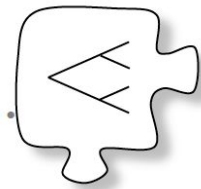


# 3.1.1 How can I represent it?

Using an Area Model



**Sample Space:** with probability, a list of all possible outcomes

## 3-1 “It’s in the genes.”

		Bend thumb?	
		Yes	No
Roll tongue?	Yes		
	No		

a) What is the probability that a randomly selected person from the U.S. has both special traits?

b) What is the probability that the person has only one of these special traits?

## 3-2 “Using an Area Model”

		Bend thumb?	
		Yes	No
Roll tongue?	Yes		
	No		

a) On the diagram, add the proportional rows and labels that would indicate the probability that 7/10 of the population can roll their tongues.

b) Fill in the probabilities. What is the area of this rectangle?

b<sup>1/2</sup>) Explain what the area means in terms of the two traits.

c) What is the probability that a randomly selected person can roll his or her tongue but not bend his or her thumb back? Highlight the answer the area model above. Explain how you got this answer.

### 3-3 “Probabilities in Vein”

Choose the type of table from 3-1 and 3-2 you prefer: the *sample space probability table* or the *probability area model*. Draw a table to represent the two blood types in the Navajo people, making sure to label it.



a) What is the probability that both individuals selected at random will have type “A” blood? Highlight in one color on your diagram and write your answer here.

b) What is the probability that both individuals selected at random will have type “O” blood? Highlight in another color on your diagram and write your answer here.

c) What is the probability that they have the same blood type? Show your work.

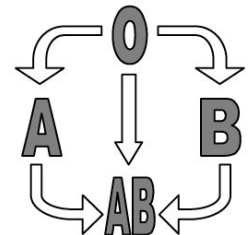
### 3-4 “Shipwrecked!”

a) Fill in the sample space probability table.

b) What is the probability that Zack and Nick have the same blood type?

	<b>Nick</b>			
	<b>O</b> (45%)	<b>A</b> (40%)	<b>B</b> (11%)	<b>AB</b> (4%)
<b>O</b> (45%)				
<b>A</b> (40%)				
<b>B</b> (11%)				
<b>AB</b> (4%)				

c-d) Assuming that Nick’s blood is compatible with Zack’s in other ways, determine the probability that he has a type of blood that can save Zack’s life! (*Tip: Highlight the boxes on the above diagram.*)



### 3-5 Don’t make assumptions...

a) What if Zack and Nick were related to each other? What if they were brothers or father and son? How could that affect the possible outcomes?

b) What has to be true in order to assume a probability area model will give an accurate theoretical probability?