

L1 Geometric Probability

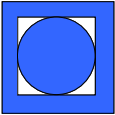
In any random experiment there are two types of random variables:

Discrete Random Variable:	Continuous Random Variable:
If it cannot take on all the possible values of an interval of real numbers.	If it can take on all the possible values of an interval of real numbers.
Ex.: We roll two dice and observe the outcome.	Ex.: We randomly choose a checkout in a grocery store.
We are interested in the sum of the two outcomes.	We are interested in the waiting time for the people in line.

1

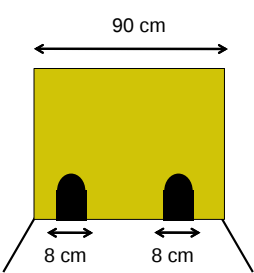
Geometric Probability

There are 3 types of geometric probabilities, one for each of the commonly used dimensions of space; **length**, **area** and **volume**.

1D	$P(\text{Target}) = \frac{\text{Target length}}{\text{Total length}}$	
2D	$P(\text{Target}) = \frac{\text{Target area}}{\text{Total area}}$	
3D	$P(\text{Target}) = \frac{\text{Target volume}}{\text{Total volume}}$	

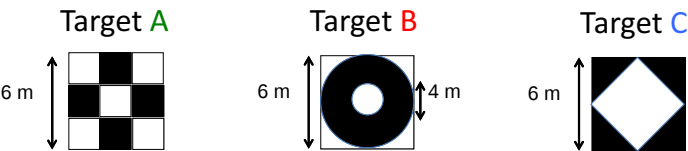
2

Ex 1: What is the probability that the blind mouse will escape into a hole?



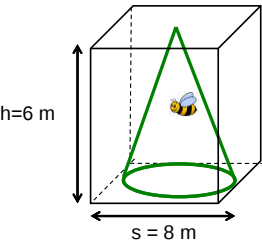
$P(\text{Target}) = \frac{\text{Target length}}{\text{Total length}}$

Ex 2: Which black target is a skydiver most likely to land on?



4

Ex 3: What is the probability the bee is in the laser cone?



Ex 4: The NUT HOUSE factory has two types of containers, a square base prism and a cylinder. Each hour they package 20 of the prism and 25 of the cylinder. Between 2 pm and 3 pm, they had some problem with their machine and lost one of their bolts in one of the containers. What is the probability that it fell in a cylinder container?



Practice:
7.3 # 1-5

