



TECHNICAL MATHEMATICS PROGRAMME FOR GRADE 11 LEARNERS FROM 18 MAY – 12 JUNE 2020

TOPIC: EUCLIDEAN GEOMETRY

MARKS IN EXAMINATION PAPER: 40 +/- 3 MARKS OF PAPER 2

MAIN RESOURCE(S) SUGGESTED: SASOL INZALO TEXTBOOK

ADDITIONAL RESOURCE(S): ANY APPROVED TEXTBOOK AND/OR STUDY GUIDE

MEDIA:

ECDOE WEBSITE.

DBE WEBSITE.

USE SASOL INZALO TEXTBOOK (PAGE 121 – 147)

Read and follow the explanation about the topic/ concept.

Follow and practice Examples indicated.

Then do Investigations/ Exercises on Learner Guide (LG) without looking at the solutions first.

Then do corrections.

Double or triple check if you are able to do Activities on your own without looking at the solutions until you master the concept(s).

NB: GO THROUGH PAGE 3 – 13 OF THIS DOCUMENT TO INVESTIGATE THEOREMS.

WEEK 1: 18 – 22 MAY 2020

DATE	EXAMPLES	EXERCISE	PAGE(S)
18/05	6.1	6.1	123
19/05	6.2 – 6.3	6.2	125
20/05	6.4	6.3	128
21/05		6.4	
22/05	Revise		

WEEK 2: 25 – 29 MAY 2020



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DATE	EXAMPLES	EXERCISES	PAGE(S)
25/05	Read Introduction to circles on page 128	6.4	128
26/05	Read Parts of a circle and basic terms on page 129 – 131	6.5	131
27/05	Read Chords and Radii on page 132	6.6	132
28/05	6.5	6.7	133
29/05	6.6	6.8 – 6.10	134 – 136

WEEK 3: 1 – 5 JUNE 2020

DATE	EXAMPLES	EXERCISES	PAGE(S)
1/06	Read Angles in a circle on page 136	6.11	136 – 137
2/06	6.7	6.12	138
3/06		6.13	139
4/06	6.8	6.14 – 6.15	140 – 141
5/06	6.9	6.16	142

WEEK 4: 8 – 12 JUNE 2020

DATE	EXAMPLES	EXERCISES	PAGE(S)
8/06	Read Cyclic Quadrilaterals	6.17	143
9/06	6.10	6.18	145
10/06	6.11 – 6.12	6.19	147
11/06	6.13 – 6.14	6.20	148
12/06	6.15 – 6.16	6.21 – 6.23	150 - 152

USE ANY PREVIOUS YEARS' QUESTION PAPERS TO REVISE EQUATIONS AND INEQUALITIES. USE ECDOE WEBSITE TO ACCESS PREVIOUS YEARS' QUESTION PAPERS IF YOU DO NOT HAVE HARD COPIES!

REMEMBER, PRACTICE MAKES PERFECT!

SO, PRACTICE, PRACTICE AND PRACTICE!

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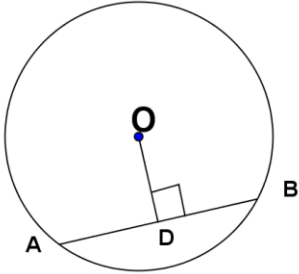
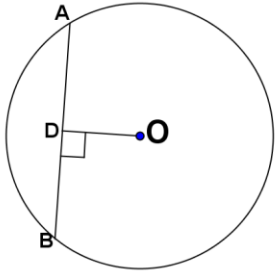
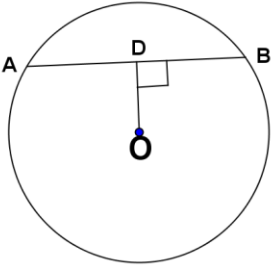
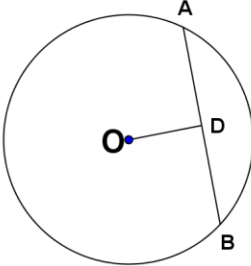
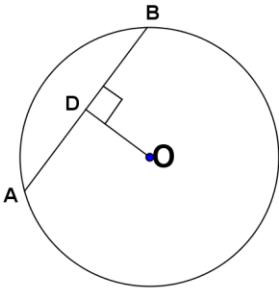


