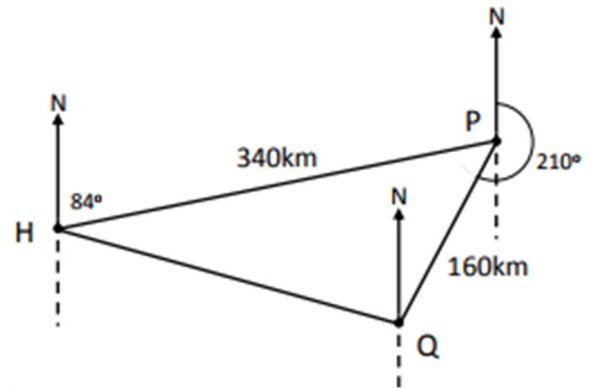Trigonometry/Precalculus
More Vector Application (with Law of Cosines)
Day _____

Name
Date
Block

1) A ship sails from harbor H on a bearing of $84°$ (from North) for 340 km until it reaches point P. It then sails on a bearing of $210°$ for 160 km until it reaches point Q.

a) Calculate the distance between point Q and the harbor.

b) On what bearing must the ship sail to return directly to the harbor from Q? (from North)

2. An airplane flies east 210 km before turning and heading toward a bearing of S 20° E and flying 100 km. Find the distance and direction of the plane from its starting point.

3.   An airplane is heading N10°E at 260 mph. A 16 mph wind blows from the west. Find the plane's resultant velocity and direction.

4) a) A motorboat travels across a lake at a speed of 10 mph and at a bearing of 25°. (measured from due North) The current of the lake due to the wind is a steady 2 mph at a bearing of 340°. Label the diagram below with the given speeds and bearings. (figure not drawn to scale)
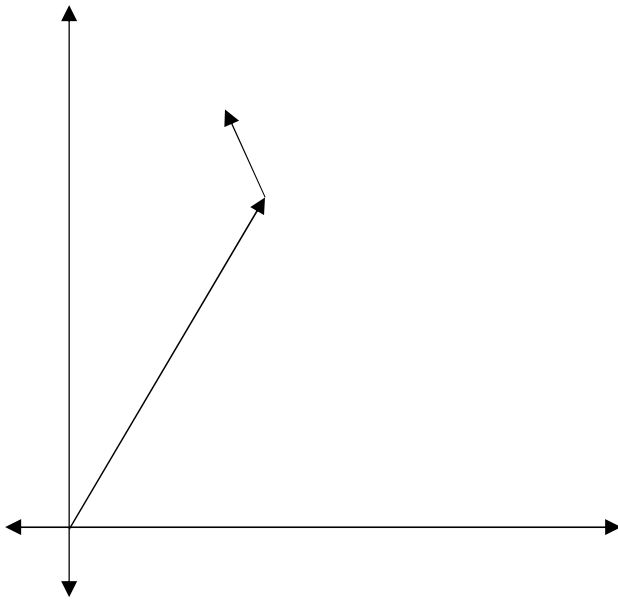
b) Find the resulting speed of the boat.

c) Find the resulting bearing of the boat. (from due North)

5) The pilot of an aircraft wishes to head directly east, but is faced with a wind speed of 40 mph from the northwest. If the pilot maintains an airspeed of 250 mph, what compass heading should be maintained? What is the actual speed of the aircraft?   (Hint: find the actual speed first.)

250 mph   40 mph

?

Actual speed?
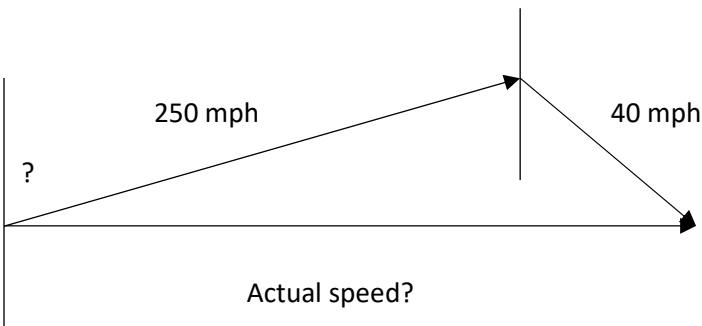
6) Olive wants to row a canoe across a river that flows at a rate of 2 miles per hour. If he wants to end up directly across from where she begins and he rows at an average of 5 mph, at what angle should she aim her canoe upstream?