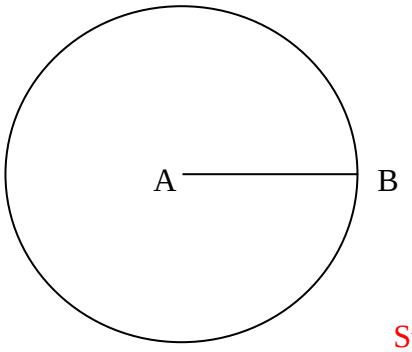
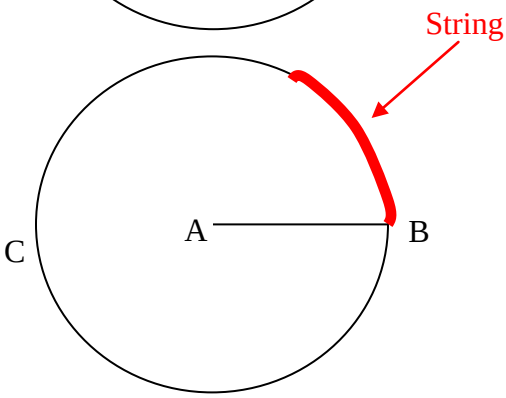
Radian Measure – Introduction
Activity Sheet 1

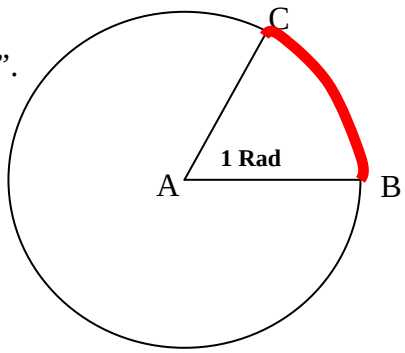
1) Construct a circle whose radius is equal to the length of the piece of string given.
2) Draw in the radius and label it AB as shown.



3) Using the string, place one end of it at B and lay it out on the circumference.
Mark C at the end of the string.



4) Join point A to point C.
The angle created in the centre of the circle is called "**1 Radian**".

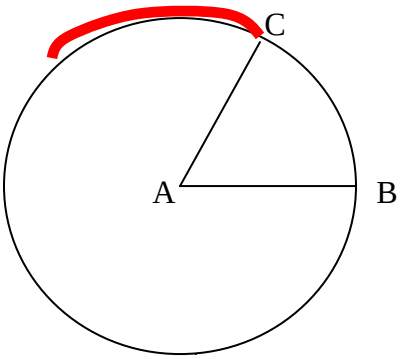


NOTE: Activities 1 to 4 show how to **construct** an angle of size 1 radian

5) Using a protractor measure (and write down) the approximate size of this radian in degrees.

Approximate size of 1 radian in degrees = _____

6) Using the string **on the circumference** repeat step 4 above until the entire circumference has been covered.



7) From the work you have done on this circle answer the following :

a) Estimate how many radians are in a full circle _____

b) Estimate how many radians are in a semi-circle _____

8) Write down, in your own words, what you understand by the phrase "*An angle of size one radian*."

_____

_____

_____

9) Complete the following table, using circles drawn by the class.

Circle	**Radius**	**Estimation of 1 radian**
Circle 1 *		
Circle 2		
Circle 3		
Circle 4		

* the circle you constructed at question 1 above

Based on the table above, what affect does the size of the radius of a circle have on the size of 1 radian ?

_____

_____

_____

10)
(a) From analysing the work so far make a connection between the number of radians in a full circle and the circumference.

(b) If θ is an angle, measured in radians, derive a formula connecting θ, **(L) the length of the arc** and the **(r) radius.**

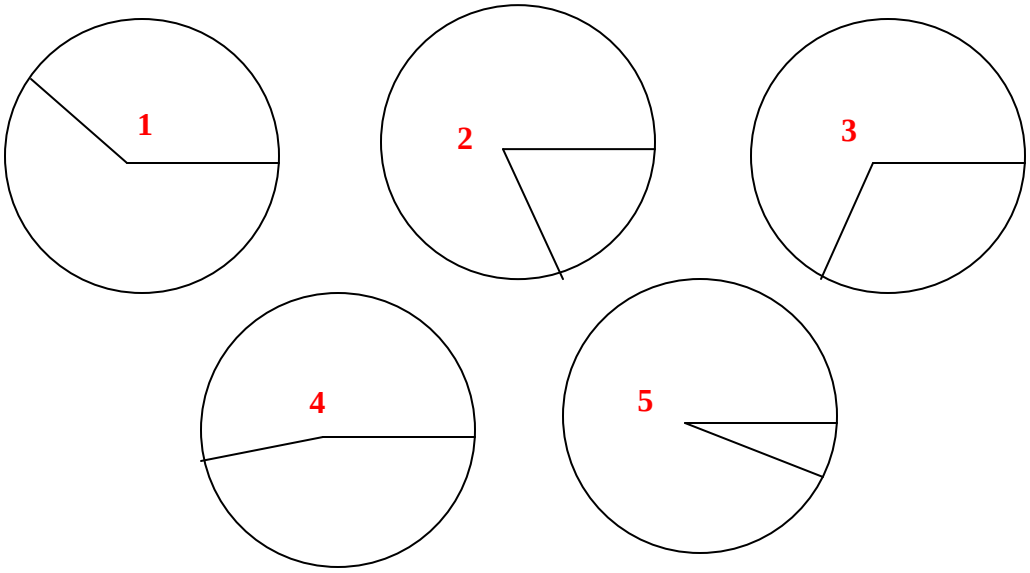
11) Using the identity generated in the previous question:
(a) How many radians are in a full circle correct to two decimal places ? _____

(b) Show that π radians = 180^o

(c) How many radians are in a semi-circle , correct to two decimal places ? _____

12) Using the identity generated at question 10 above, show how to calculate the size of 1 radian, correct to one decimal place.

13) Which of the following angles 1, 2, 3, 4 or 5 represent an angle of approximately 4 radians. Explain your answer.



14) Summarise what you have learned about radians from this activity.