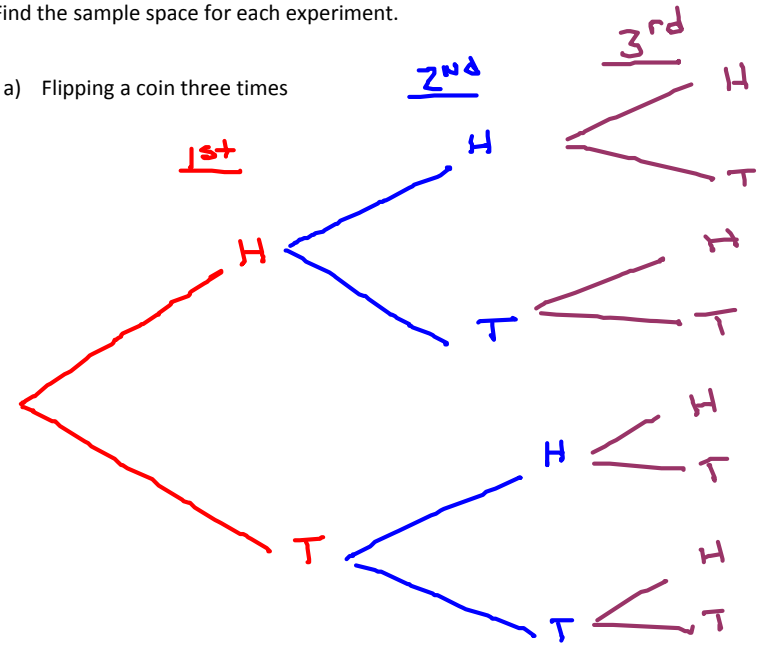
Theoretical Probability

Sample Space - the possible outcomes

Coin	Die	The integers 1 through 5 inclusive	The integers between 1 and 5
H, T	1, 2, 3 4, 5, 6	1, 2, 3, 4, 5	2, 3, 4

1. Find the sample space for each experiment.

   a) Flipping a coin three times

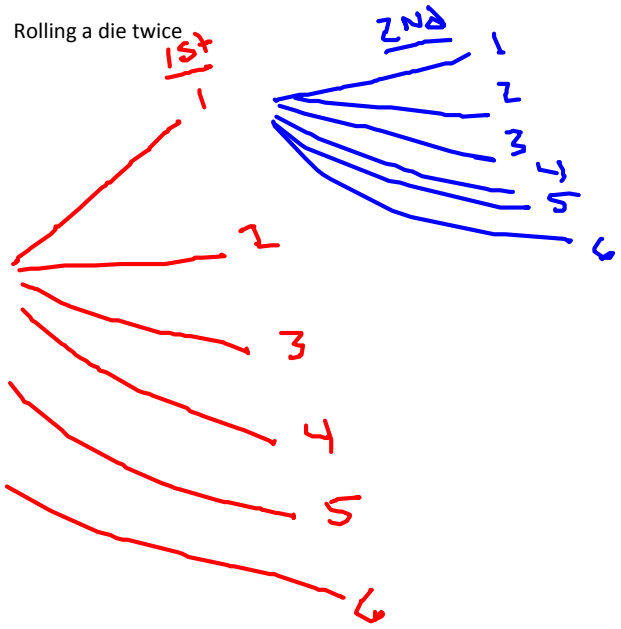


Sample space

- H H H
- H H T
- H T H
- H T T
- T H H
- T H T
- T T H
- T T T

$2 \cdot 2 \cdot 2 = 8$

b) Rolling a die twice

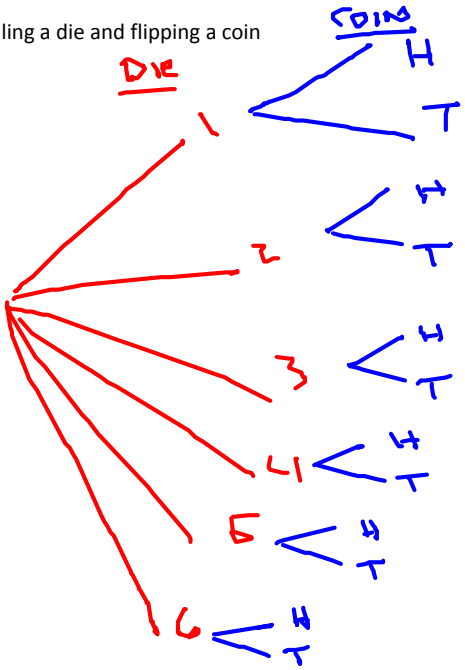


Sample space

1,1	4,1	6,1
1,2	4,2	6,2
1,3	4,3	6,3
1,4	4,4	6,4
1,5	4,5	6,5
1,6	4,6	6,6
2,1	5,1	
2,2	5,2	
2,3	5,3	
2,4	5,4	
2,5	6,5	
2,6	5,6	
3,1		
3,2		
3,3		
3,4		
3,5	3,6	

$6 \cdot 6 = 36$

c) Rolling a die and flipping a coin



Sample Space

1,H	4,H
1,T	4,T
2,H	5,H
2,T	6,T
3,H	6,H
3,T	6,T

$6 \cdot 2 = 12$

2. Find the probability of each.

a) A die is rolled twice. Find the probability that the sum of the rolls is a seven.

Look back #1b.

7

1,6
6,1
2,5
5,2
3,4
4,3

$\frac{6}{36} \div 6 = \boxed{\frac{1}{6}}$

b) A die is rolled twice. Find the probability that both numbers are the same.

1-1
2-2
3-3
4-4
5-5
6-6

$\frac{6}{36} = \boxed{\frac{1}{6}}$

c) A coin is flipped three times. Find the probability of flipping three tails.

Look back #1a.

TTT $\boxed{\frac{1}{8}}$

d) A coin is flipped three times. Find the probability of flipping at least one tail.

1T, 2T, 3T

$\boxed{\frac{7}{8}}$

3. An integer between 1 and 50 inclusive is drawn at random. Find the probability that the integer is a multiple of 5.

5, 10, 15, 20, 25, 30, 35, 40, 45, 50

$\frac{10}{50} = \boxed{\frac{1}{5}}$

4. Which has a greater probability?

$\frac{12}{50}$ or $\boxed{\frac{18}{74}}$

.24 .243

24% 24.3%

888 900

$\frac{12}{50}$ OR $\boxed{\frac{18}{74}}$