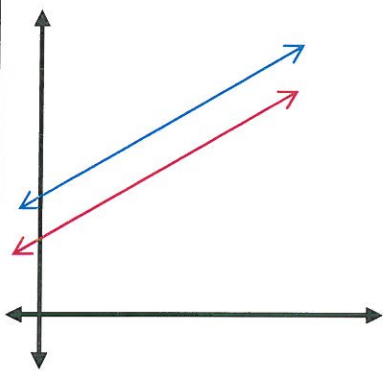
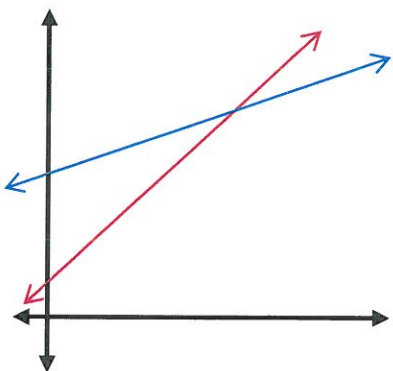
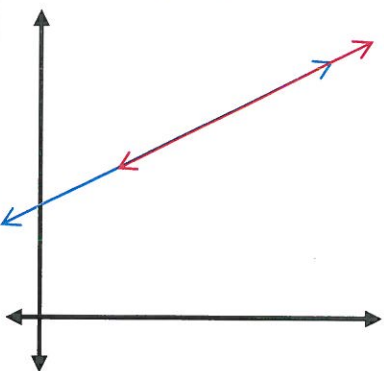
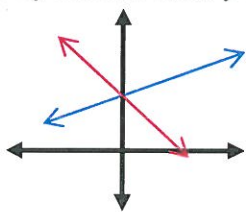
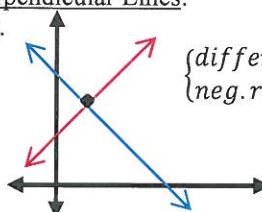


## Linear Relations

When we have two or more equations together we refer to those equations as a *System of Equations*.  
 When we are trying to find where two lines intersect, the point of intersection is referred to as a *solution*.

<u>Parallel Lines</u>	<u>Intersecting Lines</u>	<u>Coincidental Lines</u>
		
<p><b>No Solution</b></p> <p>{ same "a" different "b"</p>	<p><b>One Solution</b></p> <p>{ different "a" maybe different "b"</p>	<p><b>Infinite Solutions</b></p> <p>{ same "a" same "b"</p>
<p style="text-align: center;"><u>Notes</u></p> <ul style="list-style-type: none"> <li>-same slope</li> <li>-different y-intercept</li> </ul>	<p style="text-align: center;"><u>Notes</u></p> <ul style="list-style-type: none"> <li>-lines do not have the same slope</li> <li>-lines may have different y-intercept:</li> <li>-lines will have the same y-intercept when they intersect on the y-axis</li> </ul> <p>e.g.</p> <div style="text-align: center;">  </div> <p><i>Special Case</i>  <u>Perpendicular Lines:</u>              e.g.</p> <div style="text-align: center;">  </div> <p style="text-align: right; margin-right: 50px;">{ different "b" neg. recip "a"</p> <p style="text-align: center;"><u>Notes</u></p> <ul style="list-style-type: none"> <li>-only one solution</li> <li>-the slopes of two perpendicular lines are negative reciprocals of each other e.g.</li> </ul> $line_1 a = -\frac{4}{5}; line_2 a = \frac{5}{4}$ <ul style="list-style-type: none"> <li>-different y-intercept</li> </ul>	<p style="text-align: center;"><u>Notes</u></p> <ul style="list-style-type: none"> <li>- lines are one on top of the other</li> <li>-each point the two lines share is a point of intersection</li> </ul>