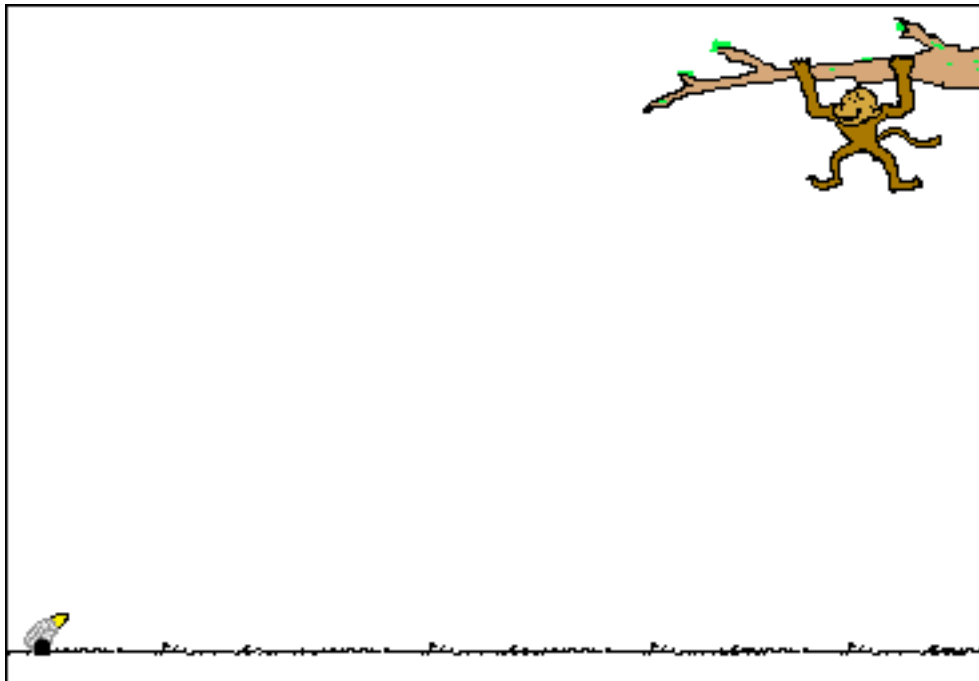


The Monkey Problem



There is an interesting monkey down at the zoo. The monkey spends most of its day hanging from a limb of a tree. The zookeeper feeds the monkey by shooting bananas from a banana cannon to the monkey in the tree. This particular monkey has a habit of dropping from the tree the moment that the banana leaves the muzzle of the cannon. The zookeeper is faced with the dilemma of where to aim the banana cannon in order to hit the monkey. If the monkey lets go of the tree the moment that the banana is *fired*, then where should she aim the banana cannon?



Crossing the River

Problem 1

A boat is rowed at 16 km/h directly across a river that is flowing downstream at 12 km/h. The river is 48 km wide.

- a) What is the speed of the boat as seen from the bank of the river?
- b) How long will it take the boat to get across the river
- c) How far downstream will the boat land?
- d) At what angle should the boat head if it wants to end up directly across the river?
- e) Will it take longer or less time to cross the river in the previous example?

Problem 2

A tourist wishes to cross a river that is 1.5 km wide and flows with a speed of 5.0 km/h parallel to its banks. The tourist uses a small powerboat that moves at a maximum speed of 12 km/h with respect to the water.

- a) If the tourist heads directly across, how far downstream will he end up?
- b) In which direction should he head to end up directly across from where he started?
- c) How long will it take to cross the river in the first scenario?
- d) How long will it take to cross the river in the second case?