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Methodology: Investigations

2.5.1 Perpendicular line from the centre to the chord.

O is the centre of the circle

<p>1.</p>  <p>Measure the length of AD = Measure the length of BD = Compare the lengths:</p>	<p>2.</p>  <p>Measure the length of AD = Measure the length of BD = Compare the lengths:</p>
<p>3.</p>  <p>Measure the length of AD = Measure the length of BD = Compare the lengths:</p>	<p>4.</p>  <p>Measure the length of AD = Measure the length of BD = Compare the lengths:</p>
<p>5.</p>  <p>Measure the length of AD = Measure the length of BD = Compare the lengths:</p>	

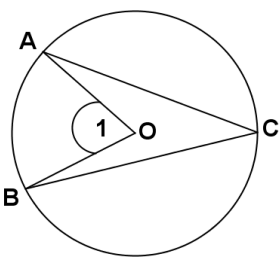
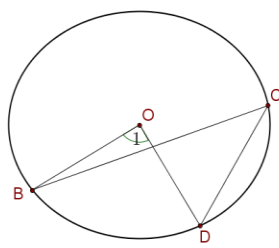
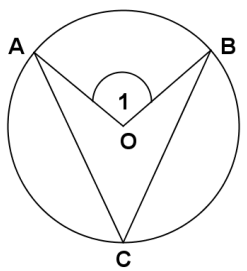
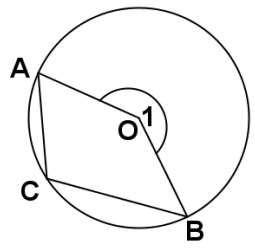
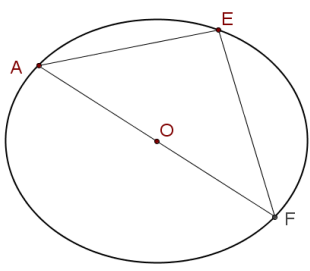
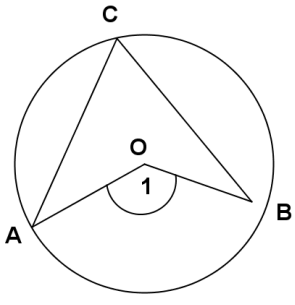
Comment on the figures above in terms of relationship between the perpendicular line from the centre and the chord (O is the centre of the circle).

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2.5.2 Angle at centre and angle at circumference



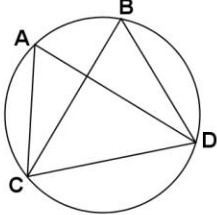
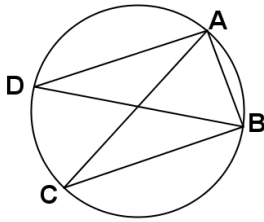
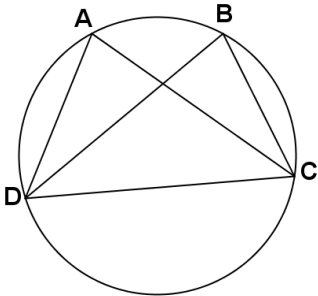
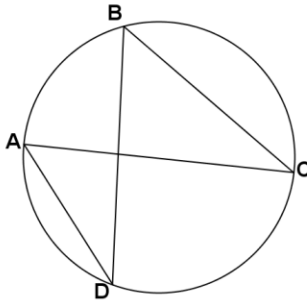
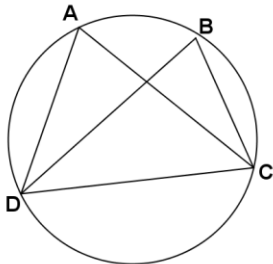
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<p>1.</p>  <p>Measure $\hat{O}_1 =$ Measure $\hat{C} =$ Compare the size of the two angles and comment:</p>	<p>2.</p>  <p>Measure $\hat{O}_1 =$ Measure $\hat{C} =$ Compare the size of the two angles and comment:</p>
<p>3.</p>  <p>Measure $\hat{O}_1 =$ Measure $\hat{C} =$ Compare the size of the two angles and comment:</p>	<p>4.</p>  <p>Measure $\hat{O}_1 =$ Measure $\hat{C} =$ Compare the size of the two angles and comment:</p>
<p>5.</p>  <p>Measure $\hat{O}_1 =$ Measure $\hat{C} =$ Compare the size of the two angles and comment:</p>	<p>6.</p>  <p>Measure $\hat{O}_1 =$ Measure $\hat{C} =$ Compare the size of the two angles and comment:</p>

