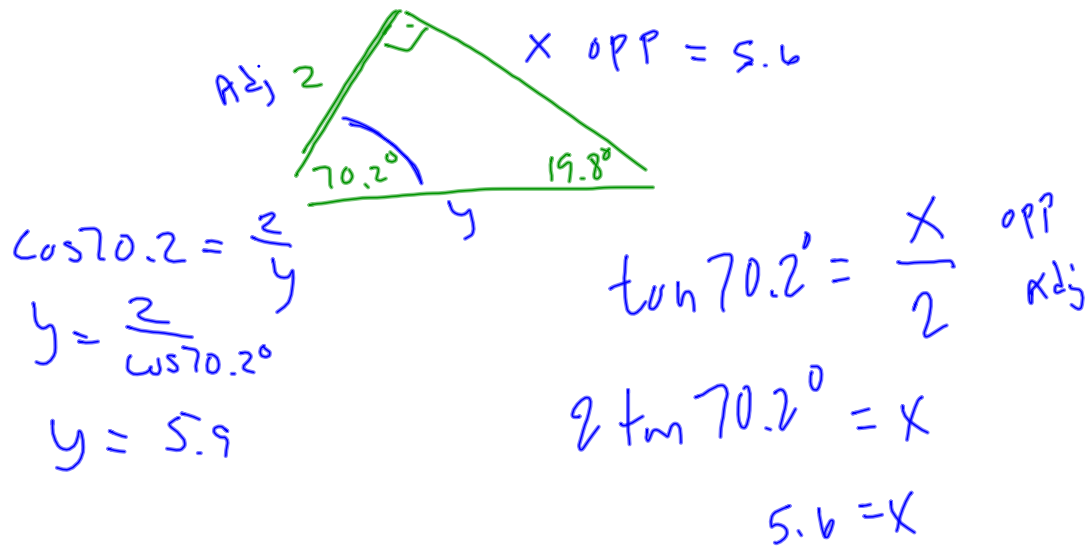
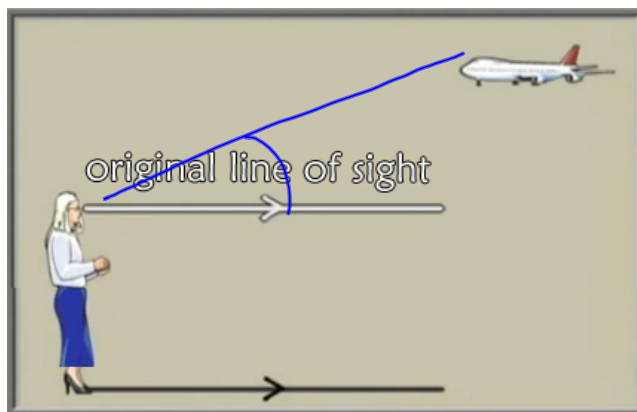


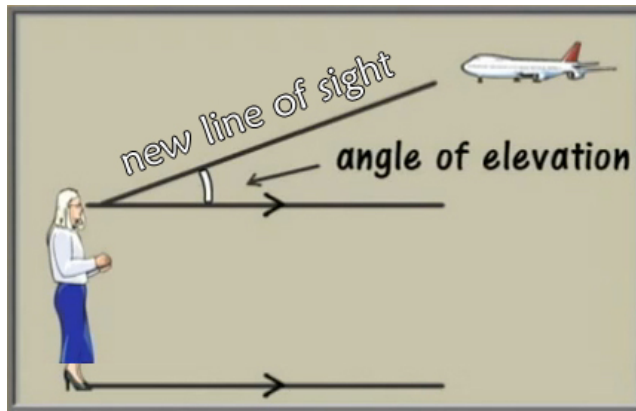
5)



Let's assume that I'm standing on level ground and I'm looking straight ahead so that my line of sight is parallel with the ground.

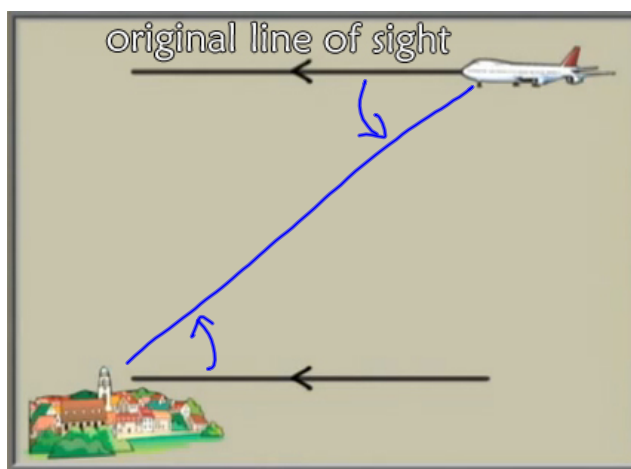


If I hear a plane above me then what I have to do to see that plane is to move my line of sight from looking ahead to looking up at the plane in other words I am elevating or lifting my line of sight in order to look directly at the plane.

