Name _____ Date _____ Period _____

Vectors

A. Completing Concepts

In the space to the left, write the answer that best completes each statement.

_____ 1. Force, like velocity and displacement, is a _____ quantity.

_____ 2. A _____ quantity can be represented by an arrow-tipped line segment.

_____ 3. Vectors can be _____ by placing the tail of one vector at the head of the other vector.

_____ 4. When adding two vectors, neither the length nor the _____ of either vector is changed.

_____ 5. The sum of two vectors, or the _____ , is found by drawing a third vector from the tail of the first to the head of the second.

_____ 6. If two vectors act in the same or in _____ directions, their vector sum can be found algebraically.

_____ 7. If two vectors act perpendicularly, the magnitude of the resultant vector can be found using the _____ theorem.

_____ 8. _____ forces are forces which act on the same point simultaneously.

_____ 9. If three different 7.0 N forces act simultaneously on the same object, the resultant can be no greater than _____ N.

_____ 10. An object is in _____ when the vector sum of the forces acting on it is zero.

_____ 11. A single force that can place two or more other forces acting on a single point in equilibrium is called the _____ .

_____ 12. The _____ force is equal in magnitude to the resultant, but opposite in direction.

_____ 13. Any vector can be resolved into _____ which, when added, give a resultant equal to the original vector.

_____ 14. The process of finding the effective value of a vector in a given direction is called _____ .

_____ 15. The component of the gravitational force which acts perpendicular to the surface of an inclined plane is called the _____ force.

_____ 16. Another component of the gravitational force, $F_{||}$, acts _____ to the surface of an inclined plane.

B. Understanding Concepts

In the space to the left, write the letter of the answer to each question.

_____ 1. The resultant vector when ↓ is added to → is

_____ 2. Four vectors of the same magnitude are added, one pointing east, one west, one south, and one north. The magnitude of the resultant vector is
a. 0 b. 1 c. 2 d. 4

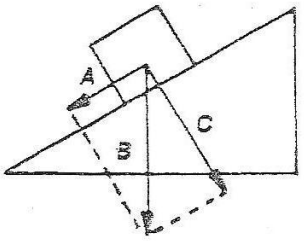
_____ 3. Two vectors acting at right angles to each other and having magnitudes of 6 and 8 have a resultant with a magnitude of
a. 2 b. 10 c. 14 d. 16

_____ 4. Two vectors having magnitudes of 5 and 8 that act on a single point cannot have a resultant with a magnitude of
a. 3 b. 7 c. 13 d. 15

_____ 5. The equilibrant force for the two vectors shown in the figure below is

_____ 6. Which of the following represents the y component of vector A shown in the figure below?

Questions 7 to 9 refer to the crate resting on the inclined plane diagrammed at right.



_____ 7. Which force vector represents the weight of the crate?
a. *A* b. *B* c. *C*

_____ 8. Which force vector represents the perpendicular force?
a. *A* b. *B* c. *C*

_____ 9. If the incline becomes steeper, which force vector will increase?
a. *A* b. *B* c. *C*

_____ 10. Three forces act concurrently on an object. The first is a 5 N force acting due east, the second a 3 N force acting due west, and the third is a 4 N force acting due east. What is the equilibrant force?
a. 12 N, E b. 12 N, W c. 6 N, E d. 6 N, W