

**Mathematics**  
**Grade 6**  
**Experimental and Theoretical**  
**Probability**

# Parent Assisted Learning

Dear Parent or Guardian:

Your son or daughter is currently learning how to write probabilities. Here is your chance to help your son or daughter practice this important skill.

In this PAL Packet you will find a short activity for you and your son or daughter to do. Please do the activity and The Back Page this evening. Then sign your name on The Back Page and have your son or daughter return it tomorrow.

Thanks for your help.

Sincerely,

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Your son or daughter's teacher

# Parent Assisted Learning

## WRITING PROBABILITIES

### **Parent Pointer —**

There are times when you might want to know what your chances are at winning a raffle. Knowing the total number of tickets that are placed in a container and the number of tickets you entered will allow you to find the probability of winning the prize. Your son or daughter is learning the difference between theoretical and experimental probabilities. A theoretical probability is based on mathematical facts. Experimental probability is a recording of what actually happens when you flip a coin, draw a card, or roll a number cube. Studying probability gives your son or daughter an opportunity to make predictions when collecting data and using statistics.

### **Math In the Home, On the Go, and For the Fun of It —**

**DIRECTIONS:** First, review what you have learned in class by reading the *Concepts in Probability* page with your parent or guardian. On the *You're a Winner!* page, write probabilities for the given situations. Then, on the *Pick a Card* page, write experimental probabilities by conducting an experiment with your parent or guardian.

### **Talk About It —**

After you have finished the activity, turn to The Back Page to show what you know.

Now go have some fun with the activity! ➡

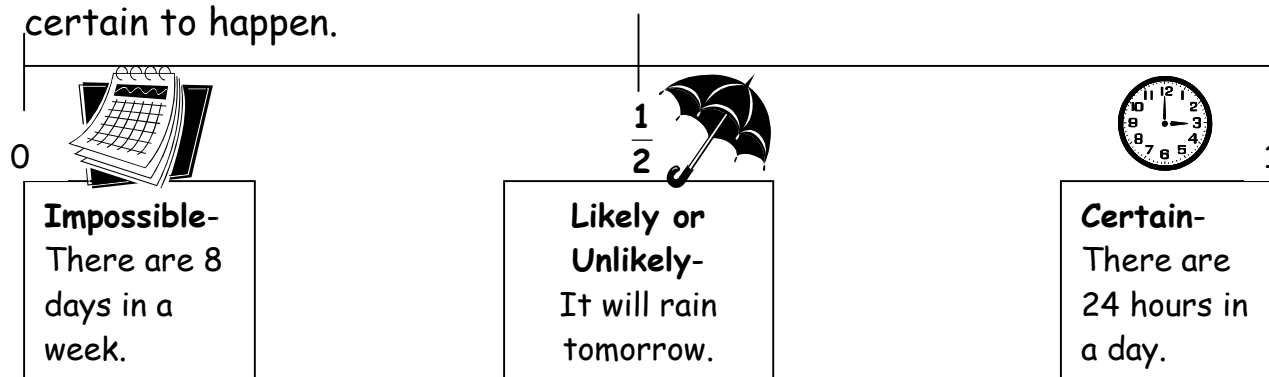
# Parent Assisted Learning

## CONCEPTS IN PROBABILITY

Probability is the chance of an event occurring.

$$P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$$

An **event** is something that may happen. The **probability** of an event can be described using numbers, for example, the number 0 for something that is impossible and the number 1 for something that is certain to happen.



A fundraising group is conducting a raffle in which they will be giving away a bicycle. There are 328 entries. Janie purchases 4 tickets. What is the probability that she will win the bicycle?



$$P(\text{Janie winning bike}) = \frac{4}{328} = \frac{1}{82}$$

If you flip a coin 50 times, how many times will it land on heads?



**Theoretical probability-**  $\frac{25}{50} = \frac{1}{2}$

**Experimental probability-** The number of times the coin actually lands on heads when you flip the coin fifty times. As the number of flips increases, the closer the experimental probability will be to the theoretical probability.

