

## VECTOR BEARING PROBLEMS - Ver. 2

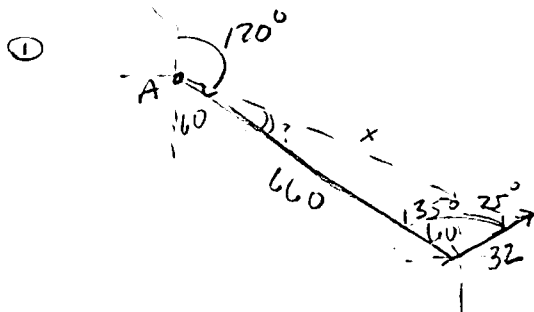
1. An airplane is traveling at 660 mph on a bearing of  $120^\circ$ . The wind is blowing on a bearing of  $75^\circ$  at 32 mph. What is the ground speed and the actual bearing of the airplane?

2. An airplane is traveling at 650 mph on a bearing of  $255^\circ$ . The wind is blowing from a bearing of  $320^\circ$  at 28 mph. What is the ground speed and the actual bearing of the airplane?

3. An airplane is traveling at 680 mph on a bearing of  $340^\circ$ . The wind is blowing from a bearing of  $68^\circ$  at 22 mph. What is the ground speed and the actual bearing of the airplane?

4. An airplane is traveling at 645 mph on a bearing of  $S 22 W^\circ$ . The wind is blowing from a bearing of  $315^\circ$  at 34 mph. What is the ground speed and the actual bearing of the airplane?

5. An airplane pilot want to travel due North. A wind is blowing at a bearing of  $60^\circ$  at 35 mph. In what direction should the pilot fly if the plane is traveling at a speed of 630 mph?



$$x^2 = 660^2 + 32^2 - 2(660)(32) \cos 135^\circ$$

$$x^2 = 466472.2$$

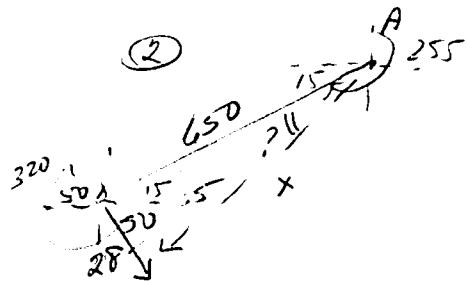
$$x = 683$$

$$\frac{\sin 135^\circ}{683} = \frac{\sin A}{32}$$

$$\sin A = .033129$$

$$A = 1.89 \approx 1.9$$

$$\text{bearing } 120 - 1.9 = 118.1^\circ$$



$$x^2 = 650^2 + 28^2 - 2(650)(28) \cos 65^\circ$$

$$x^2 = 407900.7$$

$$x = 638.7$$

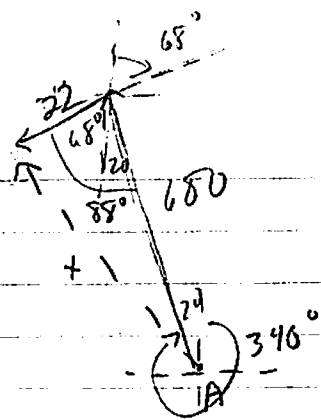
$$\frac{\sin 65^\circ}{638.7} = \frac{\sin A}{28}$$

$$\sin A = .03973$$

$$A = 2.3$$

$$\text{bearing: } 255 - 2.3 = 252.7^\circ$$

③



$$x^2 = 680^2 + 22^2 - 2(680)(22) \cos 88^\circ$$

$$x^2 = 461839.8$$

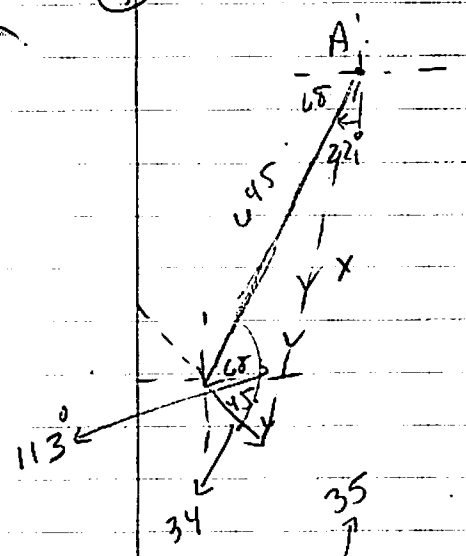
$$x = 679.6$$

$$\frac{\sin 88^\circ}{679.6} = \frac{\sin A}{22}$$

$$A = 1.9$$

$$\text{bearing: } 340 - 1.9 = 338.1^\circ$$

④



$$x^2 = 645^2 + 34^2 - 2(645)(34) \cos 113^\circ$$

$$x^2 = 434318.47$$

$$x = 659 \text{ mph}$$

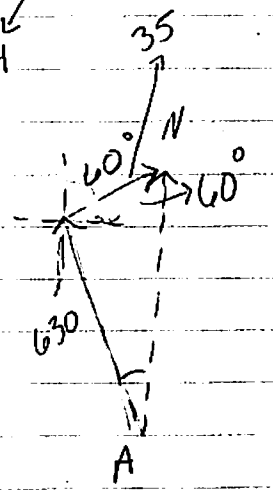
$$\frac{\sin 113^\circ}{659} = \frac{\sin A}{34}$$

$$\sin A = .04749$$

$$A = 2.7^\circ$$

$$\text{bearing } 22 - 2.7 = 19.3^\circ \text{ W}$$

⑤



$$\frac{\sin 60^\circ}{630} = \frac{\sin A}{35}$$

$$\sin A = .0481125$$

$$A = 2.8^\circ$$

$$\text{bearing } N 2.8^\circ W \approx 357.2^\circ$$

