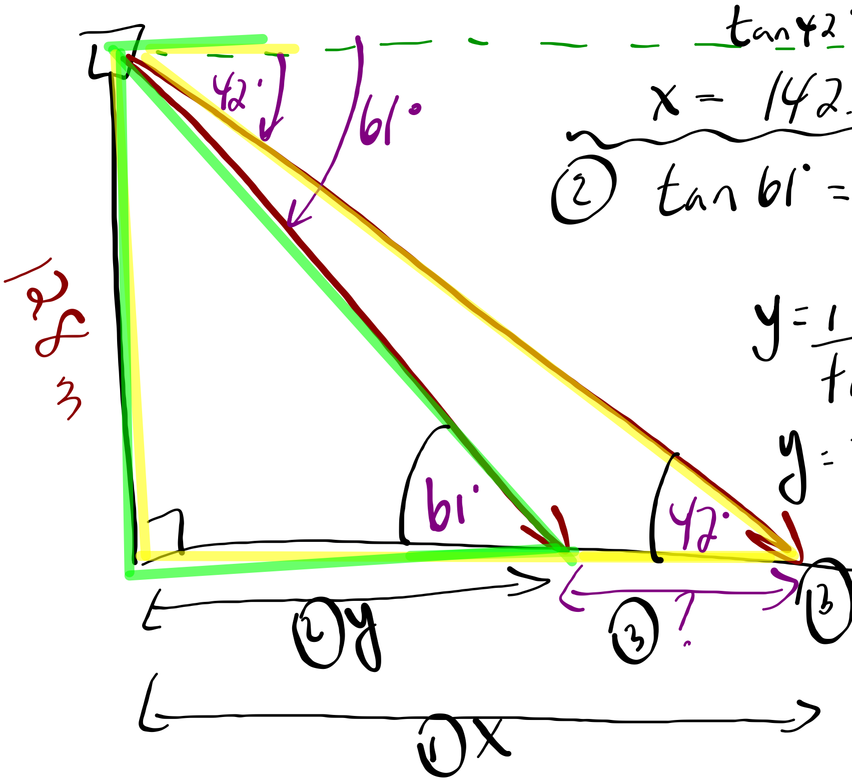
HW Questions

(1)



① $\tan 42° = \frac{128}{x}$

$x = \frac{128}{\tan 42°}$

$x = 142.2\ m$

② $\tan 61° = \frac{128}{y}$

$y = \frac{128}{\tan 61°}$

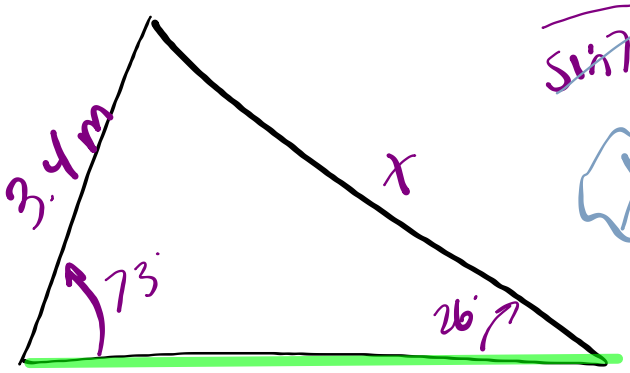
$y = 71\ m$

Dist $= 142.2 - 71$

$= 71.2$

Puzzle

(12)



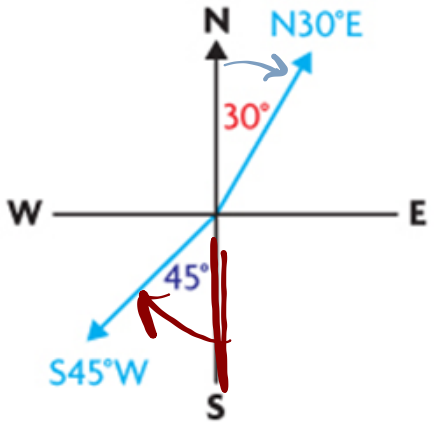
$\frac{x \sin 73}{\sin 73} = \frac{3.4 \sin 73}{\sin 26^\circ}$