List all diagram(s) that behave the same:

Based on the above investigation, what is the relationship between the angle at centre and angle at circumference?

2.5.3 Angles subtended by same chord

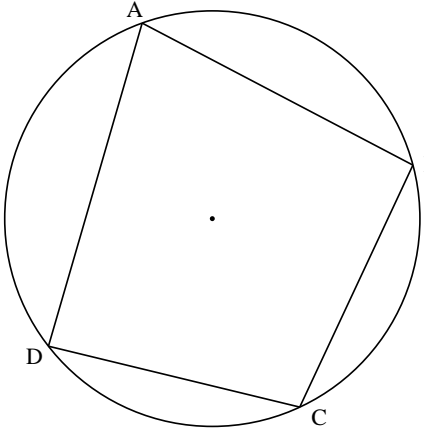
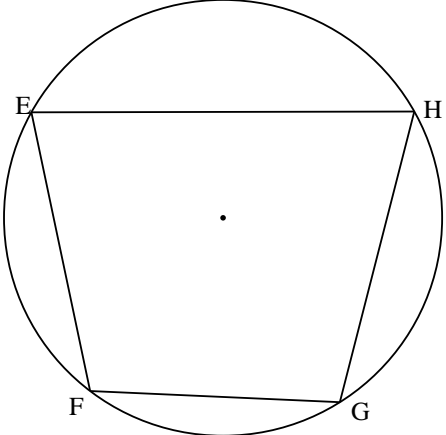
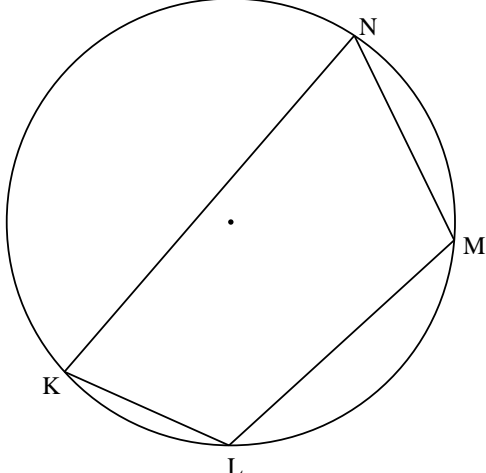
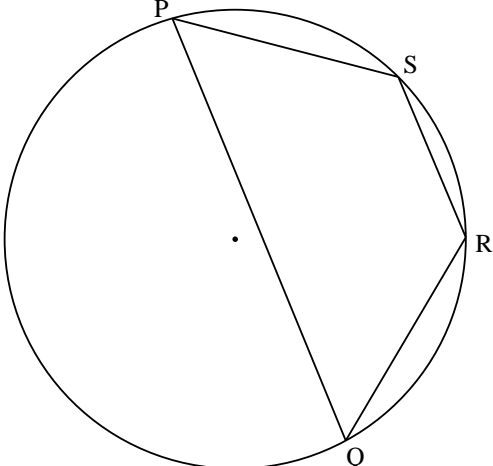
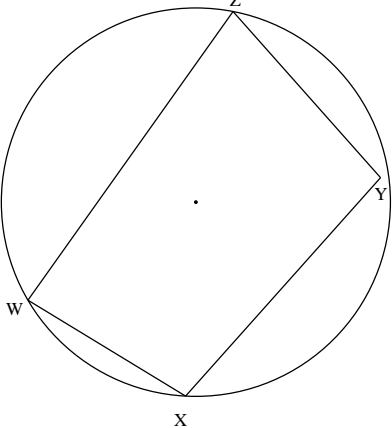
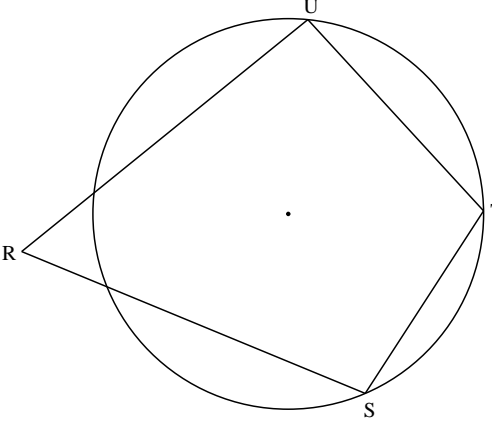
<p>1.</p>  <p>Measure \hat{A} = Measure \hat{B} = Compare the angles and comment :</p>	<p>2.</p>  <p>Measure \hat{D} = Measure \hat{C} = Compare the angles and comment :</p>
<p>3.</p>  <p>Measure \hat{A} = Measure \hat{B} = Compare the angles and comment :</p>	<p>4.</p>  <p>Measure \hat{A} = Measure \hat{B} = Compare the angles and comment :</p>
<p>5.</p> <p>Measure \hat{A} = Measure \hat{B} = Compare the angles and comment :</p> 	

