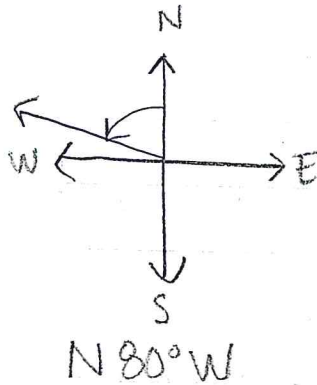
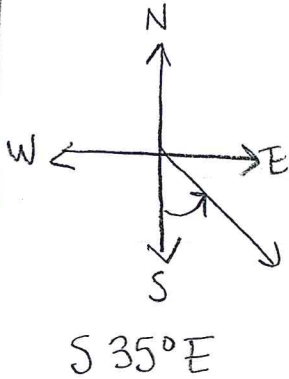
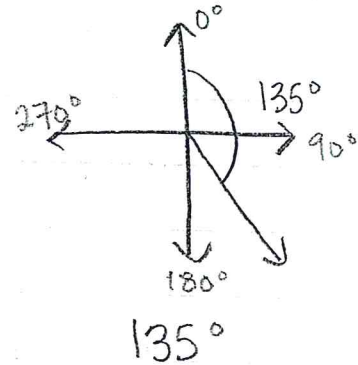


Notes: Bearings

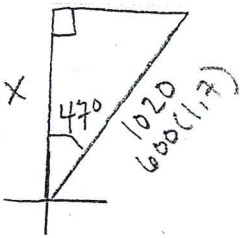


air navigation -
clockwise from north



example 1

a jet is traveling at 600 miles per hour at a bearing of 47°. After flying 1.7 hours in the same direction, how far north is the plane?

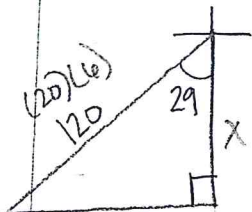


$$\cos 47^\circ = x / 1020$$

$$x = 695.638 \text{ miles}$$

example 2

a ship leaves port at noon and has a bearing of S 29° W. The ship sails at 20 knots. How many nautical miles south will the ship have traveled by 6:00 pm?

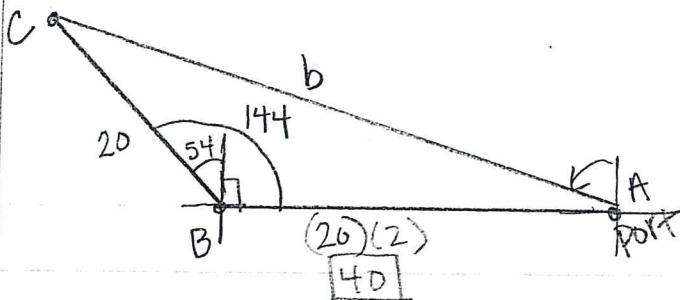


$$\cos 29^\circ = x / 120$$

$$x = 104.954 \text{ nautical miles}$$

example 3

a ship leaves port at noon and heads due west at 20 knot per hour. At 2pm the ship changes course to $N54^\circ W$. Find the ship's bearing and distance from the port of departure at 3pm.



$$b^2 = 20^2 + 40^2 - 2(20)(40)\cos 144^\circ$$

$$\boxed{b = 57.397 \text{ knots}}$$

$$20^2 = 40^2 + (57.397)^2 - 2(40)(57.397)\cos A$$

$$A = 11.818^\circ$$

Bearing from port to ship:

$$90 - 11.818 = \boxed{N 78.182^\circ W}$$