

Title: A Stroke of Genius**Brief Overview:**

In this unit students will be working in cooperative groups in a putting exercise. They will record, display, and analyze their own data.

Links to Standards:

- **Mathematics as Problem Solving**
Students will demonstrate their ability to solve mathematical problems in a cooperative atmosphere using their own data and deciding what information is pertinent to their particular task.
- **Mathematics as Communication**
Students will demonstrate their ability to communicate mathematically by using information and data to support their conclusions.
- **Mathematics as Reasoning**
Students will justify their reasoning for responses to real-world problems.
- **Mathematical Connections**
Students will demonstrate their ability to connect mathematics with real-world problems.
- **Number and Number Relationships**
Students will compute the mean for a set of data. Students will work with whole numbers, decimals, and percents in order to analyze data.
- **Statistics**
Students will demonstrate their ability to collect, organize, and display data. They will interpret data obtained from a classroom exercise.

Grade/Level:

Grades 6-7

Duration/Length:

This activity is intended for one period per day and will take 3 to 4 days.

Prerequisite Knowledge:

Students should have working knowledge of the following skills:

- Adding, subtracting and dividing decimals
- Calculating mean
- Collecting data and constructing circle graphs.

Objectives:

Students will:

- work cooperatively in groups.
- gather and interpret data.
- evaluate results of an exercise and give appropriate support for their answers.
- make accurate calculations.

Materials/Resources/Printed Materials:

- Meter stick (golf club)
- Paper plate or cup (golf hole)
- Plastic golf ball or other small ball
- Calculator
- Worksheets, web chart

Development/Procedures:

- Introduce lesson with Tiger Woods rebus.
- Work in small groups, use the web chart for brainstorming (worksheet 1).
- Share small group ideas with the whole class using web chart.
- Analyze data on worksheet 2, students will make a real-world decision and justify it.
- Apply their statistical knowledge to complete worksheet 3.
- Complete putting exercise and record data.
- Construct a circle graph and justify your results.

Performance Assessment:

The assessment is based upon a rubric which is included.

Extension/Follow Up:

- Discuss the emergence of the new racial classification “other”. Use the activity sheet and have the students make predictions based on the graph.
- Lead students through an Internet search for other golf statistics. Compare the pros’ statistics to the students’. Discuss ranking and ask the students to rank the golfers using the information that they found.

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INTRODUCTION

Tiger Woods at age 21 is the youngest person to ever to win a professional golf tournament. One of the reasons for his success is that he can hit the ball over 300 yards, longer than any other golfer.

Many think he is an overnight success because of his young age, however this is not so. His success has stemmed from hard work, devotion to practice, and determination to succeed.

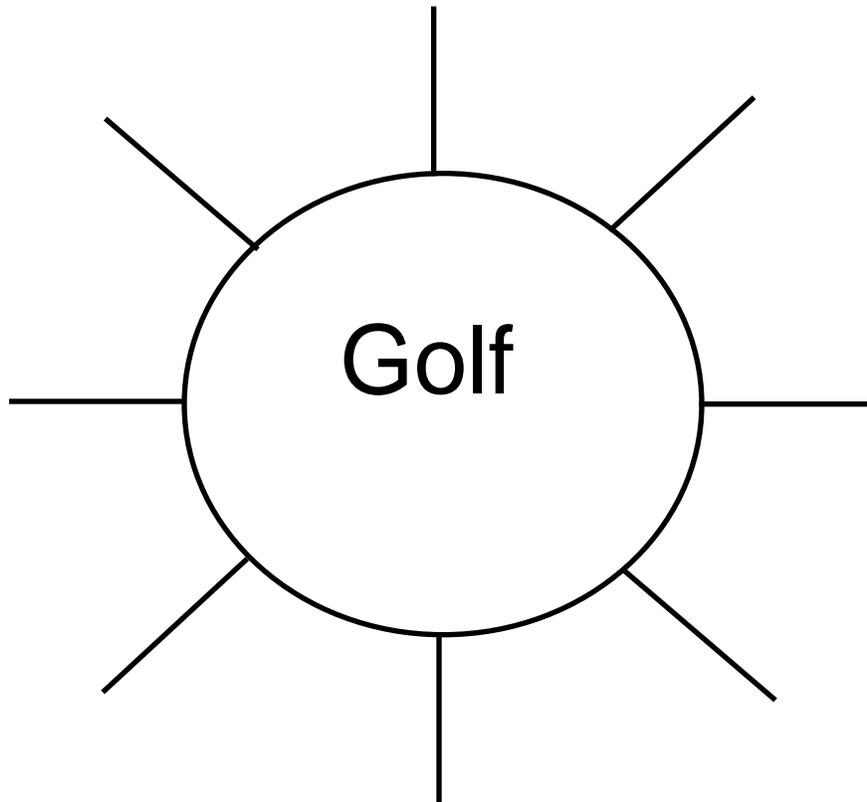
It all started at age two when his father, Earl started giving his son his first golf lesson. By age 4 Tiger was competing and winning against children who were more than twice his age. With his father's encouragement and help, and his mother, Kultidara's love and family devotion Tiger grew into a mature, responsible young man. His mother has also helped him in an unusual way. She thought that wearing red would bring him luck and help him win. Like a good respectful son Tiger followed his mother's advice and he won!

