

## 2.4 Problems

**Warm Up:** Two buildings are 14.7m apart. From the top of the taller building, the angles of depression to the top and bottom of the second building are  $27.5^\circ$  and  $63.8^\circ$ . (w/s #2.3 Question #8)

**Problem #1:** An equilateral triangle is inscribed in a circle. The radius of the circle is 10.0 cm. Calculate the side length of the triangle.

**Problem #2:** A child is flying a kite. The string is 180m long and makes an angle of  $39^\circ$  with the ground. The child's hands are at a height of 1.25m. Determine the height of the kite.

**Problem #3:** A cylindrical oil tank is 55.3m high and 28.4m in diameter. The top of the tank is reached by a spiral stairway that circles the tank once. Calculate the angle of inclination of the stairway to the nearest degree.

**Problem #4:** The distance between two office towers measured using electronic tape, measures 73m. From the 9<sup>th</sup> floor of the shorter tower, a clinometer was used to measure the angle of elevation of the top of the taller tower. The angle is  $31^\circ$ . From the same floor, the angle of depression to the base of the taller tower is  $42^\circ$ . Calculate the height of the taller tower.