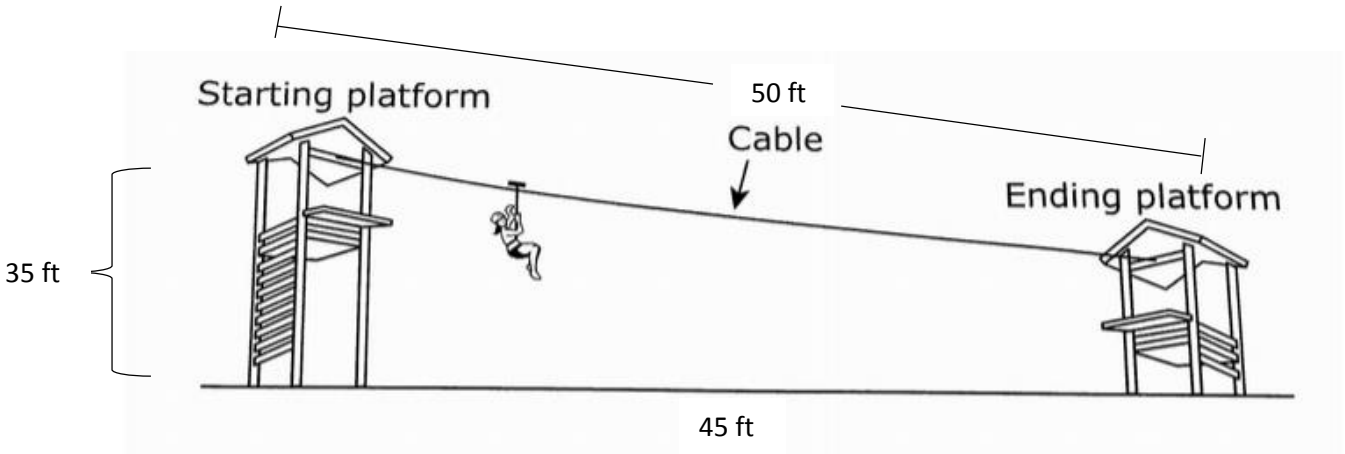


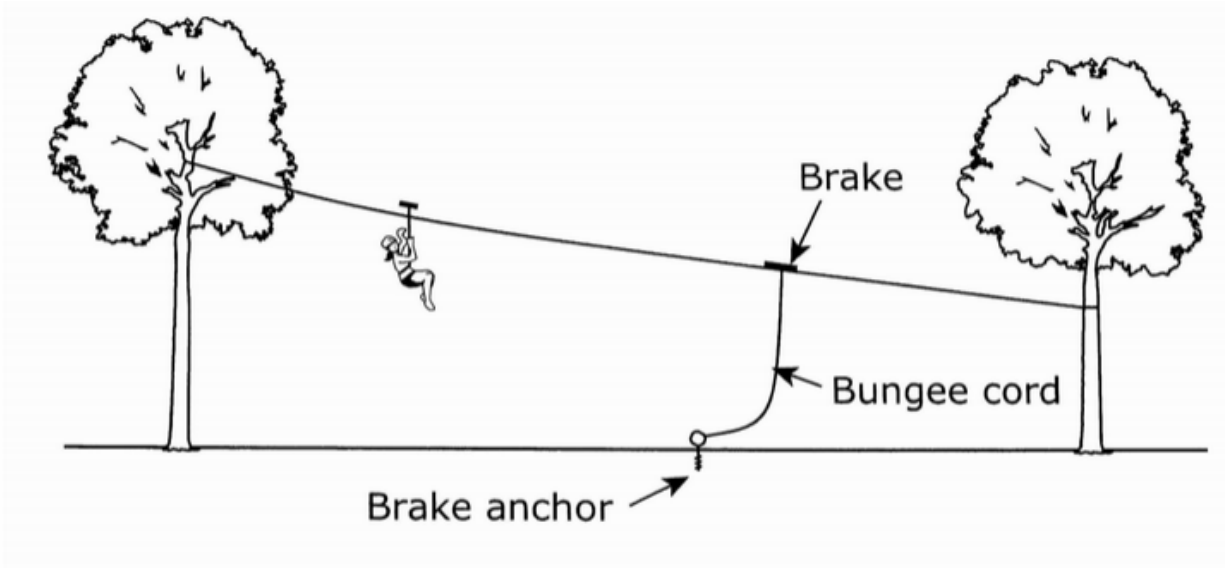
A ziplinner is on the top of a 35 ft platform. He then rides the zipline to a second platform. The bases of the platforms are 45 ft apart. The zipline cable is a total 50 ft. For all answers round to the nearest thousandth.

a) How high is the second platform?

b) What is the angle of elevation from the top of the ending platform to the top of the starting platform?

c) An engineer wants to make the zipline faster what are ways to do this without changing the distance between the platforms?

d) If the zipline length is now 60 ft and the only change being made is the height of the first platform what is it's new height.



