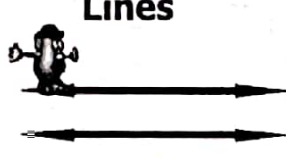
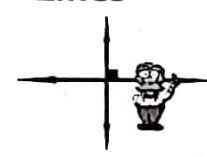


Name: \_\_\_\_\_ Class: \_\_\_\_\_

Topic: Parallel & Perpendicular Lines Date: \_\_\_\_\_

Main Ideas/Questions	Notes
<p><b>Parallel Lines</b></p> 	<p>Definition: Lines that <u>NEVER</u> intersect.</p> <p>Algebraically, how do we know if two lines are parallel? They have the <u>same slope!</u></p>
<p><b>Perpendicular Lines</b></p> 	<p>Definition: Lines that intersect at a 90° angle</p> <p>Algebraically, how do we know if two lines are perpendicular? They have a <u>negative reciprocal slope.</u></p>
<p>What are Negative Reciprocals???</p>	<p>A fraction "flipped" and sign "switched"</p> <p>Some examples...</p> <p>1) <math>\frac{3}{4}</math> &amp; <math>-\frac{4}{3}</math>    2) <math>2</math> &amp; <math>-\frac{1}{2}</math>    3) <math>-\frac{7}{8}</math> &amp; <math>\frac{8}{7}</math>    4) <math>1</math> &amp; <math>-1</math>    5) <math>0</math> &amp; <u>Undefined</u></p>
<p><b>Given Ordered Pairs</b></p> <p>ANSWERS:</p> <p>1. <u>  </u></p> <p>2. <u>⊥</u></p> <p>3. <u>Neither</u></p> <p>4. <u>⊥</u></p> <p>5. <u>⊥</u></p> <p>6. <u>  </u></p>	<p>Determine if segments AB and CD are parallel, perpendicular, or neither:</p> <p>1. AB formed by (-2, 3) and (2, 6) CD formed by (-1, 0) and (3, 3) <math>AB = \frac{6-3}{2-(-2)} = \frac{3}{4}</math> <math>CD = \frac{3-0}{3-(-1)} = \frac{3}{4}</math> ← same</p> <p>2. AB formed by (0, 2) and (5, 4) CD formed by (1, 8) and (3, 3) <math>AB = \frac{4-2}{5-0} = \frac{2}{5}</math> <math>CD = \frac{3-8}{3-1} = \frac{-5}{2}</math> ← Neg. Recip.</p> <p>3. AB formed by (-1, 8) and (2, 6) CD formed by (-1, 2) and (3, 3) <math>AB = \frac{6-8}{2-(-1)} = \frac{-2}{3}</math> <math>CD = \frac{3-2}{3-(-1)} = \frac{1}{4}</math></p> <p>4. AB formed by (2, 3) and (-1, 4) CD formed by (-5, 3) and (-4, 6) <math>AB = \frac{4-3}{-1-2} = \frac{1}{-3}</math> <math>CD = \frac{6-3}{-4-(-5)} = \frac{3}{1} = 3</math> ← Neg. Recip.</p> <p>5. AB formed by (0, -2) and (0, 7) CD formed by (3, -5) and (6, -5) <math>AB = \frac{7-(-2)}{0-0} = \text{Undefined}</math> <math>CD = \frac{-5-(-5)}{6-3} = \frac{0}{3} = 0</math></p> <p>6. AB formed by (-4, 7) and (-2, 6) CD formed by (2, -2) and (-8, 3) <math>AB = \frac{6-7}{-2-(-4)} = \frac{-1}{2}</math> <math>CD = \frac{3-(-2)}{-8-2} = \frac{5}{-10} = -\frac{1}{2}</math> ← same!</p>

Main Ideas/Questions	Notes
7. <u>  </u> 8. <u>⊥</u>	7. AB formed by (3, 1) and (3, -4) CD formed by (-4, 2) and (-4, 5) $AB = \frac{-4-1}{3-3} = \frac{-5}{0} = \text{undefined}$ $CD = \frac{5-1}{-4+4} = \frac{4}{0} = \text{undefined}$
8. AB formed by (-3, 8) and (3, 2) CD formed by (7, 1) and (5, -1)	$AB = \frac{2-8}{3+3} = \frac{-6}{6} = -1$ $CD = \frac{-1-1}{5-7} = \frac{-2}{-2} = 1$
<b>Given Equations</b>	<b>Determine if the given equations are parallel, perpendicular, or neither:</b>
9. <u>  </u>	9. $y = 7x + 2$ and $y = 7x - 1$ $m = 7$ $m = 7$ Same
10. <u>⊥</u>	10. $y = \frac{4}{5}x - 8$ and $y = -\frac{5}{4}x + 3$ $m = \frac{4}{5}$ $m = -\frac{5}{4}$ Neg. Recip.
11. <u>Neither</u>	11. $y = -\frac{1}{3}x + 2$ and $y = \frac{1}{3}x$ $m = -\frac{1}{3}$ $m = \frac{1}{3}$
12. <u>⊥</u>	12. $x + 6y = 30$ and $\frac{3y}{3} = \frac{18x-6}{3}$ $\frac{6y}{6} = \frac{-x+30}{6}$ $y = 6x - 2$ $y = -\frac{1}{6}x + 5$ $m = 6$ $m = -\frac{1}{6}$ Neg. Recip.
13. <u>⊥</u>	13. $5x - y = 4$ and $y = -\frac{1}{5}x + 7$ $\frac{-y}{-5x} = \frac{-5x+4}{-5x}$ $m = -\frac{1}{5}$ $y = 5x - 4$ $m = 5$ Neg. Recip.
14. <u>  </u>	14. $3x - y = 2$ and $12x - 4y = 4$ $\frac{-3x}{-3x} = \frac{-3x+2}{-3x}$ $\frac{-4y}{-12x} = \frac{-12x+4}{-12x}$ $y = 3x - 2$ $y = 3x - 1$ $m = 3$ $m = 3$ Same
15. <u>⊥</u>	15. $y = x + 3$ and $y = -x - 5$ $m = 1$ $m = -1$ Neg. Recip.
16. <u>⊥</u>	16. $y = 6$ and $x = -1$ $m = 0$ $m = \text{undefined}$ Neg. Recip.

Summary:  $y = \#$  will always be a horizontal line  
 $x = \#$  will always be a vertical line