List all figure(s) that give the same results:

List all figure(s) that give the different results and look at the diagram closer to see why it is different:

2.5.4 Sum of opposite angles of a cyclic quad

The following diagrams are drawn to scale. In each of the following diagram, measure each angle and determine the sum of opposite angles.

<p>1.</p> 	<p>2.</p> 
<p>3.</p> 	<p>4.</p> 
<p>5.</p> 	<p>6.</p> 

Conclusion:

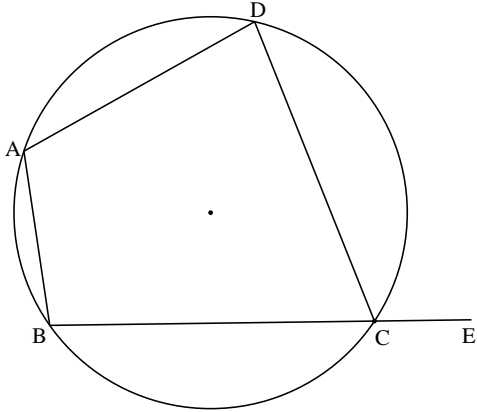
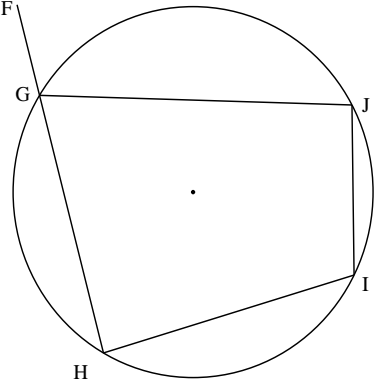
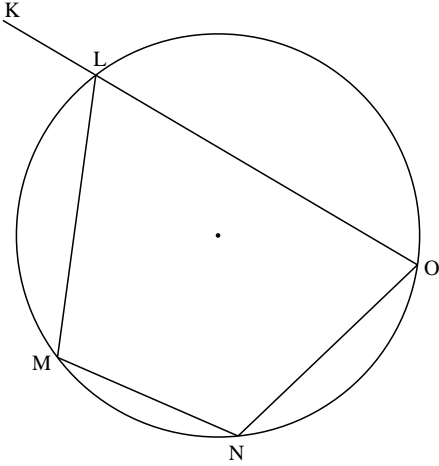
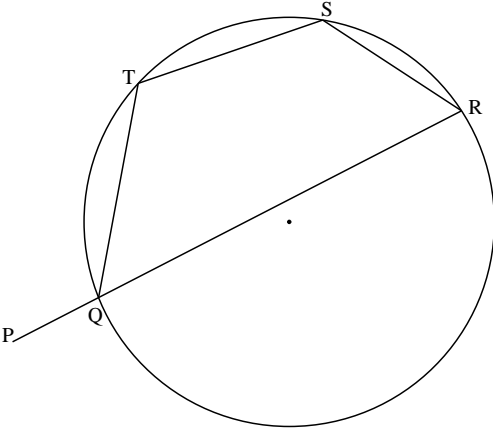
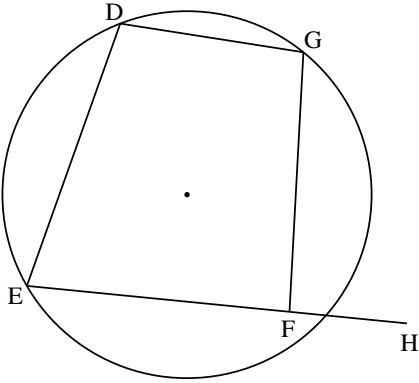
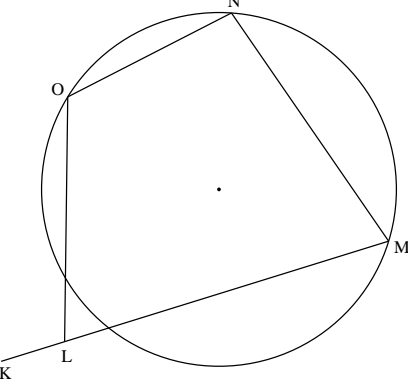
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2.5.5 Exterior angle of a cyclic quadrilateral and the interior opposite angle

