

3.5 Equations of Parallel & Perpendicular Lines DAY TWO CYU

Use when you get it right all by yourself

S Use when you did it all by yourself, but made a silly mistake

H Use when you could do it alone with a little help from teacher or peer

G Use when you completed the problem in a group

X Use when a question was attempted but wrong (get help)

N Use when a question was not even attempted

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Perpendicular slope	1, 4	2, 5	7, 8
Distance formula	1		8
Parallel slope		2	3, 6
Writing Equations			3, 6, 7
Midpoint formula	4		
Slope formula	5		

1. Find the distance from point A to the given line.

a. $A(-1, 7), y = 3x$

c. $A(15, -21), 5x + 2y = 4$

b. $A(-9, -3), y = x - 6$

d. $A\left(-\frac{1}{4}, 5\right), -x + 2y = 14$

2. Describe and correct the error in determining whether the lines are parallel, perpendicular, or neither.



Line 1: $(3, -5), (2, -1)$

Line 2: $(0, 3), (1, 7)$

$$m_1 = \frac{-1 - (-5)}{2 - 3} = -4 \quad m_2 = \frac{7 - 3}{1 - 0} = 4$$

Lines 1 and 2 are perpendicular.

3. Describe and correct the error in writing an equation of the line that passes through the point $(3, 4)$ and is parallel to the line $y = 2x + 1$.



$$y = 2x + 1, (3, 4)$$

$$4 = m(3) + 1$$

$$1 = m$$

The line $y = x + 1$ is parallel to the line $y = 2x + 1$.

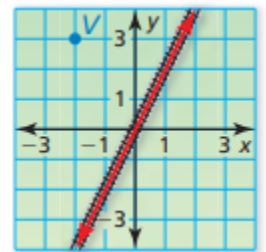
4. Find the midpoint of \overline{PQ} . Then write an equation of the line that passes through the midpoint and is perpendicular to \overline{PQ} . This line is called the *perpendicular bisector*.

a) $P(-4, 3)$ & $Q(4, -1)$

b) $P(-5, -5)$ & $Q(3, 3)$

5. A triangle has vertices $L(0, 6)$, $M(5, 8)$, and $N(4, -1)$. Is the triangle a right triangle? Explain your reasoning.

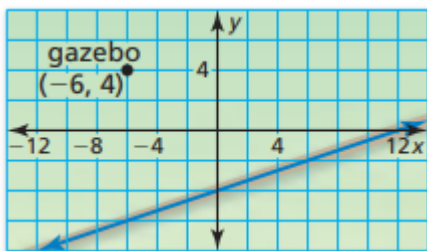
6. A new road is being constructed parallel to the train tracks through point V . An equation of the line representing the train tracks is $y = 2x$. Find an equation of the line representing the new road.



7. A bike path is being constructed perpendicular to Washington Boulevard through point $P(2, 2)$. An equation of the line representing Washington Boulevard is $y = -\frac{2}{3}x$. Find an equation of the line representing the bike path.



8. A gazebo is being built near a nature trail. An equation of the line representing the nature trail is $y = \frac{1}{3}x - 4$. Each unit in the coordinate plane corresponds to 10 feet. Approximately how far is the gazebo from the nature trail?



CYU Reflection: How far can you go: basic, intermediate, or advanced?

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

