

LESSON
12-1

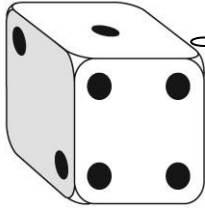
Alternative Packet: Theoretical Probability

Week 5: 4/27-5/1

Problem 1

A number cube can help you understand probability.

Think!



Possible outcomes:
1 2 3 4 5 6

Is it **likely** that you will roll a 1 every time?

This means the probability of rolling a 1 every time is low.

No. The cube has 6 sides. Only one side is a 1. It is **unlikely** that I will roll a 1 every time.

Problem 2

There are 16 marbles in a bag.

To find the probability of **not** drawing a red marble, first find the probability of drawing a red marble.

R = Red G = Green B = Blue

RED

$$P(\text{Red}) = \frac{6 \text{ Red}}{16 \text{ Marbles}}$$

$$= \frac{3}{8}$$

NOT RED

$$P(\text{Not Red}) = 1 - P(\text{Red})$$

$$= 1 - \frac{3}{8}$$

$$= \frac{5}{8}$$

P(Red) means “the probability of drawing a red marble.”
P(Not Red) means “the probability of drawing any marble that is NOT red.”

1. In Problem 1, is it more likely, less likely, or as likely as not to roll an even number? Why?

2. In Problem 2, how likely is it that you will select a purple marble? Why?

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Creating a table can help you solve probability problems.

You are to choose one of the cards at right without looking.

Consider the probability of three outcomes: 1) choosing a vowel, 2) choosing a B, or 3) choosing a letter in the word *MATH*.



Complete the table by writing whether each of the desired outcomes is *impossible*, *unlikely*, *as likely as not*, *likely*, or *certain*.

Possible Outcomes	Desired Outcomes		
	Vowel	B	Letter in <i>MATH</i>
M	no	no	yes
A	yes	no	yes
T	no	no	yes
H	no	no	yes
Results	1 out of 4	0 out of 4	4 out of 4
Probability	1. _____	2. _____	3. _____

4. You spin the spinner at the right. Complete the table. Tell whether each of the desired outcomes is *impossible*, *unlikely*, *as likely as not*, *likely*, or *certain*.



Possible Outcomes	Desired Outcomes		
	6	Factor of 4	Greater than 0
Results	___ out of ___	___ out of ___	___ out of ___
Probability			

Alternative Packet: Theoretical Probability**Week 5: 4/27-5/1****Match each event to its likelihood. The first one is done for you.**

1. rolling a number less than 6 on a number cube labeled 1 through 6 **A** A. likely
2. flipping a coin and getting heads _____ B. unlikely
3. spinning a number less than 3 on a spinner with 8 equal sections marked 1 through 8 _____ C. as likely as not
4. drawing a red or blue marble from a bag of red marbles and blue marbles _____ D. impossible
5. rolling a number greater than 6 on a number cube labeled 1 through 6 _____ E. certain

Solve. Write your answer in simplest form. The first one is done for you.

6. A bag contains 4 red marbles, 3 green marbles, and 2 yellow marbles. The probability of randomly picking a yellow marble is $\frac{2}{9}$.
What is the probability of not picking a yellow marble? **$\frac{7}{9}$**
7. A number cube is labeled 1 through 6. The probability of randomly rolling a 5 is $\frac{1}{6}$. What is the probability of not rolling a 5? _____

Tell whether the event is *impossible*, *unlikely*, *as likely as not*, *likely*, or *certain*. Explain your choice. The first one is done for you.

8. Tyrone rides his bicycle to school if he gets up by 7:15 A.M. Tyrone gets up by 7:15 about half the time. Estimate the probability that Tyrone will ride his bicycle to school.

as likely as not; Since he gets up by 7:15 about half the time, he will ride his bicycle about half the time. The probability is about $\frac{1}{2}$, or as likely as not.

9. There are 10 shirts in a drawer. Eight of the shirts have short sleeves. Two shirts have long sleeves. Estimate the probability that you get a short-sleeved shirt if you select one out without looking.

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Find each probability. Write your answer in simplest form.

1. Picking a blue shirt from a drawer with 8 blue shirts and 2 white shirts

2. Drawing a vowel from letter tiles that spell out MATHEMATICS

3. A spinner is divided into 8 equal sections: 4 red, 2 white, 1 green, and 1 blue. What is the probability that the spinner lands on blue or white?

There are 6 cans of soup in a kitchen cabinet: 2 chicken noodle, 3 tomato, and 1 vegetable.

4. You select a can without looking. What is the probability that you will **not** choose chicken noodle soup?

5. What is the probability that you will choose vegetable soup?

6. 12 more cans were **added** to the pantry: 4 cans of chicken noodle soup, 5 cans of vegetable soup, and 3 cans of tomato soup. What is the probability of choosing tomato soup?

7. What is the probability of not choosing tomato soup?