The following diagrams are drawn to scale. In each of the following diagram, measure the exterior angle and the opposite interior angle. What is the relationship between the two angles.

 <p>1.</p>	 <p>2.</p>
 <p>3.</p>	 <p>4.</p>
 <p>5.</p>	 <p>6.</p>

Conclusion:

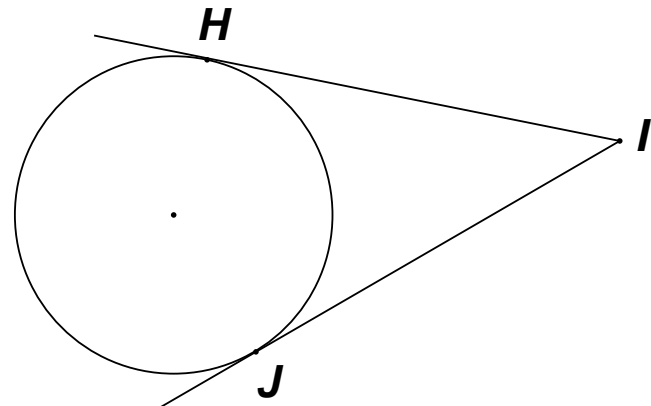
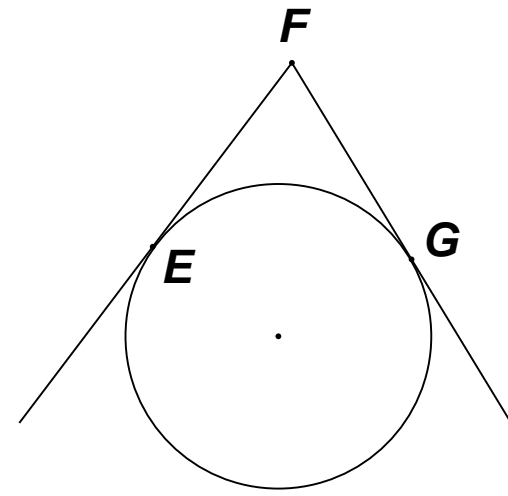
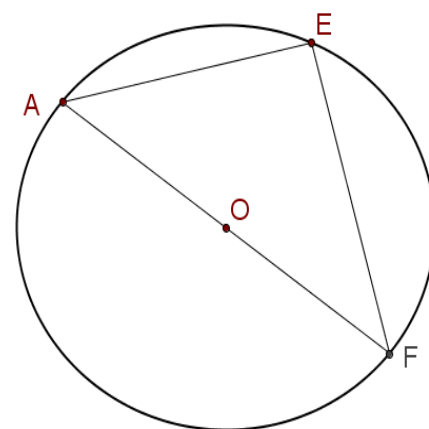
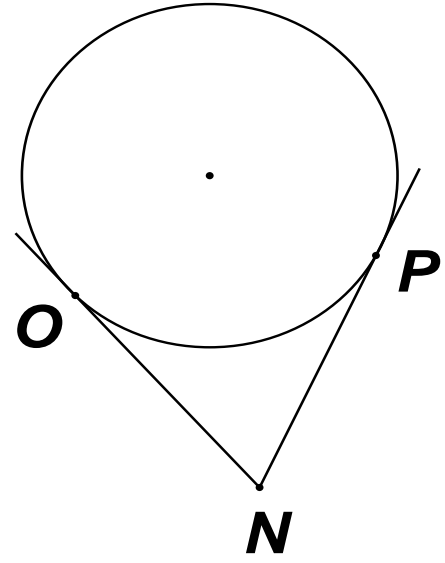
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2.5.6 Tangents drawn from the same point outside the circle