Let's analyze how Tiger's achievements are related to mathematics. Think about what math skills Tiger might use.

Worksheet 1

GOLF WEB

The sport of golf has increased in popularity and is now the fastest growing sport in America. In your group, for the next 3-5 minutes brainstorm everything you know about the game of golf. Think about how math is used in the game of golf and include these ideas on your web.



Worksheet 2

INTERPRETING DATA

Your golf game is not quite up to Tiger's level but, you are very excited when you find out you have won 3 free hours of golf lessons. Before you begin your lessons you must be familiar with the following golf strokes:

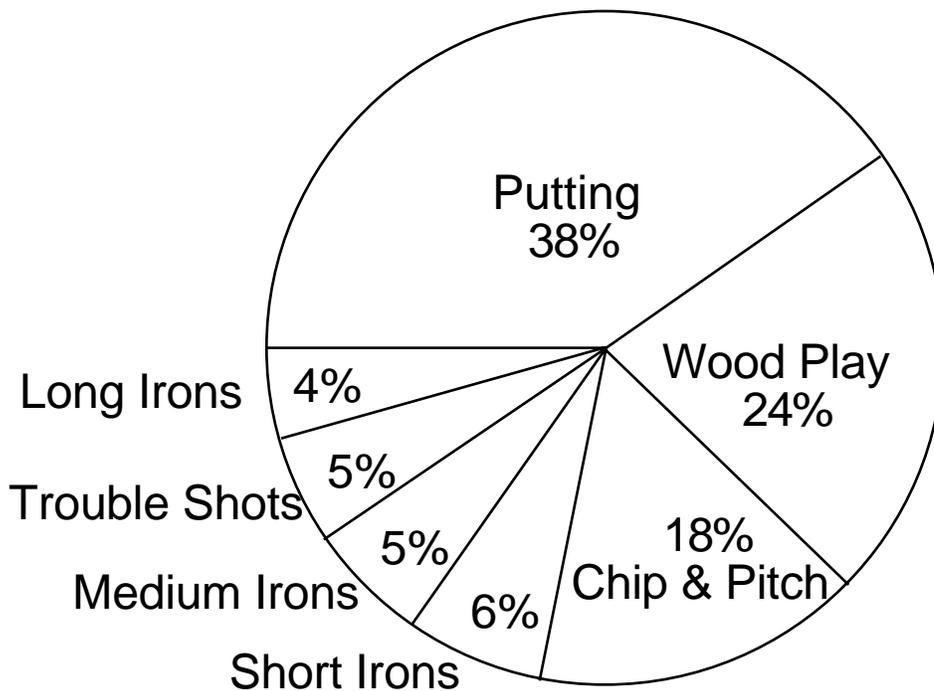
Putting - designed to roll the ball on the green

Wood play - used for long shots

Chip and pitch - for shots close to the green

Irons - used for accuracy, short, medium or long depending on the shot

The graph below represents the amount of time a professional golfer devotes to a particular stroke for an 18 hole round of golf. Study the circle graph below and think about your free lessons. In complete sentences describe how you would divide up your 3 free hours of lessons. Explain your decision.



