Worksheet 6.2 Precalculus Name_____
Period_____

1. In ΔABC, given $a=5$, $b=12$, and $c=10$, find $\angle A$ and $\angle B$ to the nearest thousandth of a degree.

$$m\angle A = \cos^{-1}\left(\frac{10^2+12^2-5^2}{2\cdot 10\cdot 12}\right) \approx 24.147^\circ$$

$$m\angle B = \cos^{-1}\left(\frac{5^2+10^2-12^2}{2\cdot 5\cdot 10}\right) \approx 100.953^\circ$$

2. In ΔDEF, given $e=13$, $f=7$, and $\angle D=100°$, find side d to the nearest thousandth **and** find $\angle E$ to the nearest thousandth of a degree.

$$m\angle E = \cos^{-1}\left(\frac{7^2+d^2-13^2}{2\cdot 7\cdot d}\right)$$

$$m\angle E = 54.129^\circ$$

$$d=\sqrt{13^2+7^2-2\cdot 13\cdot 7\cdot \cos 100^\circ}$$

$$d \approx 15.799$$

In problem 3, find the area of the triangle to the nearest thousandth and label the answer.

3. $a=20$ meters, $b=30$ meters, and $c=40$ meters.

$$s=\frac{20+30+40}{2}=\frac{90}{2}=45$$

$$A=\sqrt{45(45-20)(45-30)(45-40)}$$

$290.474\ m^2$

4. To solve an oblique triangle using the Law of Cosines, select (circle) **all** of the cases that qualify.

SSS
all three sides

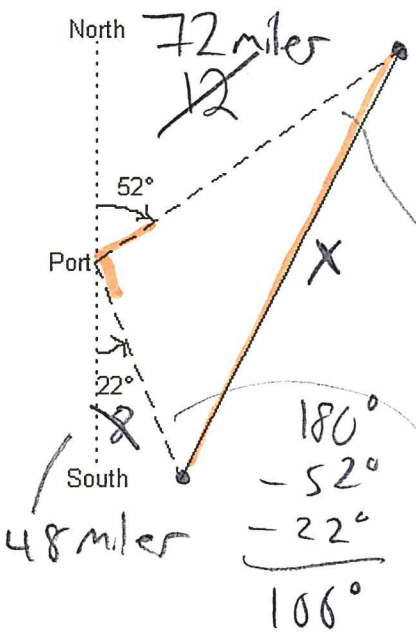
all three angles

any two angles and one side

two sides and their included angle
SAS

two sides and an angle opposite one of them

5. Two ships leave a port at 6 A.M. One travels at a bearing of N52°E at 12 miles per hour, and the other travels at a bearing of S22°E at 8 miles per hour. Find how far apart the ships are at noon that day. Round the answer to the nearest thousandth of a mile. Partial credit will be given for finding the distances traveled and the angle between the paths of the two ships.



$x = \sqrt{72^2 + 48^2 - 2 \cdot 72 \cdot 48 \cos 108°}$

96.919 miles

$\cos^{-1}\left(\frac{72^2 + x^2 - 48^2}{2 \cdot 72 \cdot x}\right) \cong 28.429°$

180°
− 52°
− 22°
106°

$\cos^{-1}\left(\frac{48^2 + x^2 - 72^2}{2 \cdot 48 \cdot x}\right) \cong 45.571°$