

Combinations

- Explain the problem posed by the brain teaser (1.1)
- Explain how using combinations can help get the answer faster in this type of small problems (1.2)
- Give students time to solve the brain teaser using the guidelines you provided.
- Move on to the second problem, explain how this problem is similar to the first one.(1.3)
- Let students figure out that using combinations is not as easy for this new problem
- Explain them how it is easier to tackle this problem by using a properly constructed tree.(1.4)

1.1. “You are a poor tradesman looking to make some money; you have in your possession a sheep, a lion and some hay. You wish to sell these items but you find a problem. On your journey, you find a river and a boat. The boat is old so you can only cross one thing at a time safely. Furthermore, if you leave the Lion and the sheep alone, the lion will eat the sheep. Something similar would happen if you leave the sheep and the hay alone, as the sheep would eat the hay.”

1.2. Begin by showing them how to do the first step

Boat	Riverside	Result
Lion	Sheep & Hay	Lose
Hay	Lion & Sheep	Lose
Sheep	Lion & Hay	Ok

Explain how by following this procedure the can easily figure out the rest of the steps to solve the brain teaser

- 1.3. “Same as before, you have to cross a river and you have an old boat. However, this time you have 3 young wolves and 3 chickens and this time your boat allows you to cross up to 2 animals at a time. Also, considering that these wolves are young, they fear attacking the chickens unless they outnumber them. And these wolves don’t care if your there, they will still eat the chickens.”
- 1.4. (Tree Diagram goes here)