# Pi Day Activity

Objectives:

-Students will discover the relationship between the circumference of a circle and its diameter.

Materials:

-String

-Chalk

-Timers

-Worksheet to record data

-Calculators

Activity

Students will be placed into groups of 3 or 4 students. Each group is given piece of string and chalk. One person stands as the center and holds one end of the string on ground while other group member walks around outlining circle with chalk. Each group will construct different-sized circles. Each student in the group will take turns walking around the circle and through the center of the circle. Students will record the time it takes to walk around the circle and through center on table in worksheet.

After activity is done bring class back together and have each group give brief overview of what they found. Then teacher discusses with students these questions:

1. What conclusions can you make based upon the circumference and diameter of the circle?
2. Does this ratio have a name? What is this ratio called?

Now, have students plot the points in their table using their graphing calculator and find the linear regression line. They should notice that the slope of this line is approximately 3.14. The more trials they collect to add to their table, the closer to pi their slope will be.

After this discussion is over transition to the lesson on circumference, diameter, and pi relationship and applications of pi.

Pi Day Activity Worksheet

Name:

Date:

Directions:

-Walk at a consistence pace

-The same person should walk the distances for the same circle

-Fill in the chart below, completing 10 trials using a different trial each

|  |  |  |  |
| --- | --- | --- | --- |
| Trial | Time it takes to walk around the circle | Time it take to walk through the center of the circle | Find the ratio of the time it takes to walk around the circle to the time it takes to walk through the circle |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |

What similarities are there between the ratios?

Now, choose 3 of the circles you constructed and measure the actual distances around the circle and through the center of the circle. Then, find the ratio of the two like you did above with the walking times. Do you find any similarities? Are there similarities between these ratios and the ratios obtained from the walking the circle?

Now, have students plot the points in their table using their graphing calculator and find the linear regression line. Pi Day Activity Worksheet

Name: Kelsey & Nicole

Date: February 18, 2011

Directions:

-Walk at a consistence pace

-The same person should walk the distances for the same circle

-Fill in the chart below, completing 10 trials using a different trial each

|  |  |  |  |
| --- | --- | --- | --- |
| Trial | Time it takes to walk around the circle | Time it take to walk through the center of the circle | Find the ratio of the time it takes to walk around the circle to the time it takes to walk through the circle |
| 1 | 4.87 sec | 1.6 sec | 3.04 |
| 2 | 5.98 sec | 1.8 sec | 3.32 |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |
| 10 |  |  |  |

What similarities are there between the ratios?

Close to 3.

Now, choose 3 of the circles you constructed and measure the actual distances around the circle and through the center of the circle. Then, find the ratio of the two like you did above with the walking times. Do you find any similarities? Are there similarities between these ratios and the ratios obtained from the walking the circle?

If we were to measure the lengths we walked, the ratios should be even more exact and closer to each other (and 3.14) regardless of the size of the circle.