

XT - MATHS Grade 12

Name: _____

Class: _____

Subject: Euclidean Geometry: Circles

Date: _____

Total Marks: 67

Question 1: True/False [2]

Mathematics - LO 3 : AS 2

Any four general points in the Cartesian plane are given.
No more than any two of these points lie in a straight line.
The four points are joined by line segments to form a quadrilateral.
Any quadrilateral thus formed will be a cyclic quadrilateral.

TRUE

FALSE

Question 2 refers to the following graphic

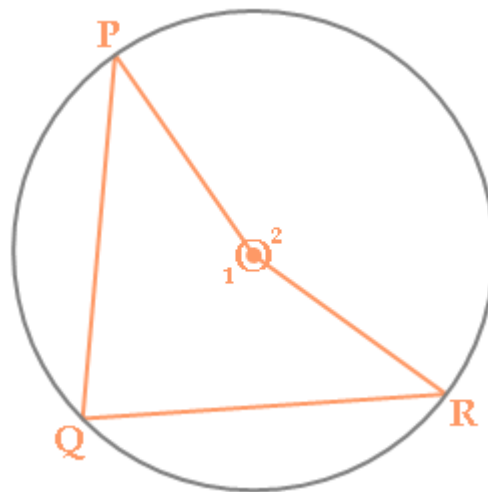


Figure 1: 1012

Question 2: True/False [7]

Mathematics - LO 3 : AS 2

In this figure: O is the centre of the circle.

$$\hat{O}_2 = 176^\circ$$

$$\hat{P} = y$$

$$\hat{R} = 3y$$

The size of \hat{R} will then be equal to 68° .

TRUE

FALSE

Question 3 refers to the following graphic

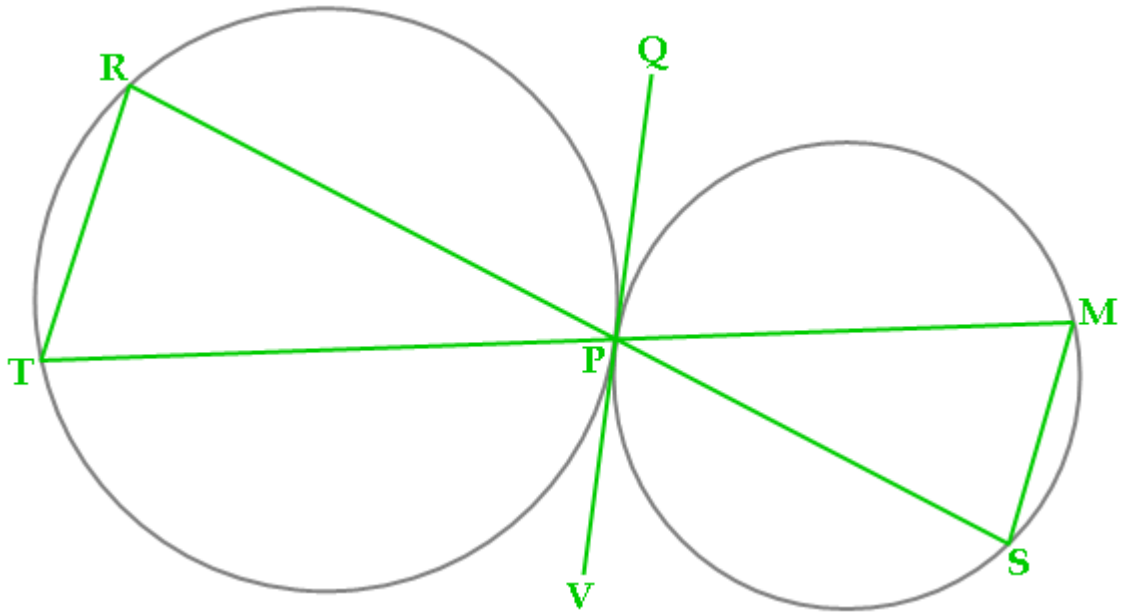


Figure 2: 1051

Question 3: Multiple Choice [6]

Mathematics - LO 3 : AS 2

In this sketch, QP is a common tangent to the two escribed circles.

