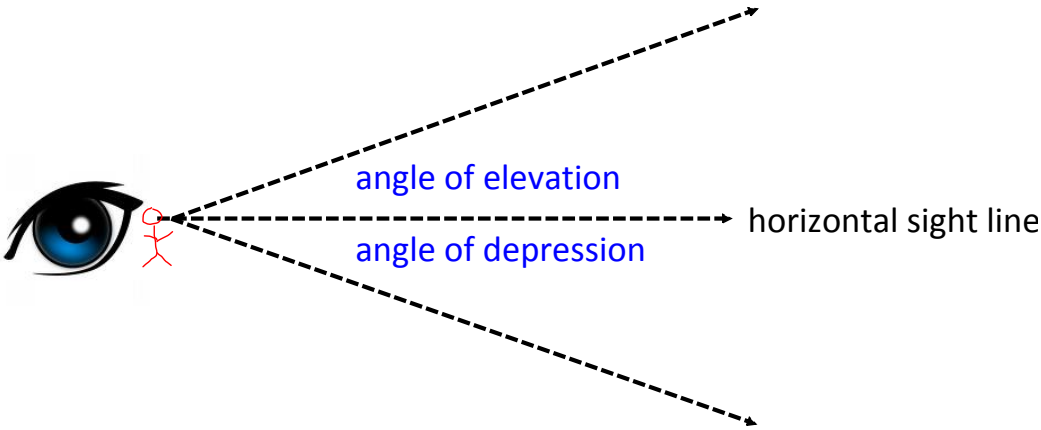
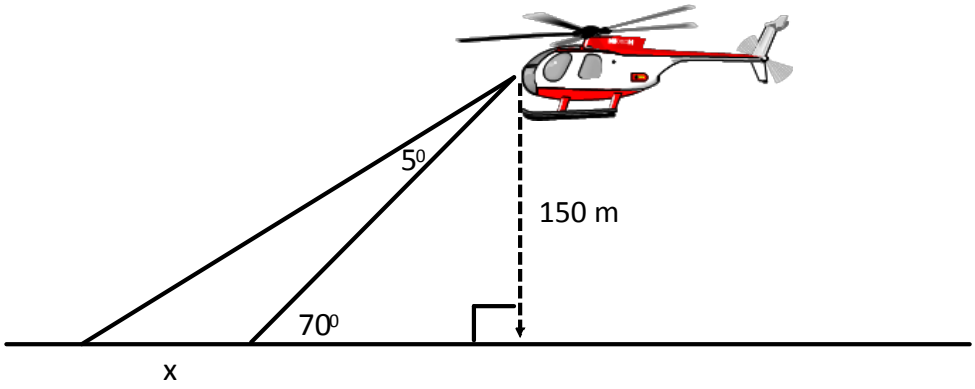
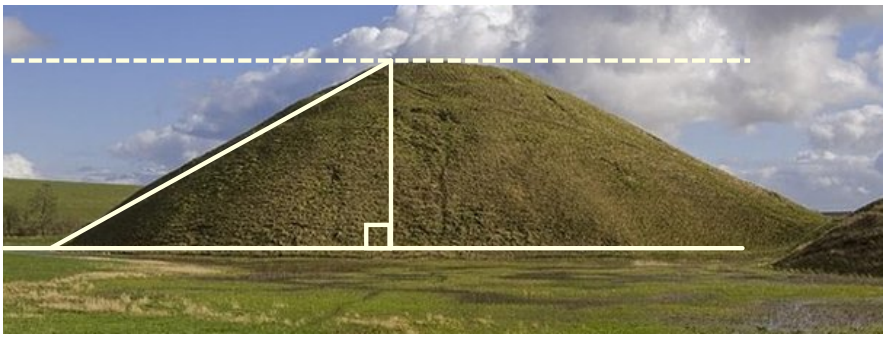
6.4 Problems: Primary Trig Ratios



Ex. 1 A searchlight is mounted at the front of a search and rescue helicopter. The pilot is flying the helicopter 150 m above the ground and the beam hits the ground at 70^0 from the horizontal. The beam spreads out at an angle of 5^0. How wide is the beam when it hits the ground?



Ex. 2 A student is standing at the top of a hill that is 200 m high. Using a clinometer, she sights the base of the hill at an angle of depression of 40^0 from the horizontal. If the slope of the hill is constant, how far will the walk be from the top of the hill to the base?



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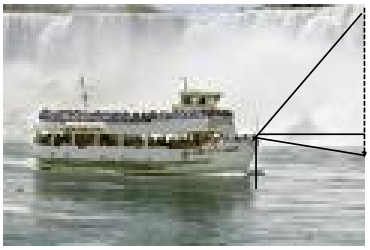
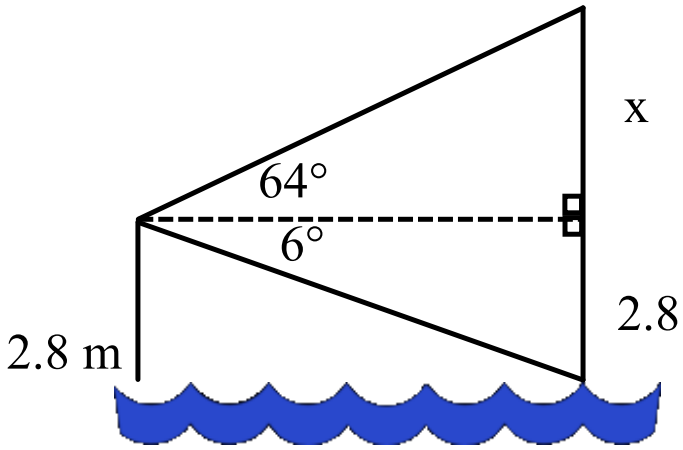
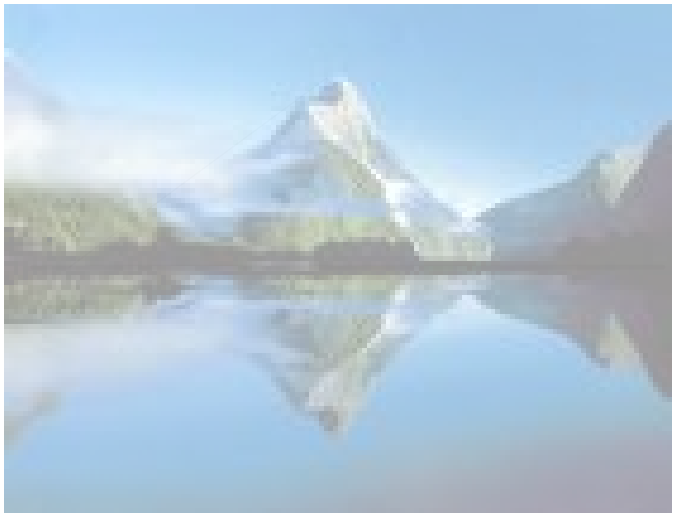
Ex 3 From the bridge of a boat on the Niagara River, the angle of elevation of the top of the Horseshoe Falls is 64°. The angle of depression of the bottom of the Falls is 6°. If the bridge of the boat is 2.8 m above the water, calculate the height of the Horseshoe Falls, to the nearest tenth of a metre.





Ex 4 From the same level, on opposite sides of a mountain, the angles of elevation to the peak are 16.3° and 24.5°. The peak of the mountain is 1464 m from the base. How long would a tunnel, going through the mountain, need to be?



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