Draw a model below:

Using Figure 2:

The height of the starting tree is 40 ft and the zip line itself is 50 ft. The trees are 32 ft apart. For all answers round to the nearest thousandth.

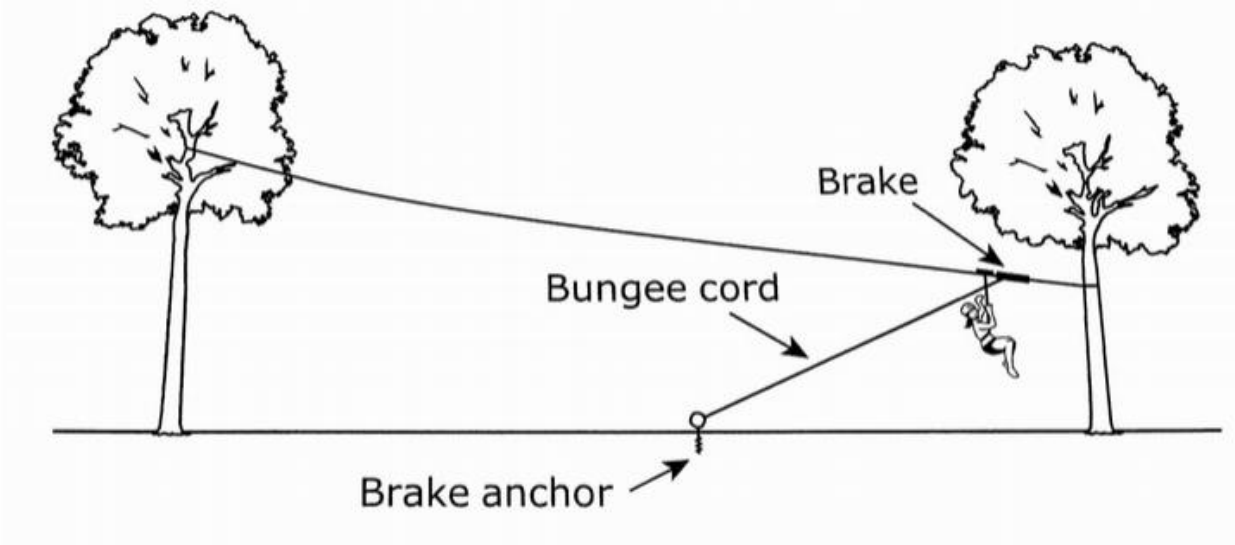
a) What is the vertical distance they dropped?

b) Based on the information above, how high up the second tree is the end of the zip line?

c) Does this seem like a reasonable distance? Explain why or why not.

d) Sam proposes to decrease the length of the zip line by 5 ft. Does this resolve the issue?

e) If the rider is traveling at approximately 5 ft/sec in relation to the distance of the zip line that Sam proposed, how long does it take the rider?



Draw a model below:

Using Figure 3:

Given: Distance between trees is 50 ft. Height from ground to start is 40 ft. Height from ground to end is 10 ft. Person drops a total of 30 ft over the ride of the zip line. For all answers round to the nearest thousandth.