Which of the following is necessarily true?

- A** $TR \parallel QP$
- B** $SM \parallel QP$
- C** $TR \parallel SM$
- D** All of the above.

Question 4 refers to the following graphic

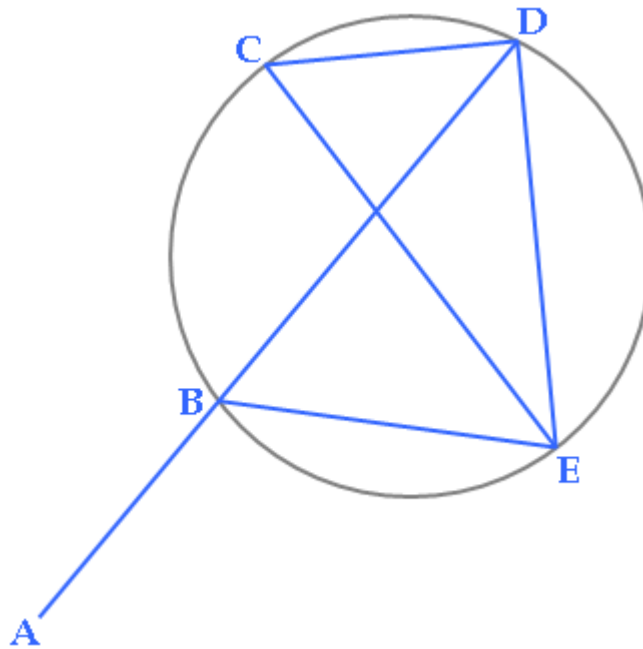


Figure 3: 1007

Question 4: Multiple Choice [5]

Mathematics - LO 3 : AS 2

In this figure: $CE = DE$

$$\hat{CED} = 28^\circ$$

Then:

$$\hat{ABE} = \dots$$

- A** 28°
- B** 152°
- C** 76°
- D** 104°

Question 5 refers to the following graphic

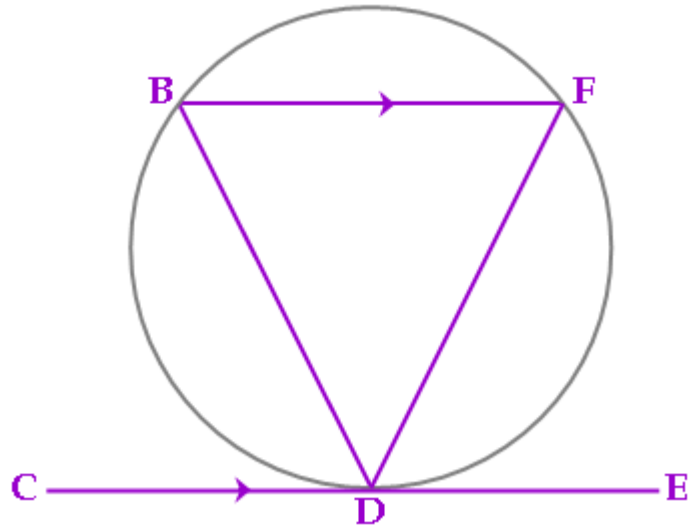


Figure 4: 1009

Question 5: True/False [4]

Mathematics - LO 3 : AS 2

In this figure: CDE is a tangent to the circle.

$BF \parallel CDE$

$\triangle BDF$ will then be an isosceles triangle.

