups of 3		groups of 4			
	____	=	____	=	____	=		
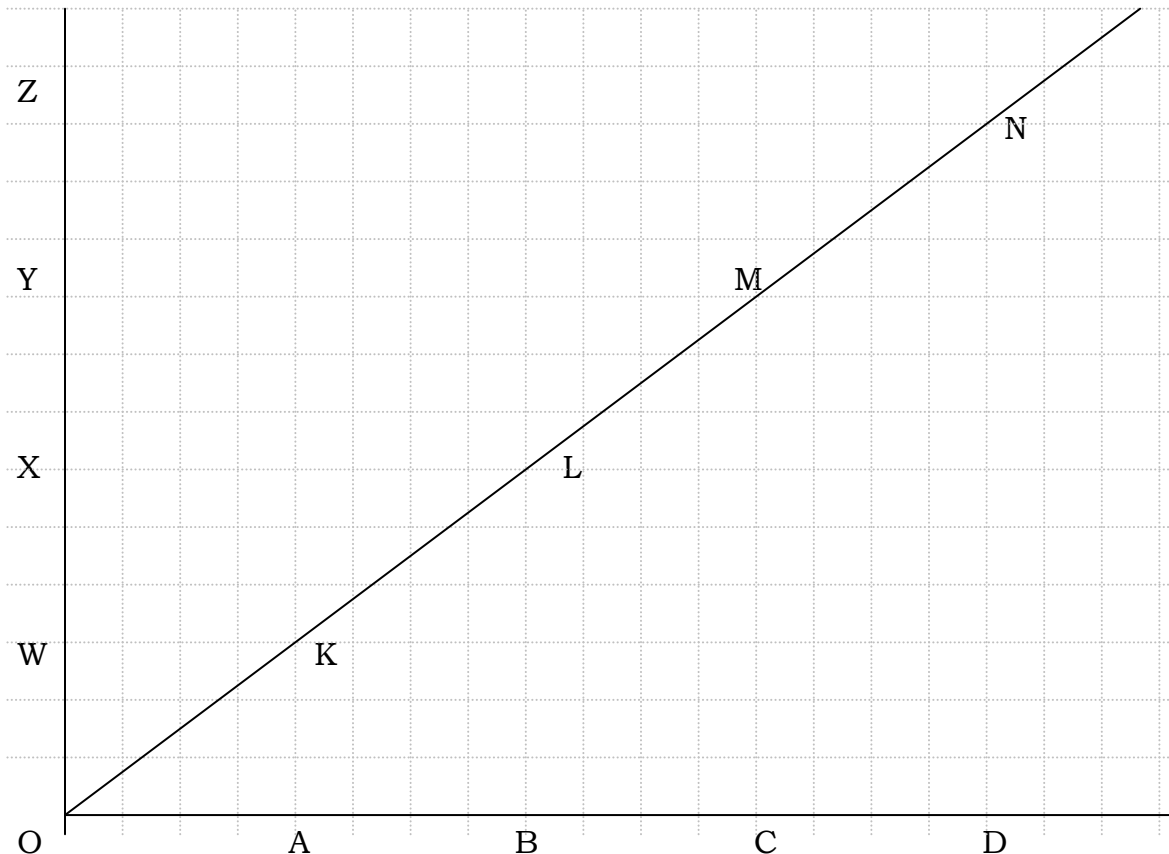
Note that

- ■ The equal signs in the chart establish **proportions**
- ■ The arrows reinforce or establish **equivalent fractions**
- ■ The triangles are **similar**
- ■ The $\dfrac{\text{Distance down from...}}{\text{Distance across from...}}$ fraction is $\dfrac{\text{change in } y = \Delta y}{\text{change in } x = \Delta x} = $ **slope**

- ■ $\dfrac{\Delta y}{\Delta x}$ for an angle with vertex at the origin is **tangent** in trigonometry, a cousin of sine and cosine.