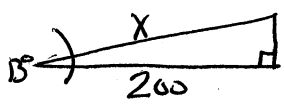
Pre-Calculus
Trig Word Problems

NAME Key

1. You have been asked to build a ramp for Daredevil Motorcycle Jump. The dimensions include a 200-ft horizontal stretch and an incline of 13°. Find the length of the jump's incline.



$\cos 13 = \frac{200}{x}$

$x = 205.3$

2. A kite flyer wondered how high her kite was flying. She used a protractor to measure an angle of 38° from level ground to the kite string. If she used a full 100-yard spool of string, how high, in feet, was the kite? (Disregard string sag and height of the string reel above the ground.)

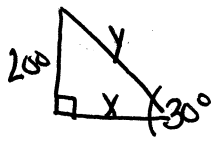
$\sin 38 = \frac{x}{100}$

$x = 61.57$ yards → 184.71 feet

3. The top of a 200-foot vertical tower is to be anchored by cables that make an angle of 30° with the ground. How long must the cables be? How far from the base of the tower should the anchors be placed?

$\sin 30 = \frac{200}{y}$

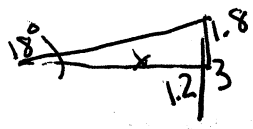
$y = 400$



$\tan 30 = \frac{200}{x}$

$x = 346.41$

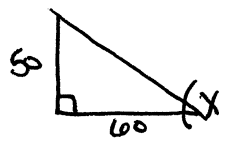
4. At a crime scene a bullet hole is found in the wall 3 meters above the ground. It shows that the bullet entered the wall at an elevation angle of 18°. Considering that the average person would hold a gun 1.2 meters above ground, approximately how far from the wall was the shooter?



$\tan 18 = \frac{1.8}{x}$

$x = 5.54$

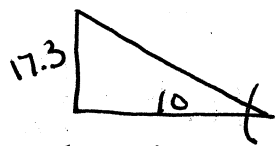
5. A tree 50 feet tall casts a shadow 60 feet long. Find the angle of elevation of the sun with the earth.



$\tan x = \frac{5}{6}$

$x = 39.8°$

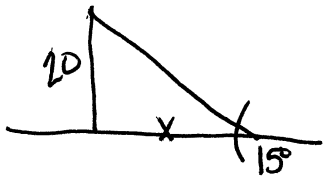
6. A staircase is to rise 17.3 feet over a horizontal distance of 10 feet. At approximately what angle with respect to the floor should it be built?



$\tan x = \frac{17.3}{10}$

$x = 59.97°$

7. The front door to the student union is 20 feet above the ground, and it is reached by a flight of steps. The school wants to build a wheel-chair ramp, with an incline of 15 degrees, from the ground to the door. How much horizontal distance is needed for the ramp?



$\tan 15 = \frac{20}{x}$

$x = 74.64$