TRUE
 FALSE

Question 6 refers to the following graphic

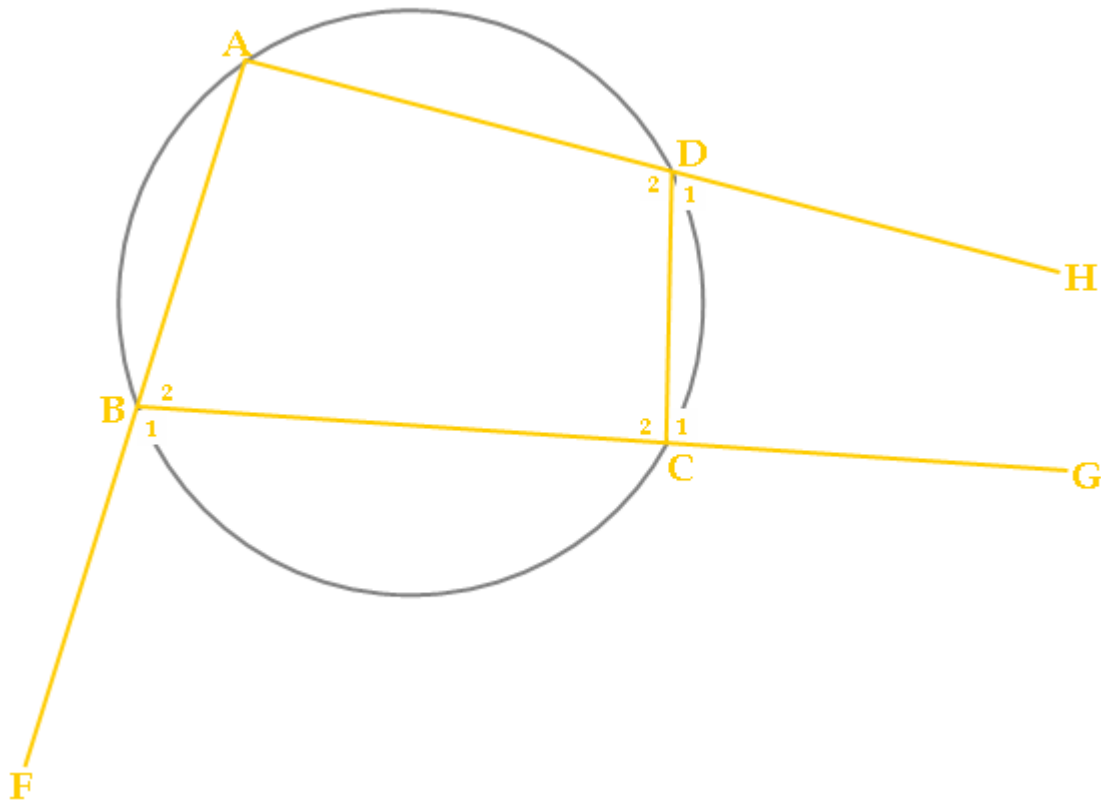


Figure 5: 1075

Question 6: Multiple Choice [2]

In this sketch, $\hat{A} = \dots$

A \hat{C}_2

B \hat{B}_1

C \hat{D}_1

D \hat{C}_1

Question 7 refers to the following graphic

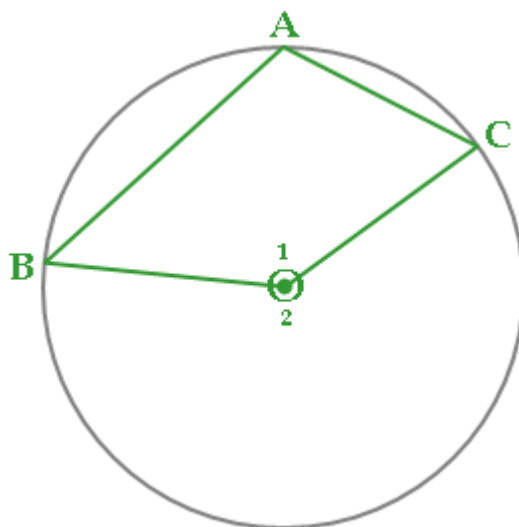


Figure 6: 1010

Question 7: Socrates [6]

In this sketch: $\hat{A} = (x + 40^\circ)$

$$\hat{O}_1 = 3x$$

Therefore, the magnitude of \hat{A} is ...