$x = 7.4$

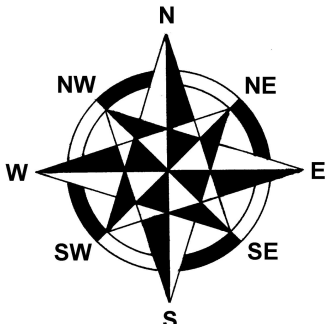
NOTE:

Communication | *Tip*

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



MORE APPLICATIONS... Bearings



Applications: Bearings

NOTE:

Communication Tip

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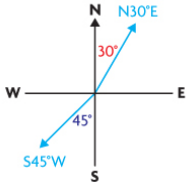
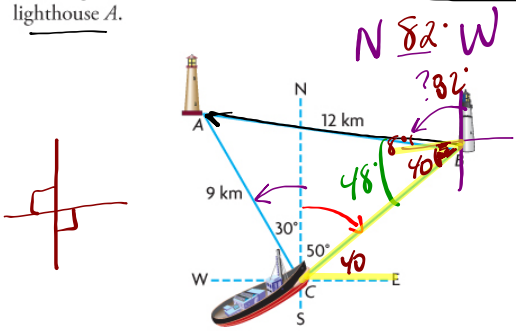
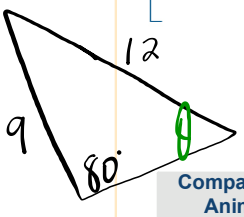


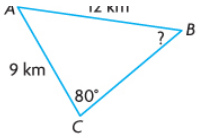
Ex #1:(p. 122) **Using reasoning to determine the measure of an angle**

The captain of a small boat is delivering supplies to two lighthouses, as shown. His compass indicates that the lighthouse to his left is located at N30°W and the lighthouse to his right is located at N50°E. Determine the compass direction he must follow when he leaves lighthouse *B* for lighthouse *A*.





Compass Rose Animation



I drew a diagram. I labelled the sides of the triangle I knew and the angle I wanted to determine.

$$\frac{\sin B}{AC} = \frac{\sin C}{AB}$$

I knew *AC*, *AB*, and $\angle C$, and I wanted to determine $\angle B$. So I used the sine law that includes these four quantities.

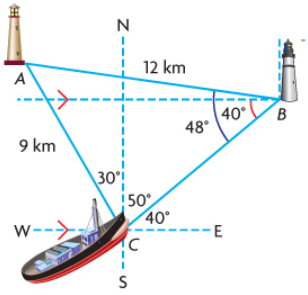
I used the proportion with sin *B* and sin *C* in the numerators so the unknown would be in the numerator.

$$\frac{\sin B}{9} = \frac{\sin 80°}{12}$$
$$9\left(\frac{\sin B}{9}\right) = 9\left(\frac{\sin 80°}{12}\right)$$
$$\sin B = 9\left(\frac{\sin 80°}{12}\right)$$
$$\sin B = 0.7386...$$
$$\angle B = \sin^{-1}(0.7386...)$$
$$\angle B = 47.612...°$$

I substituted the given information and then solved for sin *B*.

The measure of $\angle B$ is 48°.

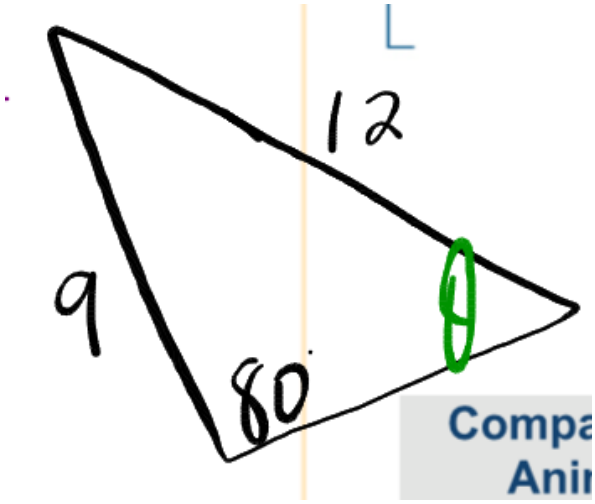
The answer seems reasonable. $\angle B$ must be less than 80°, because 9 km is less than 12 km.



