NAME _____ DATE _____

5-6 Probability and Odds (Pages 219–223)

You can calculate the chance, or **probability**, that a particular event will happen by finding the ratio of the number of favorable outcomes to the number of possible outcomes. When all outcomes have an equally likely chance of happening, the outcomes happen at **random**. **Theoretical probability** is what *should* occur. **Experimental probability** is what *actually* occurs in an experiment. Another way to measure the chance of an event occurring is with **odds**.

Definition of Probability	probability of an event or $P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{number of possible outcomes}}$
Definition of Odds	odds of an event $= \frac{\text{number of favorable outcomes}}{\text{number of unfavorable outcomes}}$

EXAMPLES

A Find the probability of randomly choosing the letter p in the word "apple."

There are 2 p's and 5 letters in all.

P(choosing a p) $= \frac{2}{5}$

The probability is $\frac{2}{5}$*, or 40%.*

B Find the odds of randomly selecting the letter p in the word "Mississippi."

Since 2 letters of 11 are p, the number of favorable outcomes is 2. Since 9 of the letters are not p, the number of unfavorable outcomes is 9. The odds of selecting a p are therefore 2:9.

Try These Together

1. What is the probability of rolling a 1 or a 2 using a 6-sided number cube?

HINT: The number of favorable outcomes is 2.

2. From a group of 125 boys and 150 girls, what are the odds of randomly selecting a girl?

HINT: Remember to simplify your ratio.

PRACTICE

Find the probability of each outcome if a computer randomly chooses a letter in the word "mathematical."

3. the letter t **4.** the letter a or c **5.** the letter d **6.** not an m

Find the odds of each outcome if a computer randomly chooses a letter in the word "Alabama."

7. the letter a **8.** the letter b **9.** a consonant **10.** not a b

11. What is the probability that a person was born on a weekday?

12. **Standardized Test Practice** What are the odds of randomly selecting a dime from a dish containing 11 pennies, 6 nickels, 5 dimes, and 3 quarters?

A 5:1 **B** 1:5 **C** 1:4 **D** 4:1

Answers: 1. $\frac{1}{3}$ 2. 6:5 3. $\frac{1}{6}$ 4. $\frac{1}{3}$ 5. 0 6. $\frac{5}{6}$ 7. 4:3 8. 1:6 9. 3:4 10. 6:1 11. $\frac{5}{7}$ 12. C