Type in just the value of the degree

Question 8 refers to the following graphic

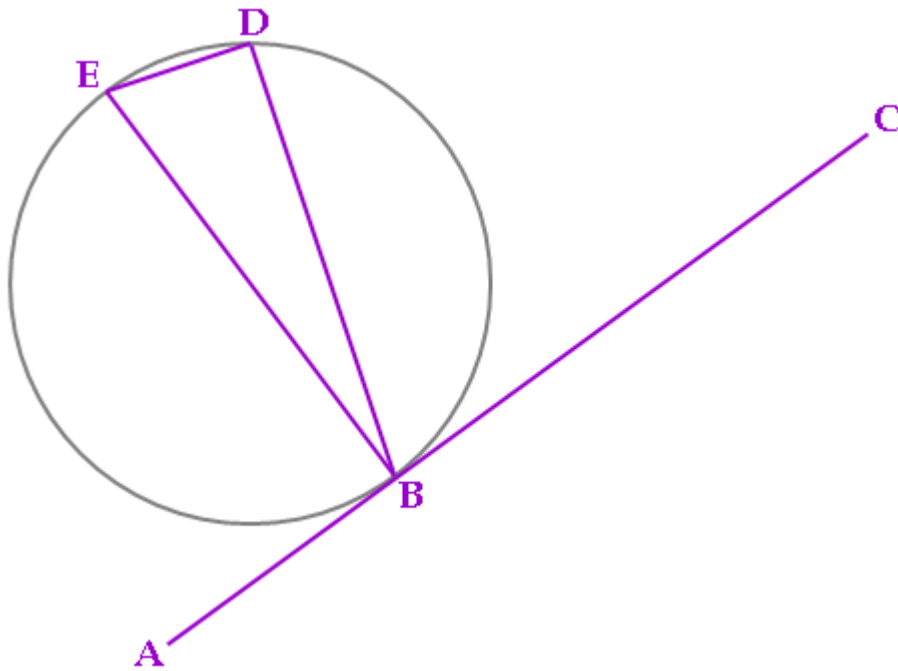


Figure 7: 1004

Question 8: Socrates [2]

Mathematics - LO 3 : AS 2

In this figure: EB is a diameter of the circle.

ABC is a tangent to the circle.

$$\widehat{DBC} = 72^\circ$$

The size of \widehat{E} will be equal to ...