Worksheet 3

AVERAGING

Your golf game has improved greatly after your free golf lessons and you feel you are ready to compete with the pros. You decide to research driving distances for players on the PGA tour. You learn the overall average driving distance for all players is 266.9 yards. The top ten averages are as follows:

1. Tiger Woods	291.5 yds
2. Scott McCarron	284.8 yds
3. John Daly	282.9 yds
4. Phil Mickelson	282.8 yds
5. John Adorn	279.4 yds
6. Mark Calcavecchia	279.3 yds
7. Kelly Gibson	279.0 yds
8. Stuart Appleby	278.6 yds
9. Paul Stankowski	277.6 yds
10. Davis Love	277.6 yds

1. Find the mean driving distance for the top ten players.

2. What is the difference between the mean you just computed and the average distance for all players?

3. The average distance of a major league home run is about 380 feet. How does this compare with your answer to question 1? Explain your thinking.

Worksheet 4
Putting the Ball

You've qualified for the Middle School Amateur Golf tournament. Before the tournament you will be competing in a putting contest. In your group you will be practicing your putting skills. Your goal is to try to putt the ball into the cup in as few strokes as possible. Remember, the lowest score in golf wins.

1. In the next 10 minutes each member of your group will have 5 attempts to putt the ball into the "hole." Begin each attempt 10 feet from the hole. Record the number of strokes on the table below.

EVENT

Name	Hole in One	2 Strokes	3 Strokes	4 Strokes
1st attempt				
2nd attempt				
3rd attempt				
4th attempt				
5th attempt				

2. Using the data above rank yourselves according to who performed the best, next best , etc. Justify your answers.

STUDENT SCORECARD

EVENT

Name	Hole in One	2 Strokes	3 Strokes	4 Strokes
1st attempt				
2nd attempt				
3rd attempt				
4th attempt				
5th attempt				

EVENT

Name	Hole in One	2 Strokes	3 Strokes	4 Strokes
1st attempt				
2nd attempt				
3rd attempt				
4th attempt				
5th attempt				

EVENT

Name	Hole in One	2 Strokes	3 Strokes	4 Strokes
1st attempt				
2nd attempt				
3rd attempt				
4th attempt				
5th attempt				

ACTIVITY SPECIFIC KEY

- 4 - Division of 3 free hours of golf lessons is logical and thoroughly justified.
 - Calculations consistently computed accurately.
 - Comparison of Tiger Wood's driving range and Cal Ripken's home run thoroughly explained. Conversion correctly computed.
 - Determination of best performer in the putting activity thoroughly justified.
 - Construction of circle graph accurate. Thorough explanation of sizes of sections included.

- 3 - Division of 3 free hours of golf lessons is logical and substantially justified.
 - Calculations frequently computed accurately.
 - Comparison of Tiger Wood's driving range and Cal Ripken's home run substantially explained. Conversion nearly correct.

 - Determination of best performer in the putting activity substantially justified.
 - Construction of circle graph nearly correct. Substantial explanation of sizes of sections included.

- 2 - Division of 3 free hours of golf completed with partial justification.
 - Calculations sometimes computed correctly.
 - Comparison of Tiger Wood's driving range and Cal Ripken's home run partially explained. Conversion attempted.
 - Determination of best performer in the putting activity partially justified.
 - Construction of circle graph partially correct with incomplete explanation.

- 1 - Division of 3 free hours of golf attempted with misconceptions noted in justification.
 - Calculations rarely computed correctly.
 - Comparison of Tiger Wood's home run shows misunderstanding. Conversion incomplete.
 - Determination of best performer in the putting activity shows misunderstanding.
 - Construction of circle graph attempted with little or no explanation.

EXTENSION ACTIVITY 2

1. Compare your putting average to the pros. Find the statistics on the Internet and see how you stack up.
2. Other statistics, like driving accuracy, driving distance, and scoring average, are also kept. How could you rate the professional golfers using the four sets of statistics.
3. Find the order of finish for the 1997 Master's Tournament. Who won? What was his score? By how many strokes did he win?

