

PRE-ALGEBRA

Unit 9

Name: _____ Per: _____ Homework

Date: _____ ** This is a 2-page document

Topic: _____

Main Ideas/Questions	Notes/Examples
EXPERIMENT	Example:
OUTCOME	Example:
SAMPLE SPACE	Example:
<i>Examples</i>	Give the sample space and 1. A state that begins with...

Directions: Give each probability as a simplified fraction, decimal, or percent.

1. A bean bag is randomly tossed onto the board below. Find each probability.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

a) $P(4)$
c) $P(\text{shaded})$
e) $P(\text{at least } 14)$

Theoretical Probability
Experimental Probability
Theoretical vs. Experimental

Use the game "Rock, Paper, Scissors" as an example to compare theoretical probability to experimental probability.

Rock Paper Scissors

retical Probability Experimental Probability

Name: _____ Date: _____

Topic: _____ Class: _____

Main Ideas/Questions	Notes/Examples
Warm-Up	A marathon has three scattered starting times, each wave then has five starting areas, called "corals" into. Draw a tree diagram that shows the possible could be assigned to.
Race Starting Line Assignments	
Waves: A, B, C	
Corrals: 1, 2, 3, 4, 5	
	a) How many different...
	b) If waves and corals...
Compound Events	
Independent Events	<ul style="list-style-type: none">In independent the outcome of one event does not affect the probability of the other.The probability of both events occurring is the product of their individual probabilities.
Examples	1. What is the probability of rolling a standard die twice and getting an even number on both rolls?

Name: _____ Date: _____

Topic: _____ Class: _____

Main Ideas/Questions	Notes/Examples
Population	
Sample	Example:

Fundamental COUNTING PRINCIPLE

You can use the counting principle if one activity can occur in _____ ways, then both _____ ways, then both _____ ways.

Examples

- To leave her office, Karen can take three sets of stairs and seven ways can she leave her office?
- A sweater comes in four sizes and three colors. How many different sweaters can she choose?
- A class has 11 boys and 11 girls. How many ways can the teacher choose a boy and a girl to be class representatives?
- A dinner menu consists of 4 appetizers and 3 desserts. How many ways can a person order one appetizer, one dessert, and a drink?
- A card is chosen from a standard deck. How many ways can a card be chosen that is either a heart or a diamond?

PROBABILITY & STATISTICS

NOTES • HOMEWORK • QUIZZES • TEST

Created by: ALL THINGS ALGEBRA®

Unit 9 - Probability & Statistics: Sample Unit Outline

	TOPIC	HOMEWORK
DAY 1	Simple Probability	HW #1
DAY 2	Theoretical vs. Experimental Probability	HW #2
DAY 3	Counting Outcomes: Tree Diagrams & Counting Principle	HW #3
DAY 4	Quiz 9-1	None
DAY 5	Compound Probability (Independent & Dependent Events)	HW #4
DAY 6	Biased vs. Unbiased Samples; Using Sampling to Predict	HW #5
DAY 7	Probability Review	HW #6
DAY 8	Quiz 9-2	None
DAY 9	Measures of Center (Mean, Median Mode) & Range	HW #7
DAY 10	Mean Absolute Deviation	HW #8
DAY 11	Box-and-Whisker Plots	HW #9
DAY 12	Quiz 9-3	None
DAY 13	Scatter Plots & Line of Best Fit	HW #10
DAY 14	Two-Way Tables & Relative Frequency	HW #11
DAY 15	Unit 9 Review	Study for Test
DAY 16	Unit 9 Test	None

See sample images of the pages on the next page.

Name: _____ Date: _____

Topic: _____

Main Ideas/Questions Notes/Examples

EXPERIMENT

Example:

OUTCOME

Example:

SAMPLE SPACE

Example:

Examples

- Give the sample space for a coin flip.
- A state that begins with the letter 'C'.
- A day of the week.

