THIRD TERM E-LEARNING NOTE

SUBJECT: MATHEMATICS **CLASS: SS2**

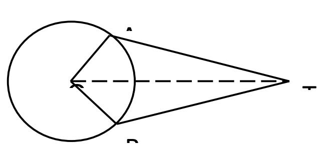
SCHEME OF WORK

WEEK	TOPIC
1	Circle Theorem: Tangent properties of circle; Angles in alternate segment; Two tangent from a circle at external point.
2	Trigonometry: Derivative of sine rule and cosine rule and their applications.
3	Bearing and Distances; Elevation and Depression.
4	Statistics: Class boundaries, class mark, and cumulative frequencies of grouped data, and histogram.
5	Statistics: Cumulative frequency curve (Ogive); Using ogive to calculate the median, quartile, percentile and decile.
6	Review of the First Half Term Work and Periodic Test.
7	Statistics: Mean, median, and mode of grouped data.
8	Probability: Introduction; use of dice, coins and playing cards.
9	Probability: Addition and multiplication rules of probability; Mutually exclusive, independent, and complementary events; Experiment with or without replacement.
10	Revision

REFERENCE BOOKS

1.New General Mathematics SSS2 by M.F. Macrae etal.
2. Essential Mathematics SSS2 by A.J.S. Oluwasanmi.
3. Exam Focus Mathematics.

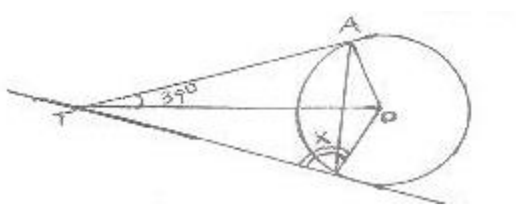
WEEK ONE
TOPIC:TANGENTS FROM AN EXTERNAL POINT
Theorem:
The tangents to a circle from an external point are equal.



Given: a point T outside a circle, centre O, TA and TB are tangents to the circle at A and B.
To prove: |TA| = |TB|
Construction: Join OA, OB and OT
In Δs OAT and OBT
OAT = OBT = 90^0 (radius tangent)
|OA| = |OB| (radii)
|OT| = |OT| (common side)
ΔOAT = ΔOBT (RHS)
|TA| = |TB|

Note that <AOT = <BOT and <ATO = <BTO hence the line joining the external point to the centre of the circle bisects the angle between the tangents and the angle between the radii drawn to the points of contact of the tangents.

Example:
1.In the figure below O is the centre of the circle and the TA and TB are tangents if <ATO = 39^0, calculate < TBX

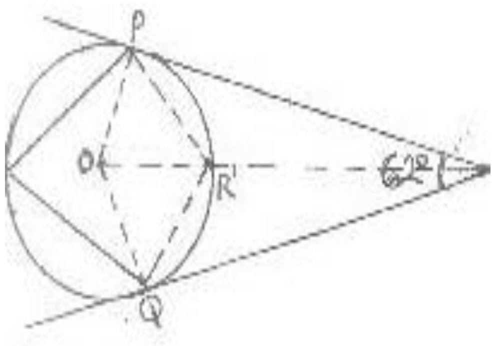


In ΔTAX
AXT = 90^0 (Symmetry)
TAX = 180 – (90^0 + 39^0) sum of angles of ()
180^0 – 129^0 = 51^0
TBX = 51^0 (symmetry)

OR

Δ ATB is an Isosceles triangle
|AT| =|BT| (tangents from external point)
<ATO = <BTO = 39^0 (symmetry)
< ATB = 2(39) = 78^0
<TAX = < TBX (base angle of Isos Δ)
2TBX = 180^0 – 78^0 (sum of angle in a
2 TBX = 102^0
$$TBX = \frac{102^0}{2}$$
TBX = 51^0

2.PQR are three points on a circle Centre O. The tangent at P and Q meet at T. If < PTQ = 62^0 calculate PRQ.



Solution
Join OP and OQ
In quadrilateral TQOP
<OQT = <OPT = 90^0 (radius $\underline{1}$ tangent)
POQ = $360^0 - (90^0 + 90^0 + 62^0)$ sum of angle in a quadrilateral)
POQ = $360^0 - 242^0$
POQ = 118^0
PRQ = $\frac{118^0}{2} = 59^0$ (2x angle at circumference = angle at centre)
PR^1QR is a cyclic quadrilateral
$R + R^1 = 180^0$ (opp. angles of a cyclic quadrilateral)
$R^1 = 180^0 - R$
$R^1 = 180^0 - 59^0$
R1 = 121^0
PRQ = 59^0 or 121^0

Evaluation
1. ABC are three points on a …