

Name: Key

Class:

Topic:

Date:

Main Ideas/Questions

Notes

Parallel Lines

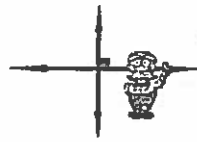


DEFINITION: two lines on a plane that never intersect

Algebraically, how do we know if two lines are parallel?

Have the same slope

Perpendicular Lines



DEFINITION: two lines that intersect and create a right angle

Algebraically, how do we know if two lines are perpendicular?

Slopes are opposite reciprocals

What are negative reciprocals???

Some examples...

1) $\frac{3}{4}$ & $-\frac{4}{3}$ 2) 2 & $-\frac{1}{2}$ 3) $-\frac{7}{8}$ & $\frac{8}{7}$ 4) 1 & -1 5) 0 & No Slope

Given Ordered Pairs

ANSWERS:

1. Parallel
2. Perpendicular
3. Neither
4. Perpendicular
5. Neither
6. Parallel

Determine if segments AB and CD are parallel, perpendicular, or neither:

1. AB formed by (-2, 3) and (2, 6)
CD formed by (-1, 0) and (3, 3)

$AB = \frac{6-3}{2-(-2)} = \frac{3}{4}$

$CD = \frac{3-0}{3-(-1)} = \frac{3}{4}$

2. AB formed by (0, 2) and (5, 4)
CD formed by (1, 8) and (3, 3)

$AB = \frac{4-2}{5-0} = \frac{2}{5}$

$CD = \frac{3-8}{3-1} = -\frac{5}{2}$

3. AB formed by (-1, 8) and (2, 6)
CD formed by (-1, 2) and (3, 3)

$AB = \frac{6-8}{2-(-1)} = -\frac{2}{3}$

$CD = \frac{3-2}{3-(-1)} = \frac{1}{4}$

4. AB formed by (2, 3) and (-1, 4)
CD formed by (-5, 3) and (-4, 6)

$AB = \frac{4-3}{-1-2} = \frac{1}{-3}$

$CD = \frac{6-3}{-4-(-5)} = \frac{3}{1}$

5. AB formed by (0, -2) and (0, 7)
CD formed by (3, -5) and (6, -5)

$AB = \frac{7-(-2)}{0-(-2)} = \frac{9}{2}$

$CD = \frac{-5-(-5)}{6-3} = \frac{0}{3}$

6. AB formed by (-4, 7) and (-2, 6)
CD formed by (2, -2) and (-8, 3)

$AB = \frac{6-7}{-2-(-4)} = -\frac{1}{2}$

$CD = \frac{3-(-2)}{-8-2} = \frac{5}{-10} = -\frac{1}{2}$

Main Ideas/Questions	Notes	
7. <u>Parallel</u> 8. <u>Perpendicular</u>	7. AB formed by (3, 1) and (3, -4) CD formed by (-4, 1) and (-4, 5) $AB = \frac{-4-1}{3-3} = \frac{-5}{0}$ No Slope $CD = \frac{5-1}{-4-(-4)} = \frac{4}{0}$ No Slope	8. AB formed by (-3, 8) and (3, 2) CD formed by (7, 1) and (5, -1) $AB = \frac{2-8}{3-(-3)} = \frac{-6}{6} = -1$ $CD = \frac{-1-1}{5-7} = \frac{-2}{-2} = 1$
GIVEN EQUATIONS	Determine if the given equations are parallel, perpendicular, or neither:	
	9. $y = 7x + 2$ and $y = 7x - 1$	10. $y = \frac{4}{5}x - 8$ and $y = -\frac{5}{4}x + 3$
	11. <u>Parallel</u>	
	12. <u>Perpendicular</u>	
	13. <u>Neither</u>	12. $x + 6y = 30$ and $3y = 18x - 6$ $\frac{6y}{6} = \frac{-x+30}{6}$ $\frac{3y}{3} = \frac{18x-6}{3}$ $y = -\frac{1}{6}x + 5$ $y = 6x - 2$
	14. <u>Perpendicular</u>	
15. <u>Perpendicular</u>	13. $5x - y = 4$ and $y = -\frac{1}{5}x + 7$ $-y = -5x + 4$ $-1 \quad -1 \quad -1$ $y = 5x - 4$	14. $3x - y = 2$ and $12x - 4y = 4$ $-y = -3x + 2$ $-4y = -12x + 4$ $-1 \quad -1 \quad -1$ $-4 \quad -4 \quad -4$ $y = 3x - 2$ $y = 3x - 1$
16. <u>Perpendicular</u>	15. $y = x + 3$ and $y = -x - 5$	16. $y = 6$ and $x = -1$ 0 No Slope

Summary: _____
