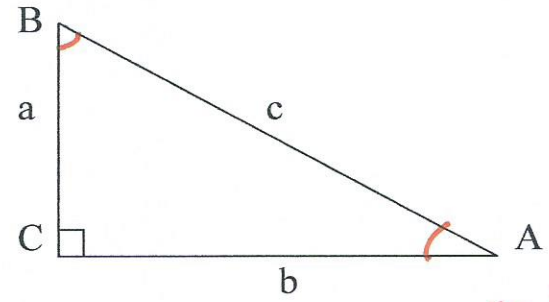
Name Mine _____ Date _____

Practice 7.9: Trig Applications

1. **Solve the right triangles**



a. $A = 20°,\ b = 10$

b. $a = 25,\ b = 35$ $\sqrt{a^2+b^2} = c = 43.0$

$\tan A = 25/35$ $\tan^{-1}(25/35) = A = 35.5°$

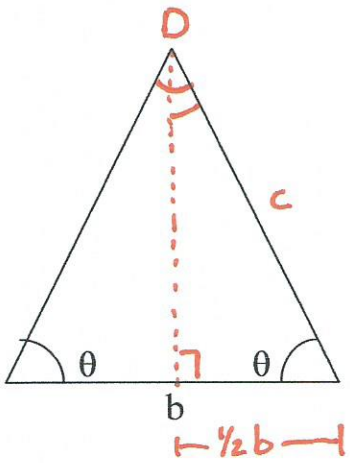
$90° - A = B = 54.5°$

c. $B = 71°, b = 24$

$A = 19°$ $\sin B = 24/c \rightarrow c = \frac{24}{\sin 71°} = 25.4$

$C = 90°$ $\tan B = 24/a \rightarrow a = \frac{24}{\tan 71°} = 8.3$

2. **Find the altitude of the isosceles triangle**



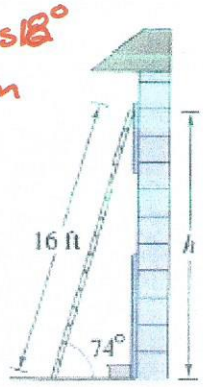
a. $\theta = 52°,\ b = 4cm$

b. $\theta = 18°,\ b = 10m$

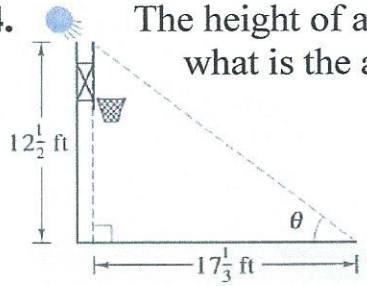
$\frac{1}{2}D = 72°$ $\frac{1}{2}b = 5m$ $c = 5/\cos 18°$

$D = 144°$ $\cos\theta = \frac{5}{c}$ $c = 5.3m$

3. A 16*ft* ladder leans against the side of a house. Find how high on the house the ladder will reach if the angle of elevation is 74°.



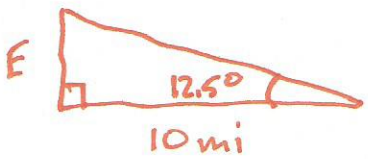
4. The height of a basketball backboard is 12½ *ft*. If you are standing 17⅓ *ft* away, what is the angle of elevation from the ground to the top of the backboard?



$\tan\theta = 12.5/17.5$

$\tan^{-1}(12.5/17.5) = \theta = 35.5°$

5. A sign on a roadway on top of a mountain says that for the next 10 miles the grade is 12.5°. Find the change in elevation for a car descending.



$\tan 12.5° = E/10$

$10 \tan 12.5° = E = 2.2mi$