

Finish in-class assignment... (20 minutes more)

When finished...work on these questions from  
the Trig Booklet:

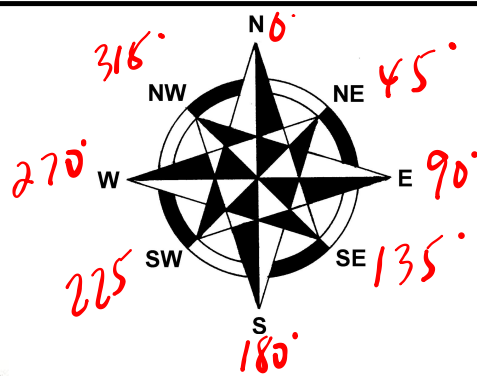
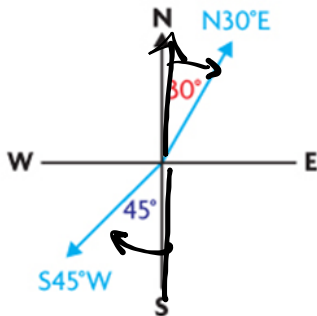
**Practice & Problems #7, 8, 9**

# MORE APPLICATIONS... Bearings

## NOTE:

### Communication Tip

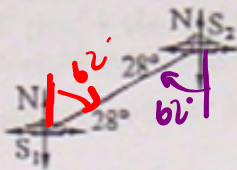
Directions are often stated in terms of north and south on a compass. For example,  $N30^\circ E$  means travelling in a direction  $30^\circ$  east of north.  $S45^\circ W$  means travelling in a direction  $45^\circ$  west of south.



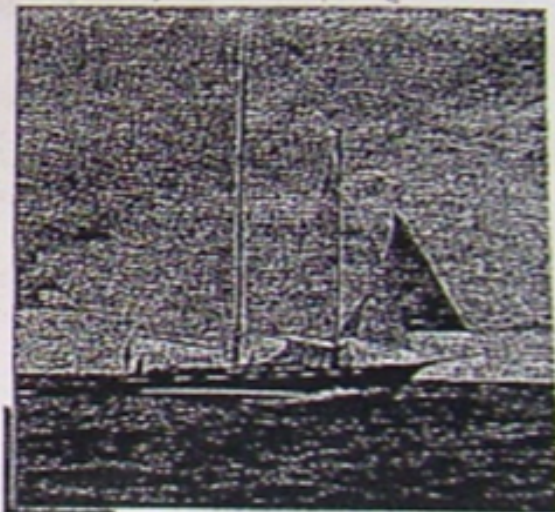
10.12

### Applications: The Cosine Law and Direction

We may use the Law of Cosines to solve problems that involve finding direction or bearing. For the two ships located in the diagram at  $S_1$  and  $S_2$ , we may state their bearing with respect to each other.

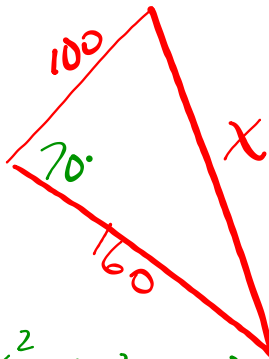


- The bearing of ship  $S_2$  from  $S_1$  is either  $E28^\circ N$  or  $N62^\circ E$ .
- The bearing of ship  $S_1$  from ship  $S_2$  is either  $W28^\circ S$  or  $S62^\circ W$ .



8 In an airport control tower A, 2 planes at B and C are located at the same altitude on a radar screen. The range finder determines one plane to bear N60°E at 100 km while the other bears S50°E at 160 km. How far apart are the planes from each other?

$$a^2 = b^2 + c^2 - 2bc \cos A$$



$$x^2 = 100^2 + 160^2 - 2(100)(160)\cos 70^\circ$$

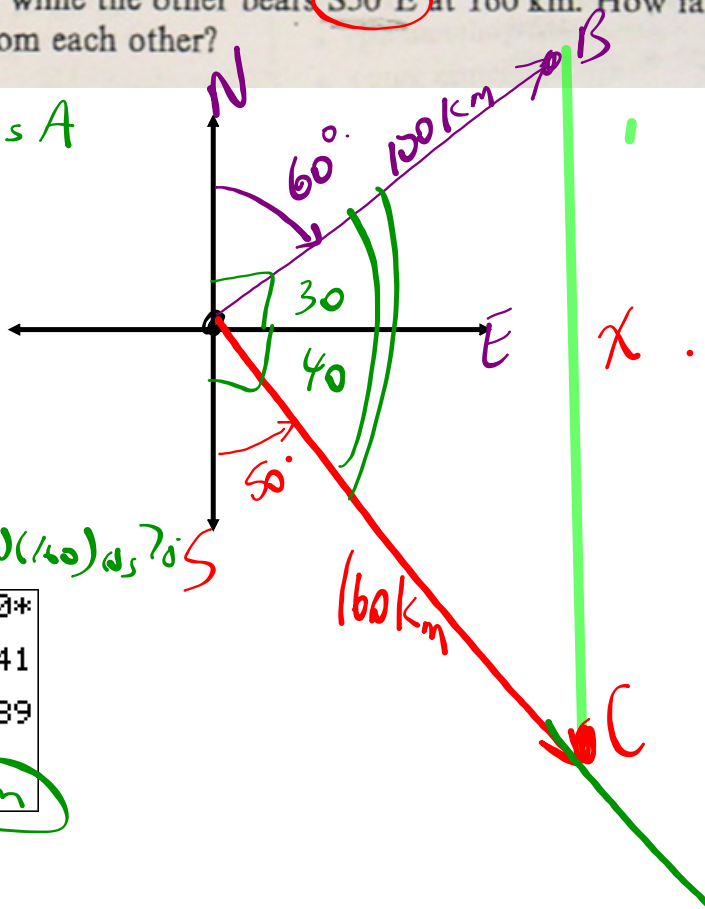
$$x^2 = 100^2 + 160^2 - 2 \cdot 100 \cdot 160 \cos(70)$$

$$= 24655.35541$$

$$x = \sqrt{24655.35541}$$

$$x = 157.0202389$$

$$x = 157.0 \text{ km}$$



10.12 # <sup>Homework</sup> // -12 (Bearings)  
Practice: Problems # 7, 8, 9