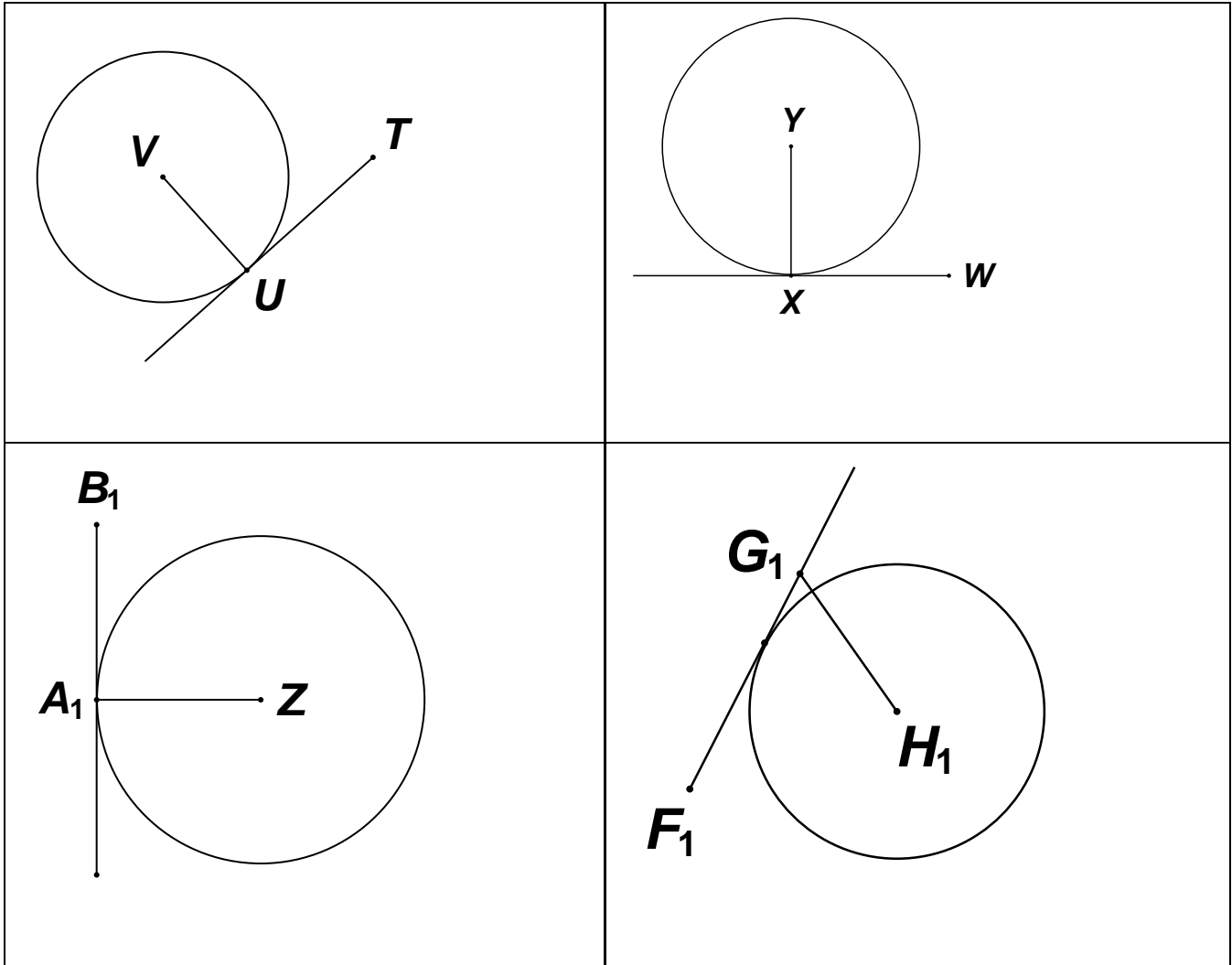
The following diagrams are drawn to scale. In each of the following diagram, measure the length of the tangent from the point outside the circle to the point it touches the circle. Compare the lengths.