Question 9 refers to the following graphic

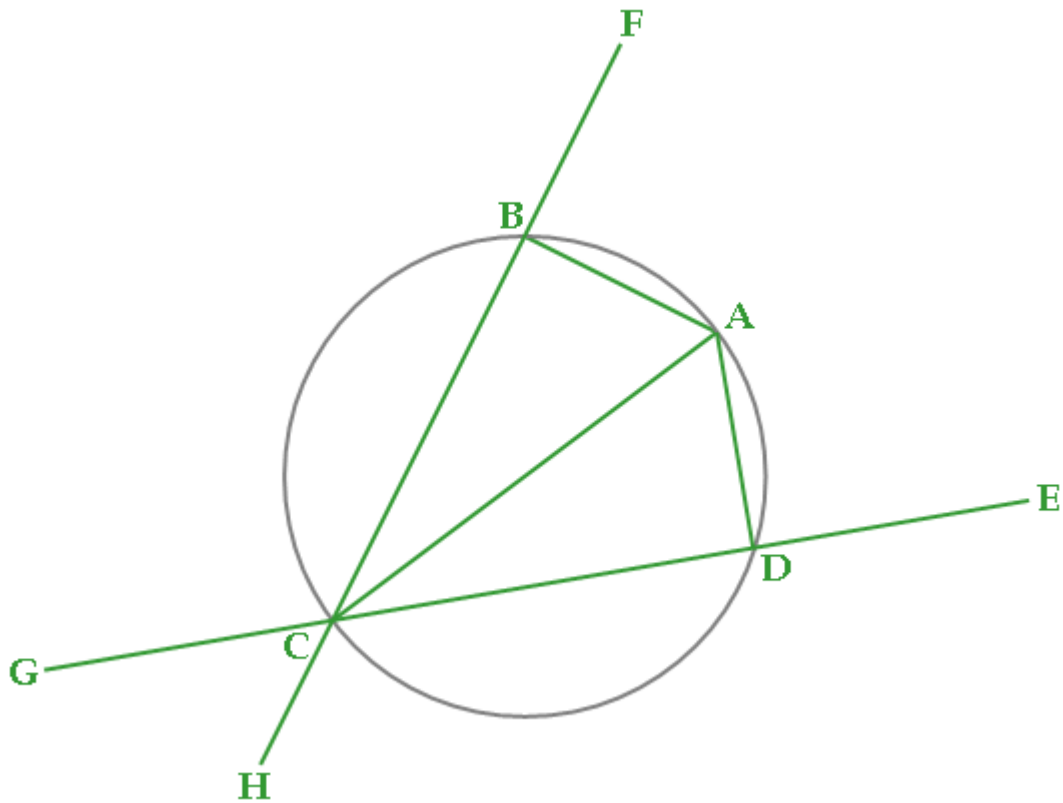


Figure 8: 1014

Question 9: Socrates [2]

Mathematics - LO 3 : AS 2

In this sketch, \hat{FBA} is an exterior angle of the cyclic quadrilateral $ABCD$.

Therefore:

Angle $FBA =$ Angle ...

Type only the letters naming the angle.

Question 10 refers to the following graphic

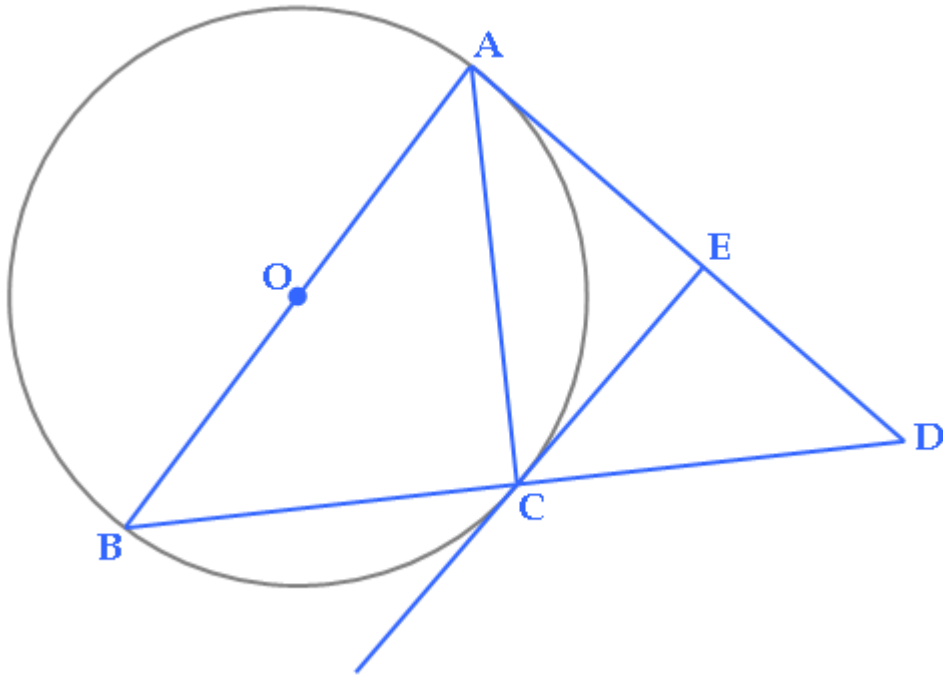


Figure 9: 1022

Question 10: Cloze [7]

Mathematics - LO 3 : AS 2

In this figure: O is the centre of the circle.

AB is a diameter of the circle.

AED and CE are tangents to the circle.

$$\hat{D} = 57^\circ$$

Then:

$\hat{CAD} =$ (Ans. 1);

$\triangle AEC$ is (Ans. 2);

$\hat{CED} =$ (Ans. 3).

