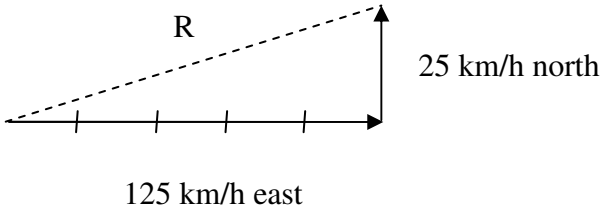
Name: _____

Chapter 6 Study Guide

6.2 **Analytical Method of Vector Addition**

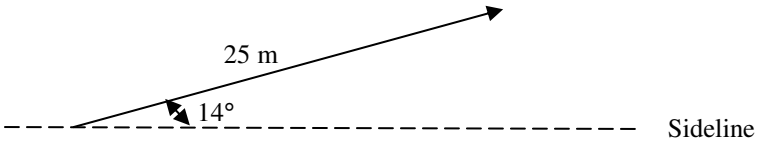
Adding Perpendicular Vectors

When two vectors are _____, the vector diagram produces a right triangle, in which the resultant vector is the _____ of the triangle. In the diagram below, an airplane flying east at 125 km/h is affected by a 25.0-km/h cross wind blowing to the north. The Pythagorean theorem can be used to calculate the _____ of the resultant vector. The equation to be used is _____. The resultant is equal to _____. Trigonometry can be used to calculate the _____ the resultant. The equation used is _____, and the direction of the resultant is _____.



Components of Vectors

Any single vector can be thought of as a(n) _____ of two vectors, called components. Usually the components are chosen to be perpendicular, so that _____ can be used to determine the size of each component. The diagram below shows the path of a football player running 25 m at an angle of 14° with the sideline. Complete the diagram by drawing the two component vectors, using the sideline as the component representing the player's forward progress. The magnitude of this component can be calculated using the _____ of 14°. The sideways components of the players' path can be calculated using the _____ of 14°. The process of finding components of a single vector is called _____.



Adding Vectors at Any Angle

Vector resolution is used when adding vectors that are not _____. Each vector is resolved into _____ components. When three vectors are added, vector resolution produces a total of _____ components. Of these components, _____ are in the horizontal direction and can be added together. The remaining _____ components are in the vertical direction an can be added together. After adding these components, there is only one _____ vector and one _____ vector. Finally, the _____ vector is found using the Pythagorean theorem.