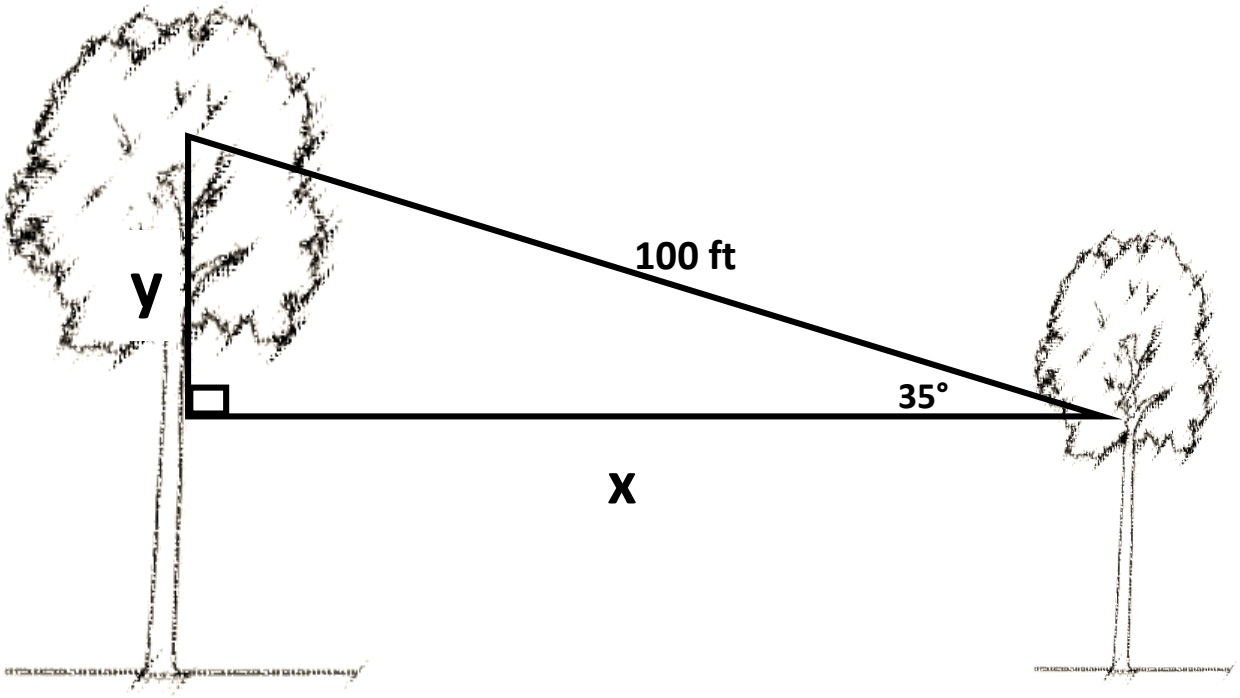
a) What is the length of the zip line?

b) If the brake is located 2/3 the way down the zip line, where is it located?

c) How much distance on the zip line does the rider have to stop?

d) If the anchor to the bungee is located half way between the trees, what is the maximum length the bungee can be if it is all stretched out for it to end exactly at the end of the zip line?

e) If the weight to length of bungee stretch is ratio to 15:2, what would be the maximum weight?



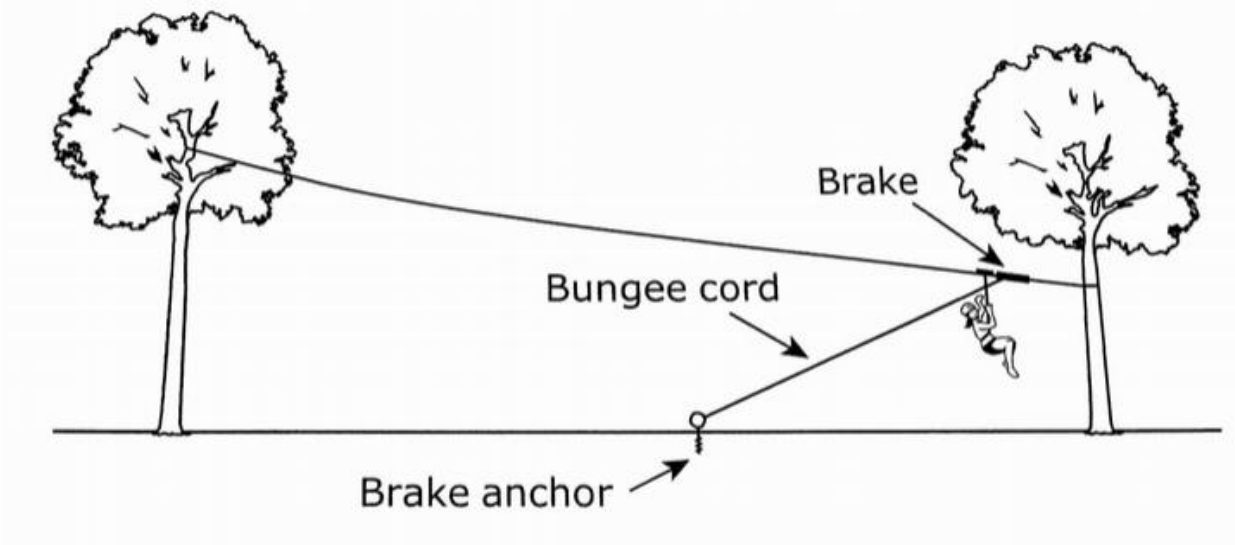
For all answers round to the nearest thousandth.

