Trig Application Practice
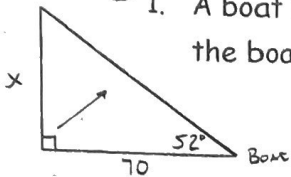Day 7 HW

Name: _____

Date: _____

(E) 1. A boat is 70m from a lighthouse. The measurement of the angle of elevation from the boat to the top of the lighthouse is 52°. Find the height of the lighthouse

$$Tan\ 52 = \frac{x}{70}$$

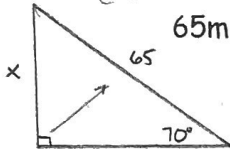$$\frac{Tan\ 52}{1} = \frac{x}{70} \qquad x = 70 \cdot Tan\ 52 \qquad \boxed{89.60}$$

(E) 2. Trevor is standing on the top of a cliff 200 feet above a lake. The measurement of the angle of depression to a boat on the lake is 21°. How far is the boat from the base of the cliff?
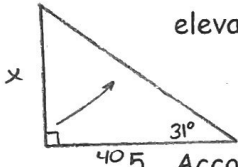
$$\frac{Tan\ 69}{1} = \frac{x}{200} \qquad x = 200 \cdot Tan\ 69 \qquad \boxed{521.02}$$
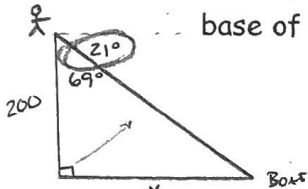
E 3. Donna is flying a kite to which the angle of elevation is 70°. The string on the kite is 65m long. How far is the kite above the ground?
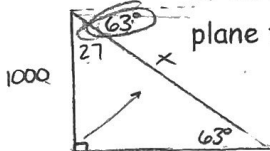
$$Sin\ 70 = \frac{x}{65} \qquad \boxed{61.08}$$

4. A flagpole casts a shadow 40ft long when the measurement of the angle of elevation of the sun is 31°. How tall is the flagpole?

$$Tan\ 31 = \frac{x}{40} \qquad \boxed{24.03}$$

5. According to the pilot's instruments, the measurement of the angle of depression of an aircraft carrier from a plane 1000ft above the water is 63°. How far is the plane from the carrier?

$$\frac{Cos\ 27}{1} = \frac{1000}{x} \qquad \boxed{1122.33}$$

6. Aaron is standing 300m from the base of a radio tower. According to his astrolabe (a device used to measure angles), the measurement of the angle of elevation to the top of the tower is 40°. How high is the tower?
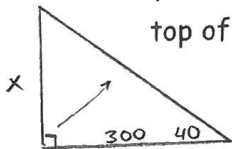
$$Tan\ 40 = \frac{x}{300} \qquad 251.73$$

7. CJ and AJ and observing the Washington Monument from ¼ mile away. The monument is 555 feet tall. What is the angle of elevation from their location to the top of the monument?
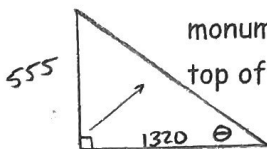
$$Tan^{-1}\left(\frac{555}{1320}\right) \qquad \boxed{22.8°}$$

8. A tree was broken in a recent storm. The top of the tree touches the ground 13 meters from the base. The top of the tree makes an angle of 29° with the ground. How tall was the tree before it was broken?

$$x+y$$

$$\boxed{22.07}$$

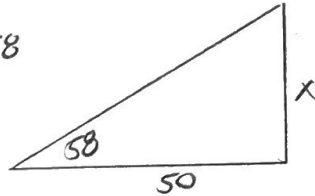$$Cos\ 29 = \frac{13}{y}$$
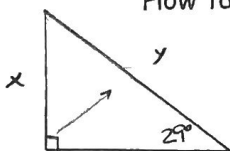
$$14.8636$$

$$Tan\ 29 = \frac{x}{13}$$

$$7.2060$$

8. You are 50 feet from the screen at a drive-in movie. Your eye is on a horizontal line with the bottom of the screen and the angle of elevation to the top of the screen is 58°. How tall is the screen?

$$\frac{Tan\ 58}{1} = \frac{x}{50}$$

$$x = 50 \cdot Tan\ 58$$

$$\boxed{80.02}$$

9. You are a block away from a skyscraper that is 780 feet tall. Your friend is between the skyscraper and yourself. The angle of elevation from your position to the top of the skyscraper is 42°. The angle of elevation from your friend's position to the top of the skyscraper is 71°. To the nearest foot, how far are you from your friend?

780   71   42
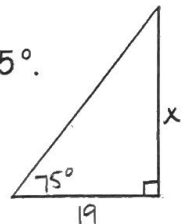268.58
Bldg. 28
866.28
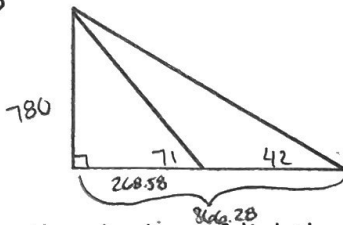
$$866.28 - 268.58 = 597.7$$

$$\boxed{598.0}$$

10. At 2 pm the shadow of lighthouse is 19 feet long and the angle of elevation is 75°. Find the height of the lighthouse.

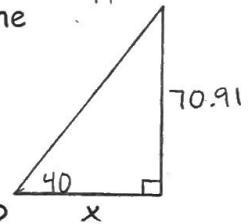$$\frac{Tan\ 75}{1} = \frac{x}{19}$$

$$x = 19 \cdot Tan\ 75$$

$$\boxed{70.91}$$

x   75°   19

11. At 4 pm the angle of elevation is 40°. Find the length of the shadow cast by the lighthouse (19 feet still).

$$\frac{Tan\ 40}{1} = \frac{70.91}{x}$$

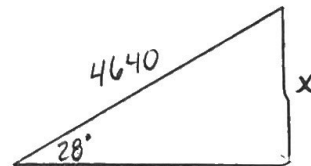$$\boxed{84.51}$$

70.91   40   x

12. At 6 pm will the length of the shadow be longer or shorter than it was at 4pm? Why or why not?

Longer, the angle of Elevation is Smaller

13. A chair lift on a ski slope has an angle of elevation of 28° and covers a total distance of 4640 feet. To the nearest foot, what is the vertical height "h" covered by the chair lift?

$$\frac{Sin\ 28}{1} = \frac{x}{4640}$$

$$\boxed{2178.35}$$

4640   x   28°

14. An airplane is on a straight line approach that forms a 3° angle with the runway. What is the distance covered along the approach path if the plane is 500 feet above the ground?

$$\frac{Sin\ 3}{1} = \frac{500}{x}$$

$$\boxed{9553.61}$$

x   500   3°