**PROJECT 2**

**TOPIC: VERIFICATION OF ALTERNATE SEGMENT THEOREM**

**OBJECTIVE:** To verify that: If a line touches a circle and from the point of contact a chord is drawn, the angles between the tangent and the chord respectively are equal to the angles in the corresponding alternate segments.

**MATERIALS REQUIRED:**

1. Geometry box
2. Practical workbook
3. Coloured chart papers – yellow, blue and red
4. Scissors
5. Scale
6. Sketch pen
7. Adhesives or glue sticks
8. Tracing papers – 2

**PROCEDURE:**

1. Draw a circle of 5 cm radius on a blue coloured chart paper. Use black sketch pen for drawing.
2. Cut out the circle.
3. Take a yellow chart paper. Cut it in the size of an A4 sheet and paste the circle on it.



1. Fold the sheet in such a way that it just touches the circle at A. Unfold the paper and draw the tangent PQ.



1. Fold the paper starting from A such that the chord AB is obtained. Draw AB.



1. $∠BAP$ and $∠BAQ$ are the angles formed between the chord AB and the tangent PQ.
2. Take a point C on the major arc. Form a crease joining AC. Draw AC.
3. Form a crease joining BC. Draw BC.



1. Take a point D on the minor arc. Form a crease joining AD. Draw AC.
2. Form a crease joining BD. Draw BD.



1. Make a replica of $∠ACB$ using a tracing paper. Place it on $∠BAQ$.

 

1. Make a replica of $∠BDA$ using a tracing paper. Place it on $∠BAP$.

 

 **RESULT:**

It is noted that $∠BAP and ∠BAQ are the angles formed between the chord AB and the tangent PQ.$. $∠BAQ$ is completely covered with $ ∠ACB$ and $∠BAP$ is completely covered with $∠ADB$. Thus the theorem is verified.

**LAST DATE OF SUBMISSION OF PROJECT: 22nd November, 2019**

**PROJECT 3**

**TOPIC: ARITHMETIC PROGRESSION**

**OBJECTIVE:**

* To understand the concept of arithmetic sequences
* To use and manipulate the appropriate formulae
* To apply the knowledge of arithmetic sequences in a variety of contexts

**PRIOR KNOWLEDGE:**

* Patterns
* Basic number system
* Sequences
* Ability to complete tables
* Basic graphs in the co-ordinate planes
* Simultaneous equations with 2 unknowns

**MATERIALS REQUIRED:**

1. Geometry box
2. Practical workbook
3. Coloured chart papers – yellow, blue and red
4. Scissors
5. Scale
6. Sketch pen
7. Adhesives or glue sticks
8. Tracing papers – 2

**PROCEDURE:**

1. Construct the pattern as shown with the dimension of small rectangles as 0.5 cm by 1 cm with different coloured craft or chart papers as per the specification.
2. In the first row: $a\_{1}= a\_{1}+d.0$
3. In the second row: $a\_{2}= a\_{1}+d.1$
4. In the third row: $a\_{3}= a\_{1}+d.2$ and so on…..
5. Now length of one row = $2a\_{1}+(n-1)d$
6. Area of the rectangle = $n\left\{2a\_{1}+(n-1)d\right\}$
7. Clearly area of the rectangle is twice the sum of progression.
8. Hence sum of the progression == $\frac{n\left\{2a\_{1}+\left(n-1\right)d\right\}}{2}$



1. Now consider this problem:

After the Knee-Surgery, The Doctor tells Mr. Sudhir to return to jogging program slowly. The Doctor suggests jogging for 12 minutes each day for the first week. Each week thereafter, he suggests Mr.Sudhir to increase that time by 6 minutes. How many weeks will it be before Mr. Sudhir are up to jogging 60 minutes per day?

 **REPRESENT THE ABOVE PROBLEM AS SHOWN ABOVE TO GET YOUR ANSWER**

**LAST DATE OF SUBMISSION OF PROJECT: 22nd November, 2019**