Name _____ Honors Physics Period _____

Vectors/Projectiles WS #4H Mrs. Nadworny

(13 pts)

Equilibrants and Resultants

Date

Directions – Read each question carefully and select the choice that best answers the question.

- 1. As the angle between two concurrent forces decreases, the magnitude of the force required to produce equilibrium
 - A) increases B) decreases C) remains the same
- 2. An object is in equilibrium. Which force vector diagram could represent the force(s) acting on the object?



3. Two forces act concurrently on an object on a horizontal, frictionless surface, as shown in the diagram below



What additional force, when applied to the object, will establish equilibrium?

A) 16 N toward the right B) 4 N toward the right C) 16 N toward the left D) 4 N toward the left

Directions – Solve the following problem, on the **BACK** of this page, using the **scale** method. Be sure to use a ruler and protractor and to show all units. Use the GUESS method to show any calculations necessary.

- 4. In 1952, the ocean liner United States crossed the Atlantic Ocean in less than four days, setting the world record for commercial ocean-going vessels. The average speed for the trip was 60.0 kilometers/hour. Suppose the ship moves in a straight line eastward at this speed for 2.50 hr. Then, due to a strong current, the ship's course begins to deviate northward by 30.0° North of East, and the ship follows the new North-East course at the same speed for another 1.50 hours.
 - a. Calculate the component displacements (in kilometers) for the two legs of the trip using the GUESS method.
 - b. Find the resultant displacement (in kilometers) for the 4.00 hour period using the scale method. You should use the back of this sheet for the diagram.