I drew a diagram and marked the angles I knew. I knew east-west lines are all parallel, so the alternate interior angle at *B* must be 40°.

The captain must head N82°W from lighthouse *B*.

The line segment from lighthouse *B* to lighthouse *A* makes an 8° angle with west-east. I subtracted this from 90° to determine the direction west of north.



$\frac{9\sin\theta}{9} = \frac{9\sin 80^\circ}{12}$

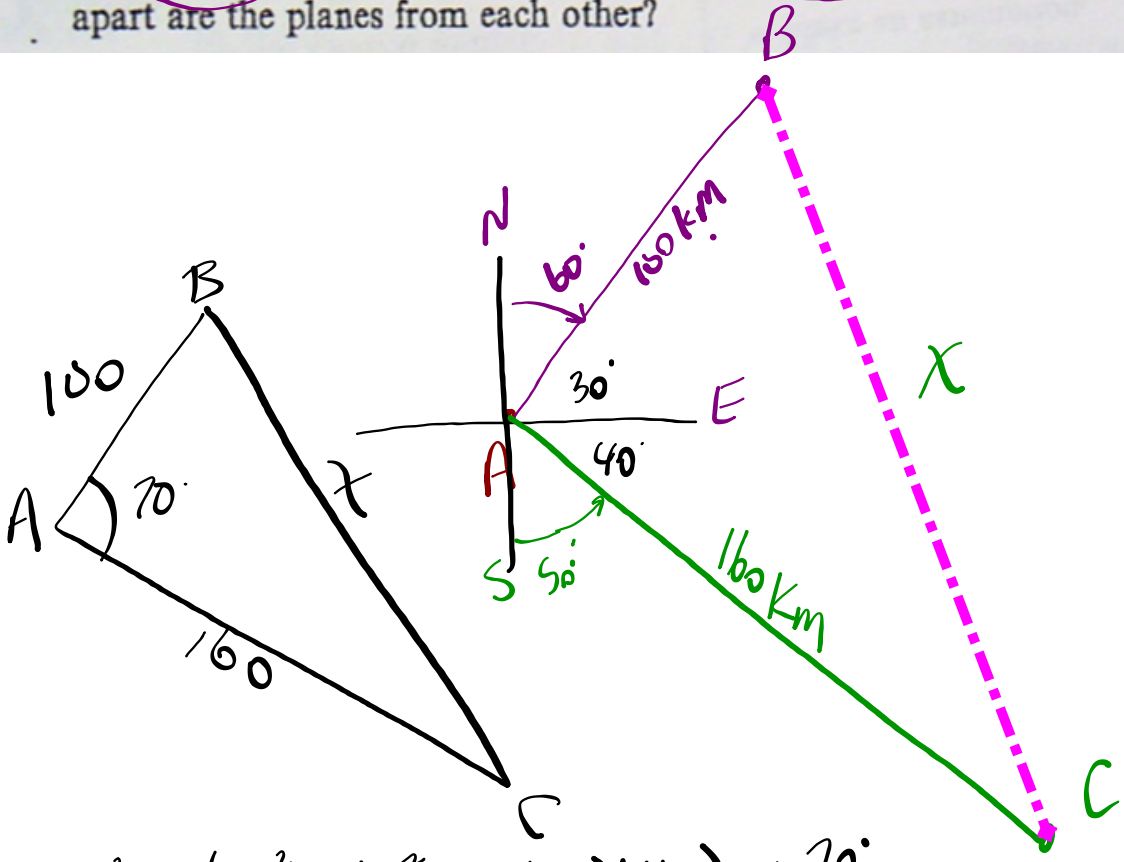
$\sin^{-1}\sin\theta = \sin^{-1}(0.7386)$

$\theta = 48^\circ$

Booklet Questions... 10.12: #10 - 12

Let's do #8 TOGETHER...

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?



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

$x^2 =$

100²+160²-2*100*160*cos(70)
24655.35541
√(Ans
157.0202389
■ X=

$x = 157$ km

HOMEWORK...

*** Quiz on Monday

- Primary Trig Ratios & Pythagorean Theorem
- Law of Sines/Cosines
- Finding angles/sides/solving/word problems

HW: 10.12 #10-12 → Direction