f) Find the vertical distance traveled.

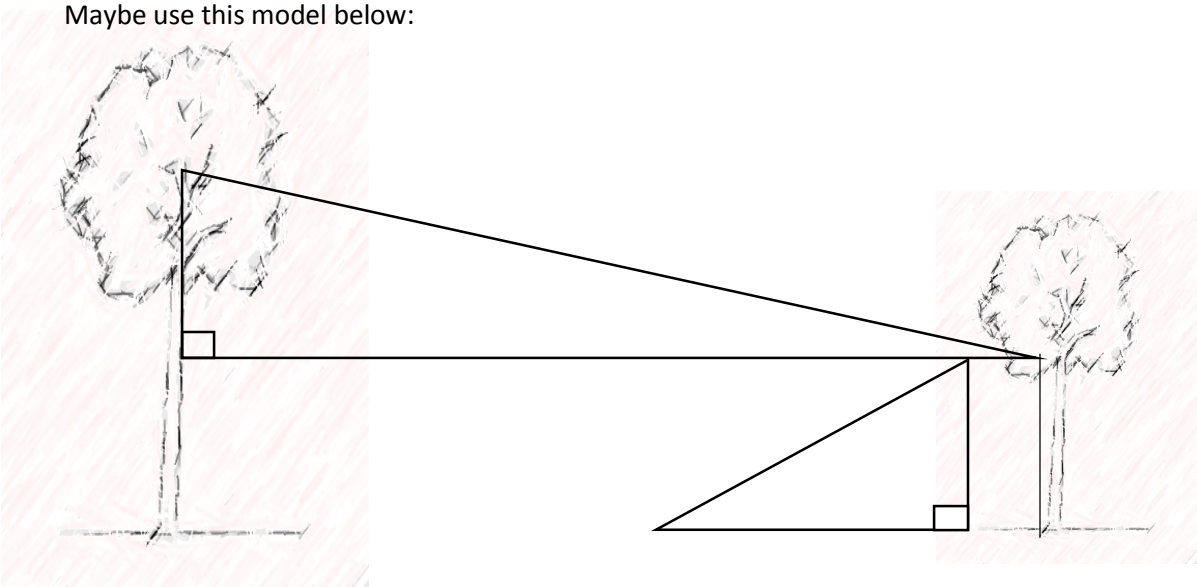
g) Find the horizontal distance traveled.

h) If the end has to be at least 7 ft off the ground, what is the height off the ground of the start?

i) If the rider does the zip line in 6 seconds, what is the vertical, horizontal and diagonal velocities?



Maybe use this model below:



Using Figure 3: For all answers round to the nearest thousandth.

a) The weight to bungee stretch ratio is 15:2 and the park wants a maximum weight of 200 pounds. What is the maximum stretch out of the bungee?
b) The anchor of the brake bungee is halfway between the trees the park wants the rider to stop 2 feet (horizontally) before the tree. The vertical height at the new stopping point and the vertical height at the ending tree will both be 10 feet due to lag in the zip line. What is the distance between:
    i. Anchor and stopping point.
    ii. Anchor and the tree?
    iii. The two trees?
c) The zip line police regulate the speed of a zip line by requiring an angle of elevation from the zipline on the ending tree to the zipline on the starting tree to be 15°. Use the distance between the trees (platforms) and the angle to calculate the vertical distance dropped by the rider.
d) What is the height off the ground of the start?
e) Find the length of the zip line.
f) If the brake is 2/3 down the zip line cable, how far is that located from the starting point?
g) What is the slope (or steepness) of the brake bungee cord?
h) The rider takes approximately 8 seconds to reach the bottom, what is the average velocity?