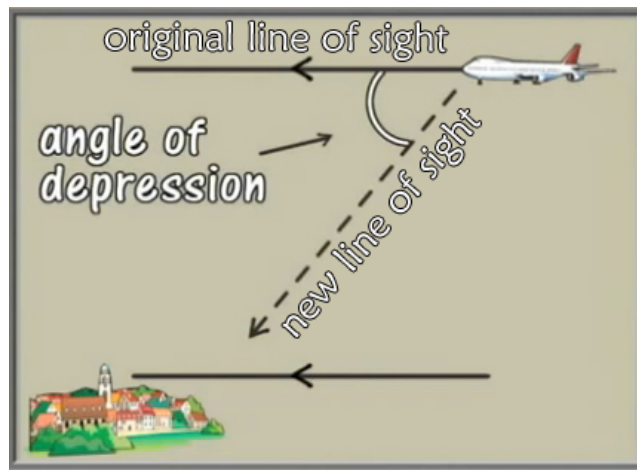


Can you see that when I do this I make an angle between my original line of sight and my new line of sight. This angle is known as the **angle of elevation** because I have to lift up or elevate my eye in order to see the object.

This time I want you to image you're the pilot in a plane and you see a town below you. We will say that the plane is flying horizontally and parallel to the ground.



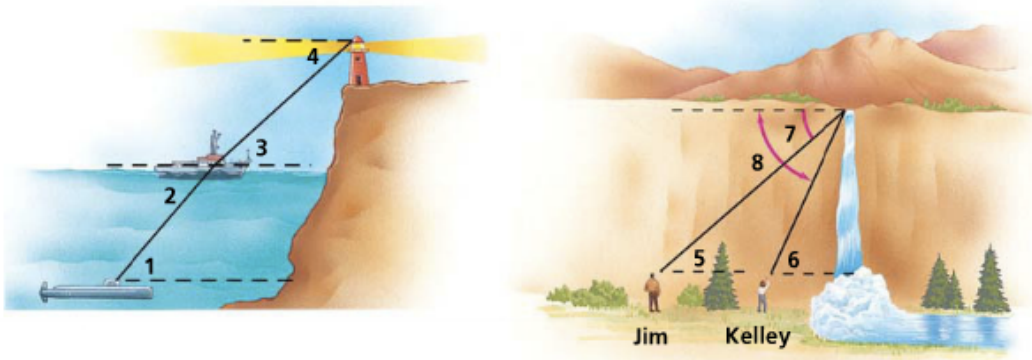
In order to see the town that is ahead of you and below you, you have to drop your line of sight.



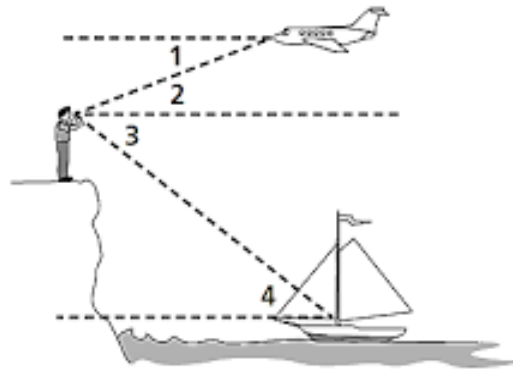
Here it is your line of sight that goes downwards. So we call the angle we made from the horizontal when we looked down the **angle of depression**. I am sure that you know that the word depression refers to something that's down in some way.

Describe each angle as it relates to the situation in the diagram.

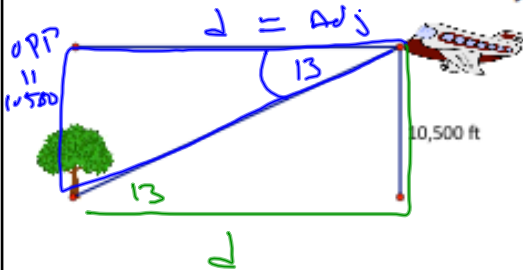
1. $\angle 1$
2. $\angle 2$
3. $\angle 3$
4. $\angle 4$
5. $\angle 5$
6. $\angle 6$
7. $\angle 7$
8. $\angle 8$