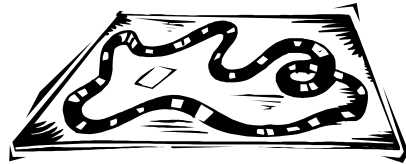
# Parent Assisted Learning

## YOU'RE A WINNER!

Read the following scenarios and write the probability for each. Make sure that the probability is reduced.

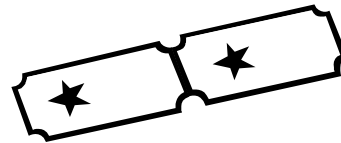
Marcus and Antonio are playing a board game. In this particular game, each of them needs to roll a number cube containing the numbers 1-6. What is the probability that Marcus or Antonio will roll a 2 or a 3?

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During intermission at the production of *Grease*, the director will be giving out prizes to those people who have a star on their ticket. He will give away one grand prize and three second-place prizes. Three hundred people will attend. What is the probability of someone winning a second-place prize?

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Marie and Sophia are playing a game where they must take a card off of the deck without looking. In the deck are 8 cards with squares, 7 cards with circles, 5 cards with rectangles, and 6 cards with hearts. What is the probability that one of the girls will choose a card with a heart?

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# Parent Assisted Learning


**PICK A CARD**





With your parent or guardian, cut out the cards at the bottom of the page and place them in a paper or plastic bag. Look at the theoretical probability (what will most likely happen) written in the table. Then, actually conduct the experiment by pulling out a card from the bag twenty times without looking and replacing the card in the bag each time so that you are always drawing from the full set of 10 cards. Record your results, then write the experimental probability. For example, if you pulled out 5 heart cards, the experimental probability would be  $\frac{5}{20} = \frac{1}{4}$ .


| Theoretical Probability  | Experimental Probability |
|--|--------------------------|
|  $\frac{2}{10} = \frac{1}{5}$  |                          |
|  $\frac{3}{10}$               |                          |
|  $\frac{4}{10} = \frac{2}{5}$ |                          |
|  $\frac{1}{10}$               |                          |

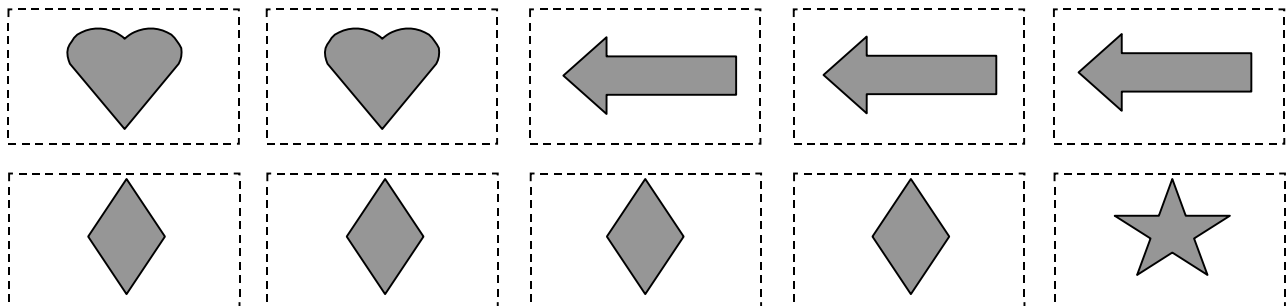
**Results:**  
Make a tally mark next to each type of card when it is pulled out.











# Parent Assisted Learning

## The Back Page

**Talk About It**

**Parent —** Ask your son or daughter the following question:

- ✓ What is the difference between experimental and theoretical probability?

**Student —** Answer the above question in a complete sentence on the bottom of this page.

**OR**

Do one of the following activities (use the back side of this page if needed):

- ✓ Show the difference between experimental and theoretical probability in a drawing.
- ✓ Write probabilities of situations from the use of a number cube or a spinner gathered from a board game.

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Student's Name

Parent or Guardian's Signature