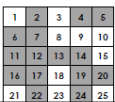
Name: _____ Unit 9: Probability & Statistics

Date: _____ Per: _____ Homework 1: Simple Probability

** This is a 2-page document! **

Directions: Give each probability as a simplified fraction, decimal, and percent.

1. A bean bag is randomly tossed onto the board below. Find each probability.



- a) $P(4)$ b) $P(\text{odd})$
 c) $P(\text{shaded})$ d) $P(\text{prime})$

Name: _____ Pre-Algebra

Date: _____ Per: _____ Unit 9: Probability

Quiz 9-1: Simple Probability, Counting Outcomes, Compound Probability

* Give all probability answers as fractions in simplest form.

For questions 1-5: If the spinner below is spun once, find each probability.



- $P(6)$
- $P(\text{shaded})$
- $P(\text{prime number})$
- $P(\text{odd or even})$

Name: _____ Date: _____

Topic: _____ Class: _____

Main Ideas/Questions Notes/Examples

Theoretical Probability

Experimental Probability

Theoretical vs. Experimental Probability

Use the game "Rock, Paper, Scissors" as an example to compare theoretical probability to experimental probability.



Rock

Name: _____ Date: _____

Topic: _____ Class: _____

Main Ideas/Questions Notes/Examples

Fundamental Counting

You can use the counting principle to find the total number of outcomes: If one activity can occur in _____ ways and another activity can occur in _____ ways, then the total number of outcomes is _____.

Name: _____ Date: _____

Topic: _____ Class: _____

Main Ideas/Questions Notes/Examples

Warm-Up

Race Starting Line Assignments	Waves	A, B, C
Corals	1, 2, 3, 4, 5	

- How many different wave and coral assignments are there? _____
- If waves and corals are randomly assigned, find $P(\text{wave B, coral 5})$: _____

Compound Events

In dependent events, the outcome of one event **does not affect** the outcome of the other event.

The probability of two independent events is found by **multiplying** the probability of the first event by the probability of the second event.

Independent Events

Exam

Compound Probability Maze

Directions: Read each problem carefully and give the probability as a fraction in simplest form. Use your solutions to navigate through the maze.

The Duck Pond game at the carnival has a pool with 75 toy ducks. Twenty-five of these ducks are marked underneath as winners. To play, you pick up a duck, do not replace it, then pick up another. What is the probability that both ducks picked are winners?

If one of the 50 states is chosen at random, then a standard die is rolled. And the probability of getting a state that starts with the letter N, then a number that is at least 2.

The spinner below is spun twice. Find the probability that it lands on an odd number, then a shaded number.

A quiz is true or false. If Mason is the pro gets all correct.

While bowling, Sarah made 5 strikes out of her last 18 frames. David made 9 strikes out of his last 25 frames. What is the probability that they both get a strike?

A card is drawn from a standard deck of cards, then a month of the year is chosen. What is the probability of getting a heart and a month that starts with the letter J?

A date in the month of June is selected, then a letter from the word SUPERSTAR is chosen. What is the probability of getting a multiple of 8, then an S?

A jar contains 10 nickels, 5 quarters, and 5 dimes. What is the probability of picking a nickel, then a dime, then a quarter?

A bag contains 2 Snickers, 3 Milky Ways, and 5 Kit Kats. What is the probability of picking a Snickers, then a Milky Way, then a Kit Kat?

A card is drawn from a standard deck of cards, then a month of the year is chosen. What is the probability of getting a heart and a month that starts with the letter J?

Name: _____

Topic: _____

Main Ideas/Questions Notes/Examples

Population

Sample

Unbiased Sample

Biased Sample

Examples

- To estimate the number of students outside of school, you decide to survey the baseball team.
- Katy would like to approximate the cost of that own a pet. She decides to survey her friends.
- The Yearbook Committee must choose 100 random students during lunch.
- The New England Patriots and the Super Bowl. To determine team preference, a newspaper surveyed 500 residents.

Name: _____ Unit 9: Probability & Statistics

Date: _____ Per: _____ Homework 6: Using Samples to Predict

** This is a 2-page document! **

Identify the population and the sample.



