**h 4: Parallel and Perpendicular Lines (Day 4)=**

**Parallel Lines**

Lines that are parallel (symbol ||) never cross.

They also have the same slope.



(Recall: slope = )

**Examples**

i) Determine whether the quadrilateral with vertices A(0,-6), B(2,-1), C(-1,5) and D(-3,0) is a parallelogram.



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ii) The slopes of two parallel lines are given. Find *k*.

a)  b) 



iii) The points P(2, -5), Q(-2, 1) and R(3, -1) are given.



Use the graph below to determine the coordinates of point S on the *y*-axis so that RS||PQ



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4. The points A(-2, 0), B(6, 4) and C(-3, 4) are given. Determine the coordinates of a point D on the *y*-axis such that CD | | AB

5. Determine the value of *x* so that the line segment with endpoints (*x*, 3) and B(1, 7) is parallel to the line segment with endpoints C(2, -4) and D(5, -2)

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v) A line passes through

A(2, 1) and B(6, 3)

a) Draw AB and determine its slope

b) Line CD is | | to AB. What is the slope of CD

c) P(-2, -2) lies on CD. Draw line CD. What are the coordinates of its *x-* and *y*-intercepts



**Perpendicular Lines**



Perpendicular means meeting at 90 degrees.

Symbol: 



Lines that are  have slopes that are negative reciprocals.



**Ex:**

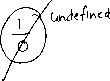


i) Find the  slope to:

a)  b) 

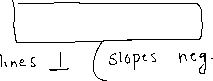


c) 2 d) 0



**Examples:**

ii) A triangle has vertices A(-2,3), B(8,-2) and C(4,6). Determine whether or not it is a right triangle.



Solution: Find the slopes of each side. We may want to draw it first.

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iii) The following are  slopes. Find *k*.

a)  b) 

**Example:**

iv) A line segment has endpoints A(5,4) and B(1,-2).



a) Find the slope of a  line segment.



b) Find C on the *x*-axis so that ABAC.



v) Is this a rectangle? J(-3,2), K(-2,-3) L(6,-2) M(5,3)



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