<p>1.</p> 	<p>2.</p> 
<p>3.</p> 	<p>4.</p> 

Conclusion:

2.5.7 Angle between the radius and tangent

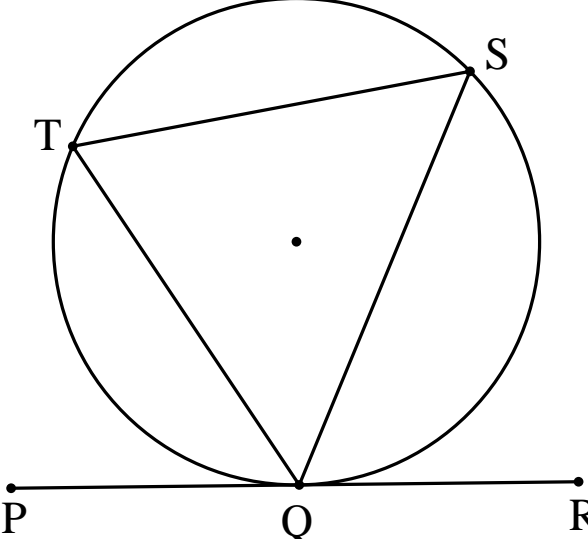
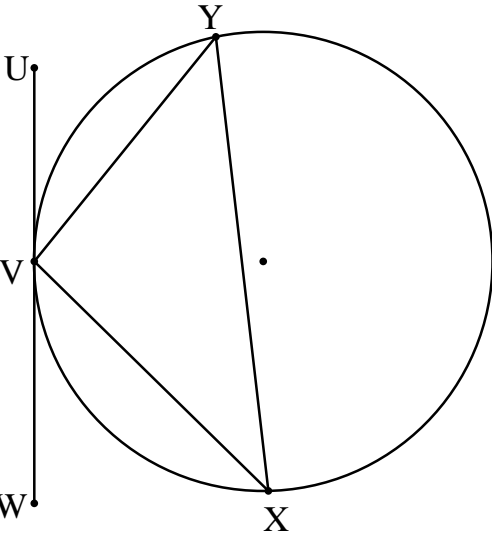
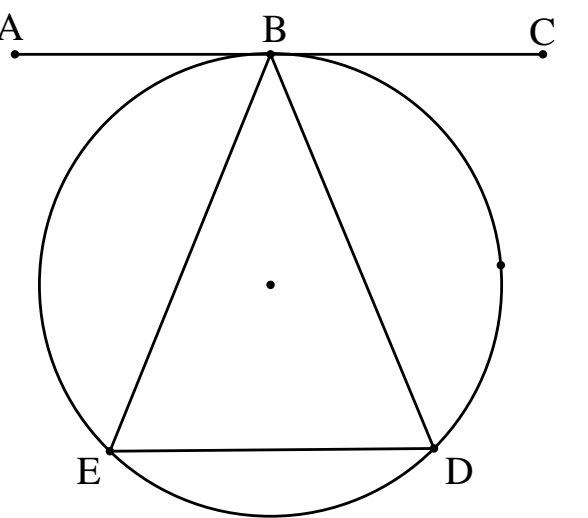
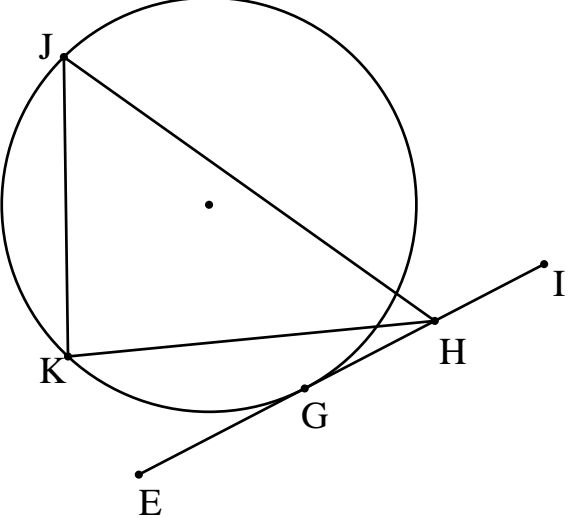
The following diagrams are drawn to scale. In each of the following diagram, measure the angle between the tangent and the radius and compare the sizes of different figures