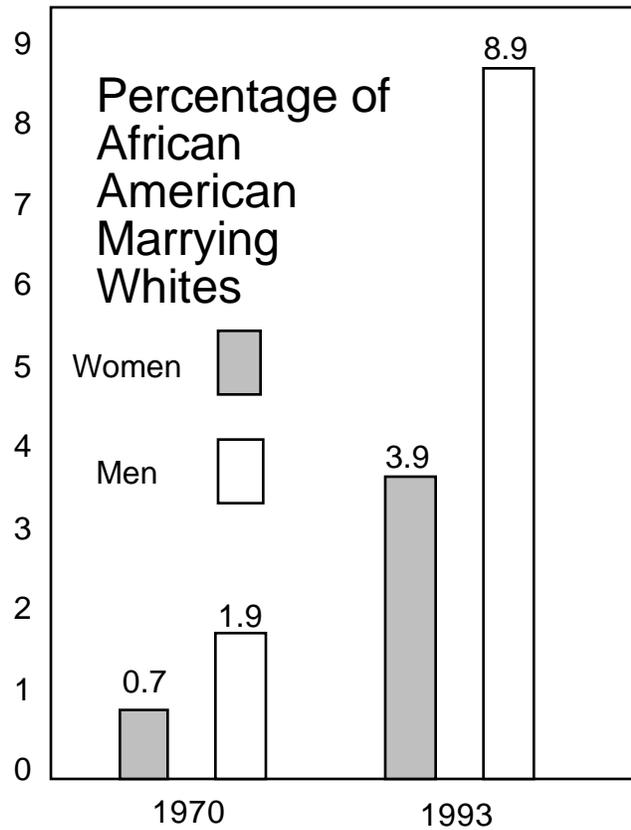
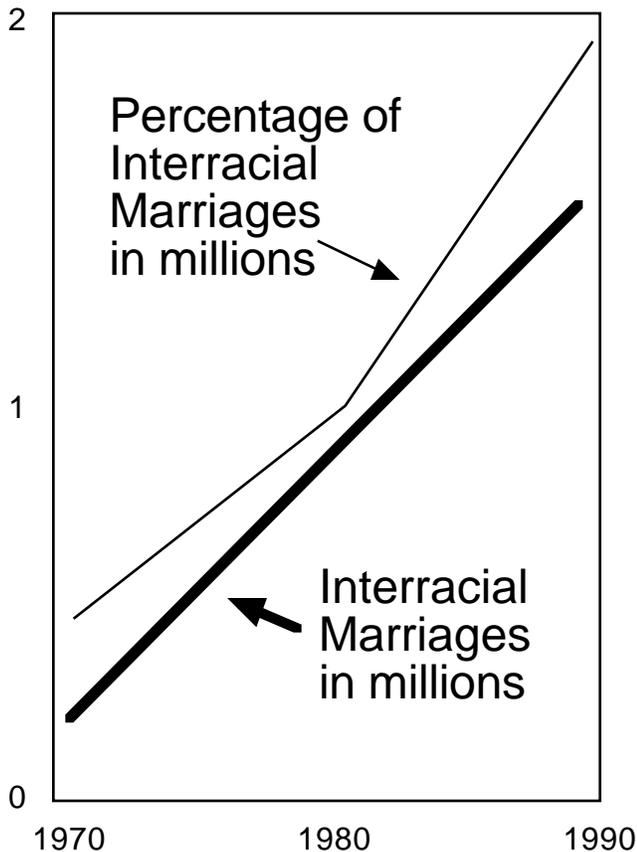
EXTENSION ACTIVITY 3

1. Write a letter to Tiger Woods. Try to find out his secret to success. How did he become so good at the game of golf? Think of other things you may want to ask him and include them in your letter.

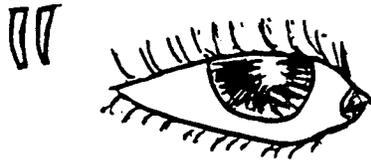
EXTENSION ACTIVITY

Tiger Woods, the great golf star, has also broken racial barriers. His mother is Asian and his father is African-American. When Tiger went to get his driver's license he was confused when he came to a question about race on the form. There was no category that fit his identity. So he just identified himself as "I am just who I am."

In America the question of a person's race is no longer as simple as black or white. Midway through the 21st century whites will no longer make up a majority of the U. S. population. Blacks will be overtaken as the largest minority group by Hispanics. Asians and Pacific Islanders will more than double their number of 9.3 million in 1995 to 19.6 million by the year 2020. The number of children, like Tiger, who are born to parents of different races is increasing rapidly. Look at the graphs below. What can you conclude from this information? Make a prediction based on the bar graph about the numbers of African Americans and whites marrying each other in the year 2010.



Who am I?



M & M - M