1	
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2	
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3	
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▶ 57°

▶ 33°

▶ 66°

▶ 53°

▶ a right-angled triangle

▶ an isosceles triangle

Question 11 refers to the following graphic

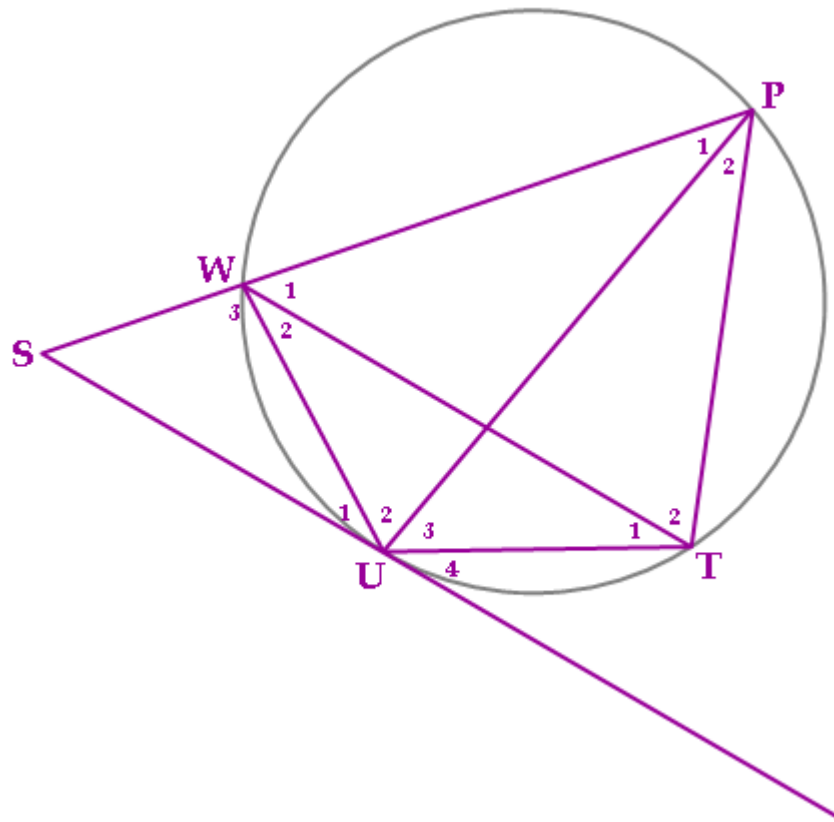


Figure 10: 1057

Question 11: Cloze [8]

Mathematics - LO 3 : AS 2

In this sketch: $WT \parallel SU$

WU and UT are equal chords.

Complete the following proof that SU is a tangent to the circle:

$\hat{P}_1 = \hat{P}_2$ [reason: (Ans. 1)]

$\hat{P}_2 = \hat{W}_2$ [reason: (Ans. 2)]

$\therefore SU$ is a tangent. [reason: (Ans. 3)]

1	
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2	
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3	
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- | | | |
|-----------------------------------|---------------------------------------|---------------------------------------|
| ▶ $WU = UT$ | ▶ UT subtends equal \angle 's | ▶ alt. \angle 's; $WT \parallel SU$ |
| ▶ tangent-chord theorem | ▶ converse of tangent-chord theorem | ▶ PU is a diameter |
| ▶ WU subtends equal \angle 's | ▶ $\triangle PWU \cong \triangle PTU$ | |