Conclusion:

2.5.8 Tangent of the circle and the chord

The following diagrams are drawn to scale. In each of the following diagram, measure each angle and compare the angle between the tangent and the chord, and the angle subtended by the same chord on the alternate segment.

Conclusion:

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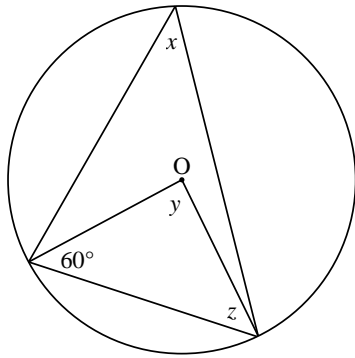


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2.5.9 Application of theorems (Activity 24)

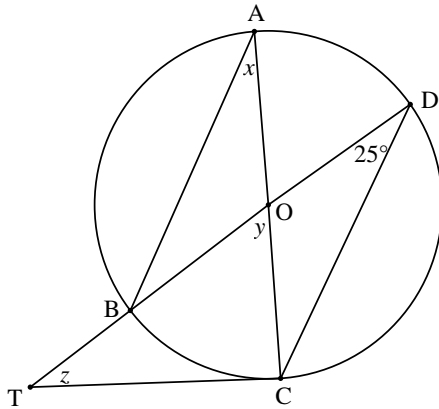
Question 1

O is the centre of the circle. Determine the values of x , y and z .



Question 2

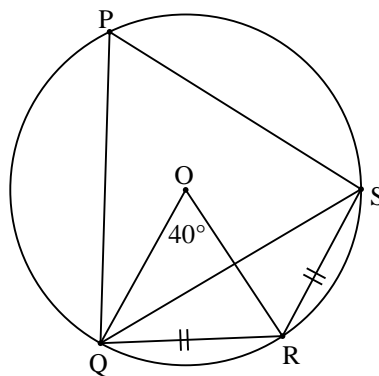
O is the centre of the circle. TC the tangent to the circle meets DB produced at T. AC and DB are diameters. $\hat{D} = 25^\circ$. Determine the values of x , y and z



Question 3

PQRS is a cyclic quadrilateral of circle centre O. $QR = RS$ and $\hat{BOC} = 40^\circ$. Determine with reasons the values of:

- a) \hat{QSR}
- b) \hat{QPS}



Question 4 Building blocks for growth.

AB and AC are tangents to the circle at B and C. $BG = GC$. BC produced intersect the line through E parallel to GC at D. BG produced intersect AD at E. $\hat{ABE} = x$



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In the diagram alongside, arc RS is the span of a bridge which forms an arc of a circle. $RS = 48$ m and the maximum height of the bridge is 12 m.

Calculate the radius RO of the circle of which RTS is an arc, if $VO = x$.

