

NAME: _____

P.I. A.S.18: Know the definition of conditional probability and use it to solve for probabilities in finite sample spaces

1. Two number cubes are thrown. Find the probability that the sum turning up is seven given that the first number cube shows a six.
2. A class of 40 students has 11 honor students and 12 athletes. Three of the honor students are also athletes. One student is chosen at random. Find the probability that this student is an athlete if it is known that the student is not an honor student.
3. Each person in a group of students was identified by his or her hair color and then asked whether he or she preferred taking classes in the morning, afternoon, or evening. The results are shown in the table below. Find the probability that a student preferred morning classes given he or she has blonde hair.

Preference	Blonde	Brunette	Redhead
Morning	25	5	15
Afternoon	35	45	20
Evening	10	50	30

4. In order to determine the effectiveness of a new measles antibody test, it is administered to 500 people chosen at random. An older more elaborate test reveals that 425 of the people have the measles antibodies. The new test was positive when administered to 96% of those who have the antibodies and it also gave positive results in 2% of those who do not have them. Based on these results, what is the probability that a randomly chosen person has measles antibodies in his/her blood if the new test indicates their presence?

NAME: _____

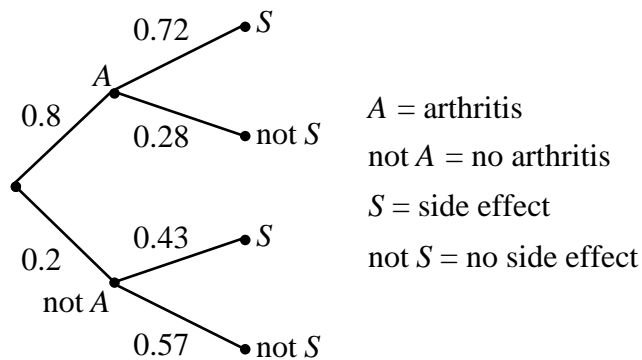
5. Ms. Chin collected data about how long students in two of her classes spent doing homework. This table shows the result.

Did you spend more than $\frac{1}{2}$ hour on math homework last night?

	yes	no
3rd period	5	18
4th period	11	9

Suppose a student from her third or fourth period class is selected at random. Find the probability $P(\text{yes} \mid \text{3rd period})$.

6. If a random person is given a medicine and has arthritis A there is a 0.72 probability of having a side effect S from the medicine. The tree diagram shows probabilities of the medicine and its side effects if the patient does or does not have arthritis.



What is the probability that a random person given the medicine has a side effect?

[1] $\frac{1}{6}$

[2] $\frac{9}{29} \approx 0.31$

[3] $\frac{5}{14} \approx 0.357$

[4] $P(\text{measles antibodies} \mid \text{positive test}) = 0.996$

[5] $\frac{5}{23}$, 0.217 or about 22%

[6] 0.662
