

Name: Key
Date: _____

Mr. Johnson
Math 8

Lesson 7.3 – Probability of Independent Events

Definitions:

Probability:

discuss difference of odds
the likelihood of a particular outcome; the number of times a particular outcome occurs, written as a fraction of the total number of outcomes

Possible Outcomes:

all the possible events of an experiment
(ex: rolling a dice = 6 possible outcomes)

Independent Events:

two events in which the result of one event does not depend on the result of the other event.

Notes:

In order to find the probability of independent events we first need to know all the possible outcomes. There are two different methods to determine possible outcomes.

Method #1: Table

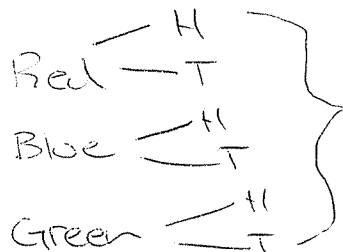
For example: Determine the number of possible outcomes when you toss a coin and then roll a dice.

	1	2	3	4	5	6
H	H1	H2	H3	H4	H5	H6
T	T1	T2	T3	T4	T5	T6

12 possible outcomes

Method #2: Tree Diagram

For example: Determine the number of possible outcomes when you spin a three colour spinner and toss a coin.



6 possible outcomes

Now that we understand how to determine the number of possible outcomes we can determine our probability.

Probability of an event, $P = \frac{\text{number of favourable outcomes}}{\text{total number of possible outcomes}}$

Example:

1) Determine the probability of picking a heart from a deck of cards: $P = \frac{13}{52} = \frac{1}{4}$

2) Determine the probability of rolling a 6 on a dice $P = \frac{1}{6}$

If we are determining the probability of two independent events then we use the following:

Let $P(A)$ represent the probability of event A

Let $P(B)$ " " " " " B

Then, the probability that A and B occur is written as $P(A \text{ and } B) = P(A) \times P(B)$

If A and B are independent events, then:

Examples:

A coin is tossed and dice is rolled:

Why do I feel like this?

1) $P(H \text{ and } 2) = P(H) \times P(2)$
 $= \frac{1}{2} \times \frac{1}{6}$
 $= \frac{1}{12}$

2) $P(H \text{ and even number}) = P(H) \times P(2, 4, 6)$
 $= \frac{1}{2} \times \frac{3}{6} = \frac{3}{12} = \frac{1}{4}$

3) $P(T \text{ and number less than 3}) = P(T) \times P(1, 2)$
 $= \frac{1}{2} \times \frac{2}{6}$
 $= \frac{2}{12} = \frac{1}{6}$

4) $P(T \text{ and } 7)$
 $= P(T) \times P(7)$
 $= \frac{1}{2} \times 0$
 $= 0$

Assignment:
 Pg. 410-413
 #'s 1, 3-7, 10-13