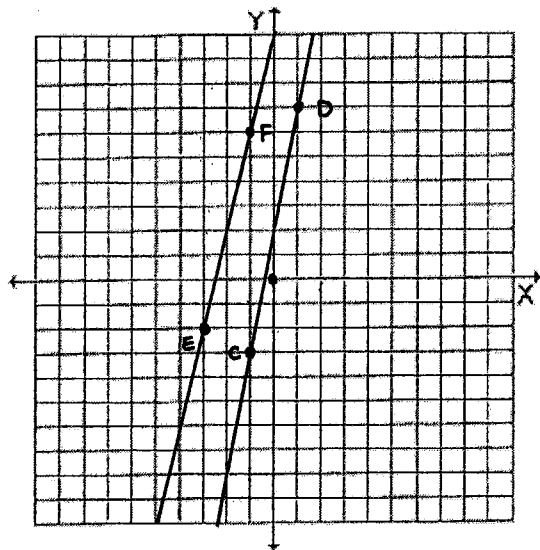


Common Math 10
Lesson 6.2 ~ Slopes of Parallel & Perpendicular Lines

Parallel lines are always the same distance apart; they never intersect. The slopes of parallel lines are equal.

Example #1: Line EF passes through $E(-3, -2)$ and $F(-1, 6)$. Line CD passes through $C(-1, -3)$ and $D(1, 7)$. Sketch the lines. Are they parallel? Justify your answer using slopes.

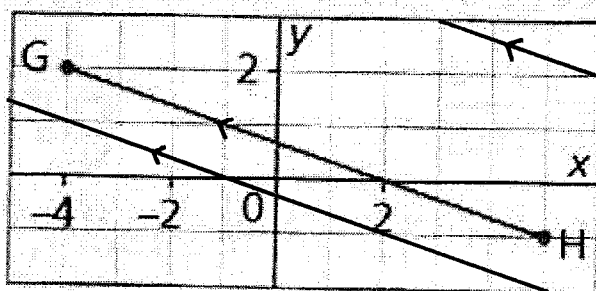


$$m_{EF} = \frac{\text{rise}}{\text{run}} = \frac{8}{2} = 4$$

$$m_{CD} = \frac{\text{rise}}{\text{run}} = \frac{10}{2} = 5$$

$m_{EF} \neq m_{CD}$, so lines are not parallel

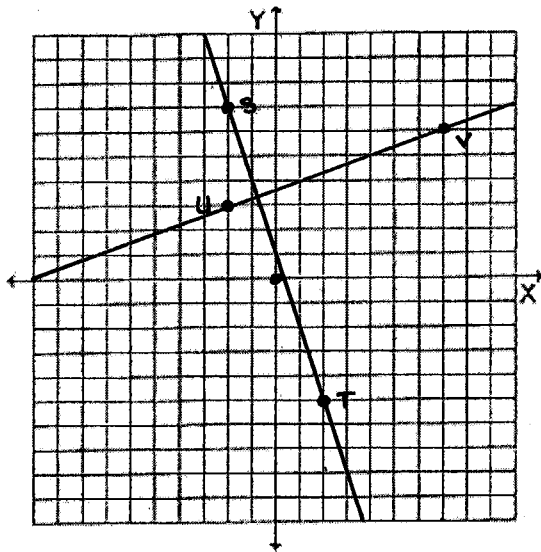
Example #2: Determine the slope of a line parallel to the line graphed below. Sketch a parallel line on the same graph.



$$m_{GH} = \frac{\text{rise}}{\text{run}} = \boxed{\frac{-1}{3}}$$

Perpendicular lines intersect at a right angle (90°). The slope of one line is the negative reciprocal of the other.

Example #3: Line ST passes through $S(-2, 7)$ and $T(2, -5)$. Line UV passes through $U(-2, 3)$ and $V(7, 6)$. Sketch the lines. Are they perpendicular? Justify your answer using slopes.

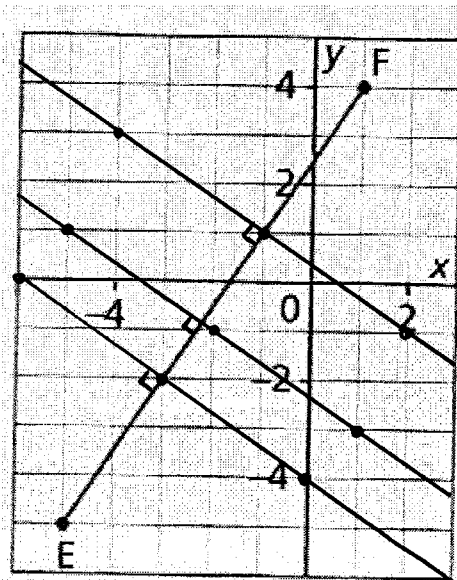


$$m_{ST} = \frac{\text{rise}}{\text{run}} = -\frac{12}{4} = -\frac{3}{1}$$

$$m_{UV} = \frac{\text{rise}}{\text{run}} = \frac{3}{9} = \frac{1}{3}$$

Since m_{ST} is the negative reciprocal of m_{UV} , the lines are perpendicular.

Example #4: Determine the slope of a line perpendicular to the line graphed below. Sketch a perpendicular line on the same graph.



$$m_{EF} = \frac{\text{rise}}{\text{run}} = \frac{3}{2}$$

$$m_{GH} = -\frac{2}{3}$$