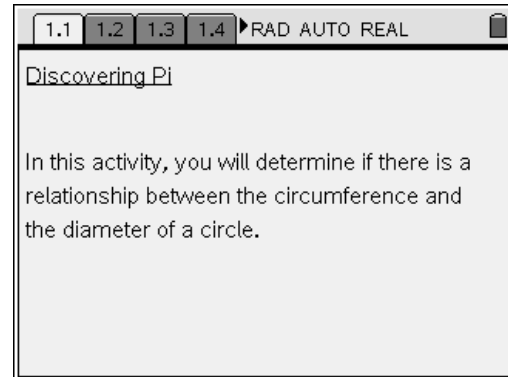


In this activity, you will explore:

- *The relationship between the circumference and diameter of a circle*
- *The relationship between the area and radius of a circle*

Open the file *DiscoveringPi.tns* on your handheld and follow along with your teacher to work through the activity. Use this document as a reference.



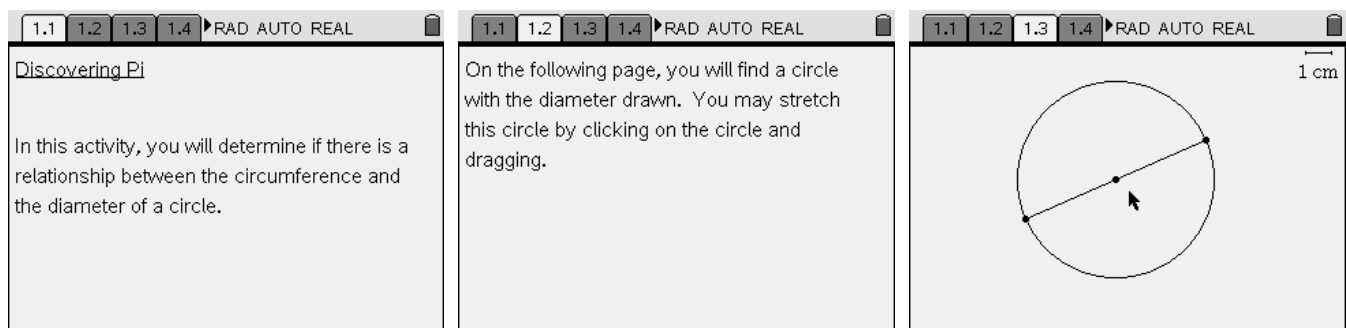
Exploring the Relationship between the Circumference and Diameter of a Circle

- Read the information on page 1.2. On page 1.3, you can change the size of the circle by clicking on the circle and dragging.
- Use the measurement tool to find the circumference and diameter of the circle:
 - Press MENU, Measurement...Length.
 - Click when the circle is selected. Move this measurement to the top right corner.
 - Click when the segment (diameter) is selected. Move this measurement to the middle right of your screen.
- Store these values as variables (Cir and Diam)
 - To store a variable, **CLICK** once on the value to be stored, press CTRL + VAR, enter the name for the variable, and press ENTER.
- Advance to the spreadsheet on page 1.7 and set it up to capture data from page 1.5 manually (**MENU > Data > Data Capture > Manual Data Capture**). Data is captured into the spreadsheet each time you press CTRL + .. Capture at least 5 sets of values.
- Look at the data and see if you can find a relationship between the circumference and diameter of the circle.
- In column C, divide column a by column b. (Type =a/b in the cell with the diamond)
- What do you notice about the results?

Exploring the Relationship between the Area and Radius of a Circle

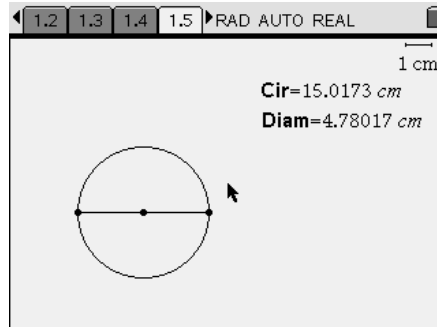
- Read the information on page 2.1.
- Use the measurement tool to find the area and radius of the circle:
 - Press MENU, Measurement...Length.
 - Click the center of the circle and the point on the circle. Move this measurement to the middle right of your screen.
 - Press MENU, Measurement...Area
 - Click when the Circle is selected. Move this measurement to the top right of your screen.
- Store these values as variables (Area and Rad)
 - To store a variable, **CLICK** once on the value to be stored, press CTRL + VAR, enter the name for the variable, and press ENTER.
- Advance to the spreadsheet on page 1.7 and set it up to capture data from page 2.2 manually (**MENU > Data > Data Capture > Manual Data Capture**). Data is captured into the spreadsheet each time you press CTRL + .. Capture at least 5 sets of values.
- Look at the data and see if you can find a relationship between the area and radius of the circle.
- In column C, square the radius.
- In column D, divide the area by the radius squared.
- What do you notice about the results?

Completed Student File:



1.1 1.2 1.3 1.4 ▸ RAD AUTO REAL

You are now going to find the circumference and diameter of the circle using the measurement tool. When you have the measurements store them using the variables, *Cir* and *Diam*.



1.3 1.4 1.5 1.6 ▸ RAD AUTO REAL

On the next screen, you will see a spreadsheet. You will be capturing the data from page 1.5 as you increase and decrease the size of the circle.

1.4 1.5 1.6 1.7 ▸ RAD AUTO REAL

	A	B	C	D	E	F
	=captu	=captu	=a[]/b[]			
1	11.68...	3.720...	3.14159			
2	13.07...	4.162...	3.14159			
3	19.91...	6.338...	3.14159			
4	24.24...	7.716...	3.14159			
5	35.88...	11.42...	3.14159			
E1						

1.5 1.6 1.7 1.8 ▸ RAD AUTO REAL

Question

Look at the values in columns A and B. How do you think they're related?

Answer ⌵

1.6 1.7 1.8 1.9 ▸ RAD AUTO REAL

Next, we will explore this relationship by dividing column *a* by column *b*. Go back to 1.7 and type a formula in column *c* that will divide the values in column *a* by the values in column *b*.

1.7 1.8 1.9 1.10 ▸ RAD AUTO REAL

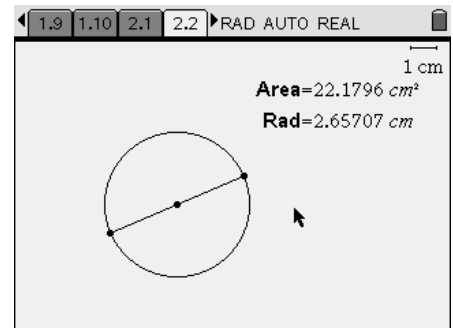
Question

What do you notice about the relationship between the circumference and diameter of a circle?

Answer ⌵

1.8 1.9 1.10 2.1 ▸ RAD AUTO REAL

We will now do a short exploration using the area of a circle. Do you think the area and radius of a circle are related? How?



1.10 2.1 2.2 2.3 ▸ RAD AUTO REAL

	A	B	C	D	E	F
	=captu	=captu	=b[]^2	=a[]/c[]		
1	40.87...	3.606...	13.01	3.14159		
2	9.683...	1.7557	3.0825	3.14159		
3	26.42...	2.900...	8.4125	3.14159		
4	61.01...	4.4071	19.42...	3.14159		
5	70.91...	4.751...	22.57...	3.14159		
E2						

2.1 2.2 2.3 2.4 ▸ RAD AUTO REAL

Use the spreadsheet to capture the data and explore the relationship between the area and radius of a circle.

HINT: You will need to square the radius.