

Name: _____

Basics of Probability

Probability, at its most basic level, is the ratio of what you want to the total number of options.

Event: a possible outcome

Complement of an Event: when an event DOES NOT happen

Sample Space: the list of all possible outcomes

Sample Size: the total number of outcomes

Uniform Probability: when all outcomes have the same probability of happening

Non-uniform Probability: when one or more of the outcomes has a different probability than the others

Fill in the table for each.

EXAMPLE



Sample Space (List of item types)	White Shirt	Black Shirt	Blue Shirt
Amount of that item	2	2	1
Sample Size (total: same number for each)	5 total	5 total	5 total
Probability of that item (as a reduced fraction)	$\frac{2}{5}$	$\frac{2}{5}$	$\frac{1}{5}$
Probability of the complement (NOT that item)	$\frac{\text{not white}}{5} = \frac{3}{5}$	$\frac{\text{not black}}{5} = \frac{3}{5}$	$\frac{\text{not blue}}{5} = \frac{4}{5}$

Does this sample space have a Uniform or Non-uniform probability?

It is **non-uniform**, because the blue shirts have a different probability than the white and black shirts.

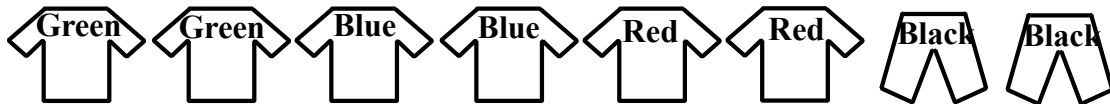
EXAMPLE There are 7 blue pens, 5 red pens, 10 black pens, and 4 pencils in a box.

Sample Space	Blue Pen	Red Pen	Black Pen	Pencil
Amount of that item	7	5	10	4
Sample Size	26	26	26	26
Probability of that item	$\frac{7}{26}$	$\frac{5}{26}$	$\frac{10 \div 2}{26 \div 2} = \frac{5}{13}$	$\frac{4 \div 2}{26 \div 2} = \frac{2}{13}$
Probability of the complement	$\frac{\text{not blue pen}}{26} = \frac{19}{26}$	$\frac{\text{not red pen}}{26} = \frac{21}{26}$	$\frac{\text{not black pen}}{26} = \frac{16}{26} = \frac{8}{13}$	$\frac{\text{not pencil}}{26} = \frac{22}{26} = \frac{11}{13}$

Does this sample space have a Uniform or Non-uniform probability?

It is **non-uniform**, because none of them have the same probability.

1.



Sample Space				
Amount of that item				
Sample Size				
Probability of that item				
Probability of the complement				

Does this sample space have a Uniform or Non-uniform probability?

2. There are 8 clear marbles, 5 red marbles, and 8 yellow marbles in a bag.

Sample Space			
Amount of that item			
Sample Size			
Probability of that item			
Probability of the complement			

Does this sample space have a Uniform or Non-uniform probability?

3.



Sample Space				
Amount of that item				
Sample Size				
Probability of that item				
Probability of the complement				

Does this sample space have a Uniform or Non-uniform probability?

4. There are 2 yellow balloons, 2 green balloons, 4 blue balloons, 2 white balloons, and 4 orange balloons.

Sample Space					
Amount of that item					
Sample Size					
Probability of that item					
Probability of the complement					

Does this sample space have a Uniform or Non-uniform probability?

5. Spinner has 8 sections: 2 of them are red, 2 are blue, 2 are green, and the rest are white.

Sample Space				
Amount of that item				
Sample Size				
Probability of that item				
Probability of the complement				

Does this sample space have a Uniform or Non-uniform probability?