2. a. $\angle 1$
 b. $\angle 2$
 c. $\angle 3$
 d. $\angle 4$



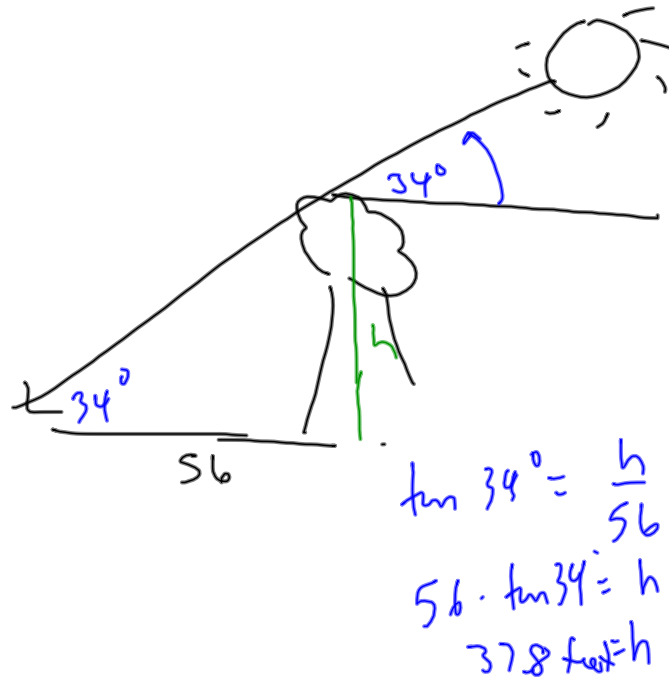
1. An airplane is flying 10,500 ft above level ground. The angle of depression from the plane to base of a tree is 13° . How far horizontally must the plane fly to be directly over the tree?



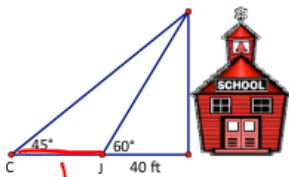
$$\tan 13^\circ = \frac{10500}{d}$$

$$d = \frac{10500}{\tan 13^\circ} = 45,480.5 \text{ feet}$$

2. The shadow of an oak tree is 56 feet when the angle of elevation to the sun is 34° . Find the height of the tree.



3. The angle of elevation from Jordan's feet to the top of the school is 60° when he is 40 feet away from the school. When Clayton is standing behind Jordan the angle of elevation from Clayton's feet to the top of the school is 45° . How tall is the school? How far away from Jordan is Clayton?

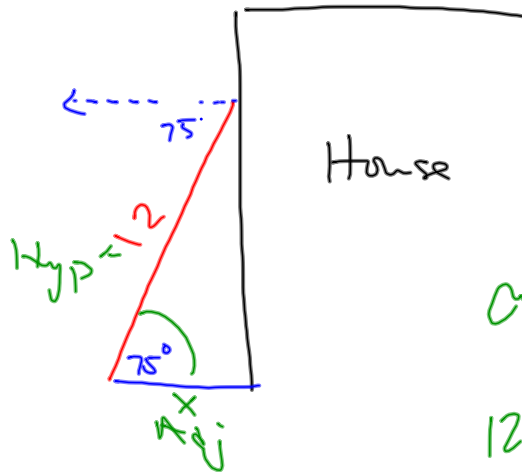


$d = 69.3 - 40$
 $d = 29.3$

$\tan 45^\circ = \frac{69.3}{b}$
 $b = \frac{69.3}{\tan 45}$
 $b = 69.3$

$\tan 60^\circ = \frac{h}{40}$
 $40 \cdot \tan 60 = h$
 $69.3 = h$

4. Charles rested a 12 ft ladder up against the side of his house so that he could clean the ivy off of his stone chimney. He found out that the angle of depression to the ground was 75° . How far away from the house was the base of the ladder?

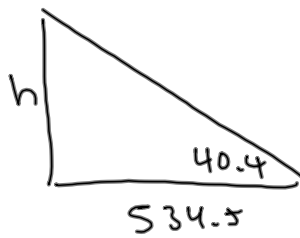
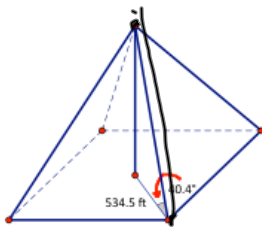


$$\cos 75^\circ = \frac{x}{12}$$

$$12 \cos 75^\circ = x$$

$$= x$$

5. Mr. Kordenbrock went to the Great Pyramid of Giza and found that it is 534.5 ft from a corner on the base of the pyramid to the center of the pyramid. He also found that the angle of elevation to the top of the pyramid is 40.4° . How tall is Great Pyramid of Giza?



$$\tan 40.4 = \frac{h}{534.5}$$

$$534.5 \tan 40.4 = h$$

$$454.9 = h$$

6. Mr. McCord traveled to Chicago and visited the Willis Tower over the summer. He noticed that the angle of depression from the Skydeck, which is on the 103rd floor, to his car was 80°. Mr. McCord's car was 238.5 ft away from Willis Tower. If the Tower is 1451 ft tall, how far from the top was the Skydeck?

