CIRCUMFERENCE
Student Notes

This TI-Nspire activity will help you to:

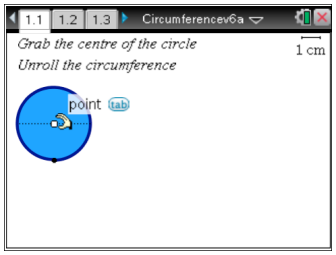
- understand what the circumference of circle is and how long it is;
- find the relationships between radius, diameter and circumference;
- use what you have found to solve problems.

1. Roll the circle

Open the document ***Circumference.tns***.

On page 1.1 there is a circle.

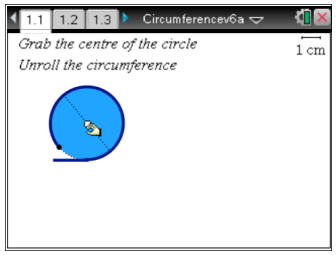
Move the cursor over the centre of the circle until it looks like this.



Press ctrl ☝ to close the hand up.

Press and hold ▶.

The circle begins to roll.



Roll it as far as you can until all the circumference of the circle has “unrolled”.

Roll it up and unroll it again.

2. Length of the circumference

How long do you think the circumference is?

Twice the width of the circle?

Or 3 times or 4 times…?

Press ctrl ▶ to move to page 1.2.

Now there are several circles in a pile.

Grab the circles one at a time and slide them to the left.

How many diameters make up the length of the circumference?

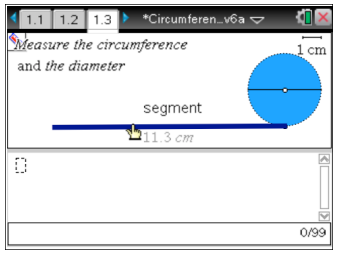
3. Measure the lengths

Move to page 1.3 by pressing ctrl ▶.

You can measure lengths by pressing

menu 8 1

Then move the cursor over the unrolled circumference of the circle until it looks like this.



Press ☝ ☝ to fix the length of the circumference on the screen.

Move the cursor over the diameter and measure it too.

Does it look as if the circumference is three and a bit times the diameter?

4. How big is the bit?

Press ctrl tab to move to the bottom of page 1.3 where you can do calculations.

Enter the length of the circumference.

Press ÷.

Enter the length of the diameter.

Press enter.

Is it true that circumference is three and a bit times the diameter?

How big is the bit?

Is the same true for other circles?

5. Another circle

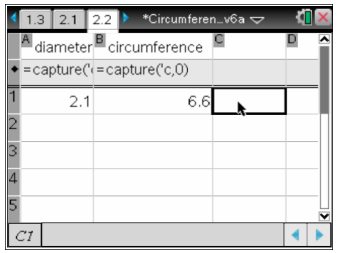
Press ctrl ▶ to move to a new problem on page 2.1.

This time there is a slider that will change the value of d, the diameter of the circle.

At first d is 2.1.
Unroll the circumference completely.

Press ctrl . to record the value of d and also c, the circumference.

Move to page 2.2 and you will see that the values of d, the diameter and c, the circumference have been recorded in a table.



Move to cell C1 and calculate the current value of c divided by d. To do this press

= 6.6 ÷ 2.1 enter.

6. Yet more circles

Press ctrl ◀ to go back to page 2.1.

Roll up the circumference.

Grab the slider and use it to change the diameter of the circle.

Unroll the circumference and press ctrl . to record the new values of d and c.

On page 2.2, in cell C2 divide the new values.

By now you will be noticing something important about c/d.

Repeat this for several more circles.

The value 3.14 (approximately) is known as π. (Say “pi”.)

The circumference is *always* π times the diameter.