Determine whether the sample is biased or unbiased. Explain.

- A restaurant would like to evaluate the efficiency of its workers, so they observe the workers during the second shift.
- At the end of the year, a teacher decides to survey the students who turned in their first paper.
- An airport randomly inspects every 8th suitcase that goes through security.
- Mark would like to know the habits of students on his campus, so he surveys the students in his math class.
- To determine how many students plan to attend the school musical, Kaitlyn surveys 100 random people in the hallway.
- To track the number of students who take the east coast, she surveys the students who live in the east coast.
- To determine how many homes in his neighborhood plan to hand out candy on Halloween, Jack chooses one street at random and surveys each household on that street.
- To check the number of light bulbs from a factory, the inspector checks 100 bulbs from a shipment of 10,000.
- Suppose you would like to determine how many students have a pet. Give an example of a biased sample and an unbiased sample.

PROBABILITY REVIEW

SIMPLE PROBABILITY

- If the spinner below is spun once, find each probability.

a) $P(\text{blank})$	b) $P(\text{at least } \$500)$
c) $P(\$800 \text{ or } \$1,000)$	d) $P(\text{a maximum of } \$700)$
e) $P(\text{less than } \$400)$	f) $P(\text{lose a turn})$
- A bucket contains a set of magnetic alphabet letters. If a letter is drawn at random, what is the probability that it is a letter in the word FIRECRACKER?
- Sarah has been late for work 9 out of the last 30 days. Based on this, what is the probability that she will be on time for work on any given day?

THEORETICAL VS. EXPERIMENTAL PROBABILITY

4. A day of the week was chosen at random 60 times. Results of this experiment are shown in the table below.

Result	Sun	Mon	Tues	Weds	Thurs	Fri	Sat
Frequency	14	6	5	10	12	9	4

- What is the theoretical probability of selecting a day that starts with the letter S?
- Based on this experiment, what is the probability of selecting a day that starts with the letter S?
- Theoretically, if a day is chosen at random 300 times, about how many times would you expect Monday to be chosen?
- Based on this experiment, if a day is chosen at random 300 times, about how many times would you expect Monday to be chosen?

COUNTING PRINCIPLE

- How many ways can Mason make his elective schedule if he can choose from photography, journalism, art, or marketing as his first elective and keyboarding or chorus as his second elective?
- To access their grades in the gradebook, each student is given a unique code that contains three letters followed by one digit. How many codes are possible?

Name: _____ Unit 9: Probability & Statistics

Date: _____ Per: _____ Homework 6: Probability Review

** This is a 2-page document! **

Give all probability answers as fractions in simplest form.

- A date in the month below is chosen at random. Find each probability.

a) $P(\text{the 14th})$	b) $P(\text{Wednesday})$
c) $P(\text{Saturday or Sunday})$	d) $P(\text{a perfect square})$
e) $P(\text{divisible by 4})$	f) $P(\text{before the 13th})$
- A card is chosen at random from a standard deck of cards. What is the probability that it is a club or a face card?
- Curt is playing darts. He hit the bulls-eye eight out of his last thirty throws. What is the probability that he does not make a bulls-eye on his next throw?



- The spinner below is spun 50 times. The results are shown in the table below.



Result	1	2	3	4	5	6	7	8
Frequency	9	5	7	10	2	8	6	3

- What is the theoretical probability of the spinner landing on a number greater than 6?
- Based on this experiment, what is the probability of the spinner landing on a number greater than 6?
- Theoretically, if the spinner is spun 500 times, how many times would you expect it to land on 1?
- Based on this experiment, if the spinner is spun 500 times, how many times would you expect it to land on 1?

Use the counting principle for questions 5-6.

- A sandwich shop has three kinds of bread, seven types of meat, and four types of cheese. How many different sandwiches can be made using one type of bread, one meat, and one cheese?
- A standard die is rolled two times, then a letter of the alphabet is chosen. How many outcomes are possible?