Question 12 refers to the following graphic

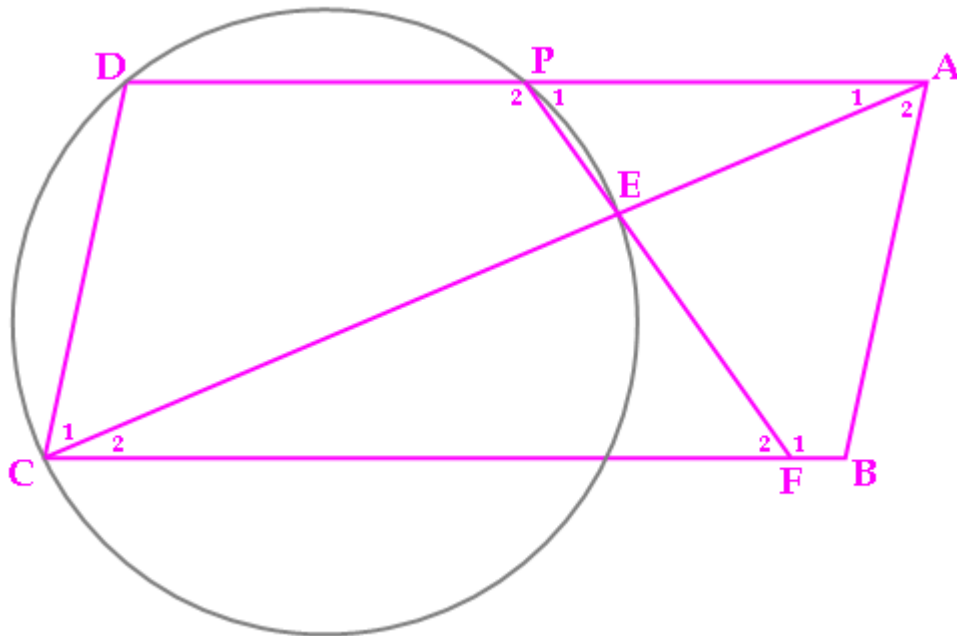


Figure 11: 1067

Question 12: Cloze [6]

Mathematics - LO 3 : AS 2

In this sketch: AEC is a diagonal of parallelogram $ABCD$.

PEF is a straight line.

$$\hat{C}_1 = x$$

Then:

$$\hat{P}_1 = \hat{C}_1 = x \quad [\text{reason: (Ans. 1)}]$$

$$\hat{A}_2 = \hat{C}_1 = x \quad [\text{reason: (Ans. 2)}]$$

$$\hat{P}_1 = (\text{Ans. 3}) = x \quad [\text{reason: alt. } \angle\text{'s; } AD \parallel BC]$$

$\therefore ABFE$ is a cyclic quadrilateral. [reason: (Ans. 4)]

1	
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2	
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3	
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4	
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▶ ext. \angle equal to opp. int. \angle of cyclic quadrilateral $DCEP$

▶ alt. \angle 's; $CD \parallel AB$

▶ corresp. \angle 's; $CD \parallel AB$

▶ \hat{F}_2

▶ \hat{A}_1

▶ \hat{F}_1

▶ ext. \angle of $ABFE$ is equal to opp. int. \angle of $ABFE$

▶ one chord subtends equal \angle 's

▶ opp. int. \angle 's of $ABFE$ are suppl.

Question 13 refers to the following graphic

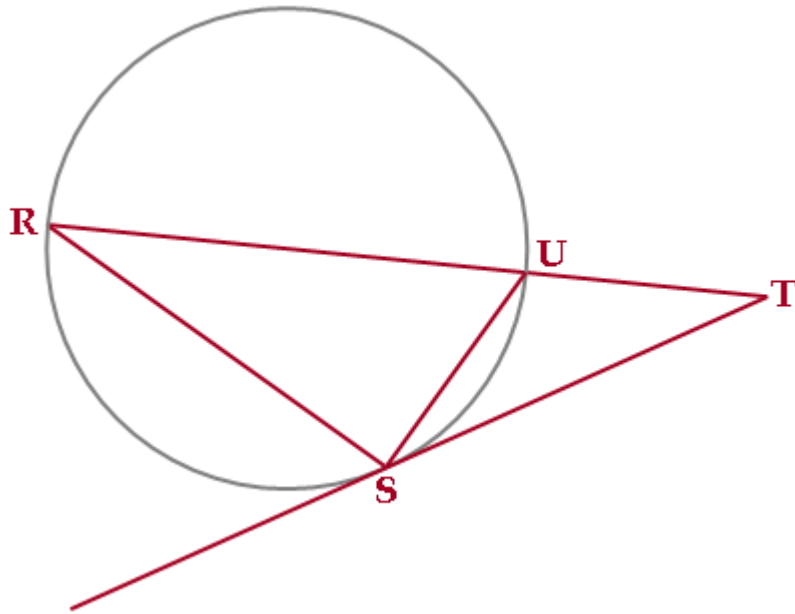


Figure 12: 1013

Question 13: True/False [5]

Mathematics - LO 3 : AS 2

In this figure: RU is the diameter of the circle.

ST is a tangent to the circle.

$$\hat{R} = 36^\circ$$

The size of \hat{T} will then be equal to 18° .

TRUE

FALSE

Question 14 refers to the following graphic

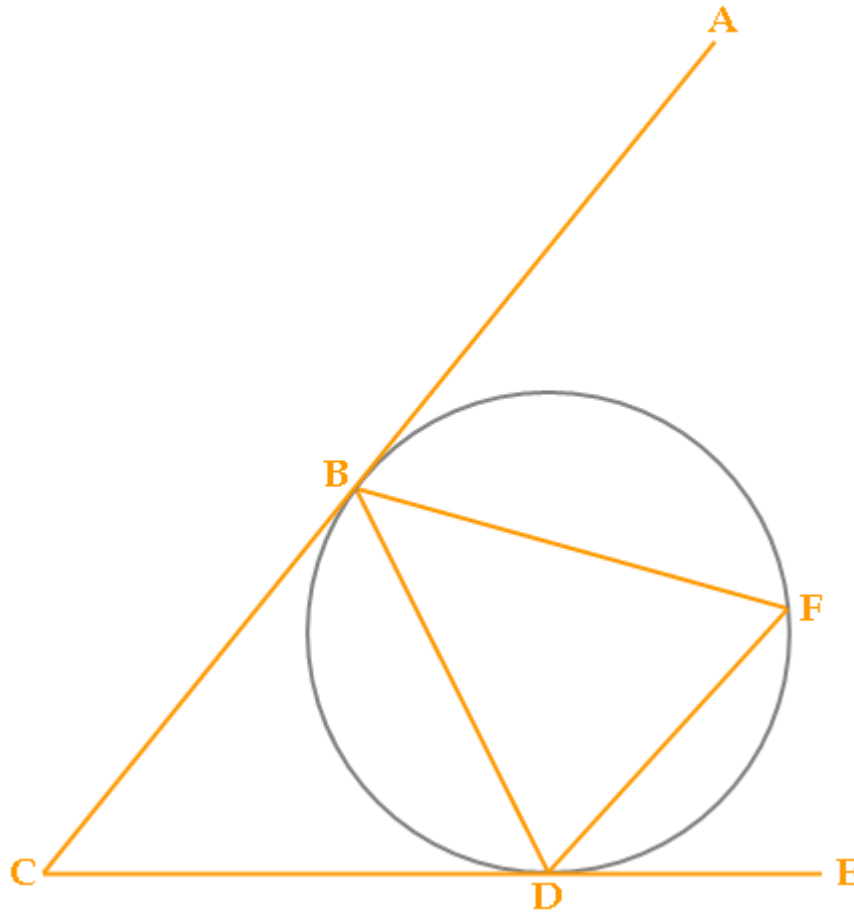


Figure 13: 1019

Question 14: Multiple Choice [4]

Mathematics - LO 3 : AS 2

In this figure: \widehat{CBA} and \widehat{CDE} are tangents to the circle.

If $\widehat{C} = 42^\circ$, then $\widehat{F} = \dots$

- A 42°
- B 69°
- C 159°
- D 138°

Question 15: Socrates [1]

Mathematics - LO 3 : AS 2

If the radius of a circle bisects a chord of that circle, then the radius is ... to the chord.
Type in just the correct word.