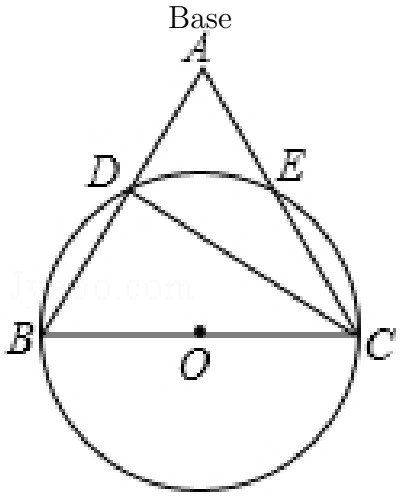
RoMMath Origin Items with Adversarial Variants

geo1021-origin

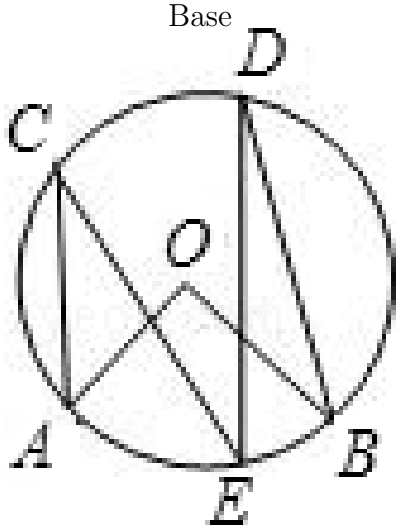
As shown in the figure, given that the equilateral triangle △ABC has BC as the diameter of the circle intersecting AB at D and AC at E, if BC=2, then what is the length of CD?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.



geo1025-origin

As shown in the figure, points A, E, and B are on circle O. The inscribed angle ∠ACE is 25°, and ∠BDE is 15°. What is the measure of the central angle ∠AOB?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

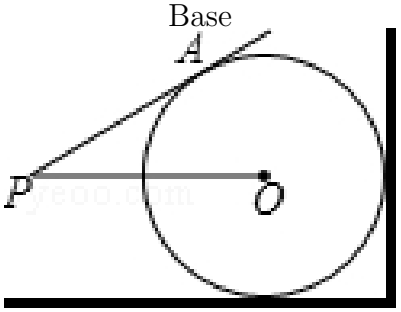
Base



geo1045-origin

As shown in the figure, PA is the tangent to circle O at point A, PO=2, and ∠APO=30°. What is the length of PA?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

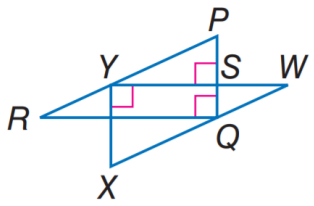
Base



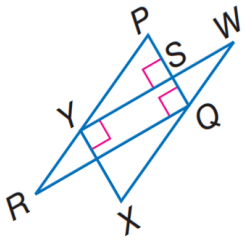
geo137-origin

If P R \parallel W X, W X = 10, X Y = 6, W Y = 8, R Y = 5, and P S = 3, find P Y.
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

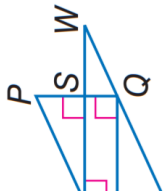
Base



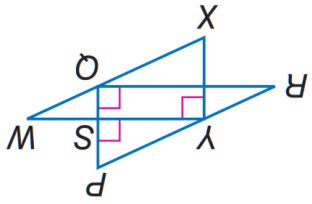
geo137-origin_rot30



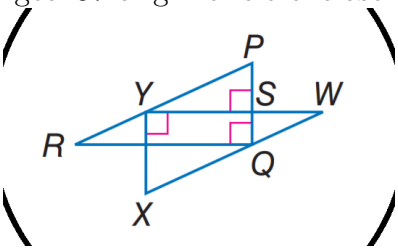
geo137-origin_rot90



geo137-origin_rot180



geo137-origin_circle_enclose



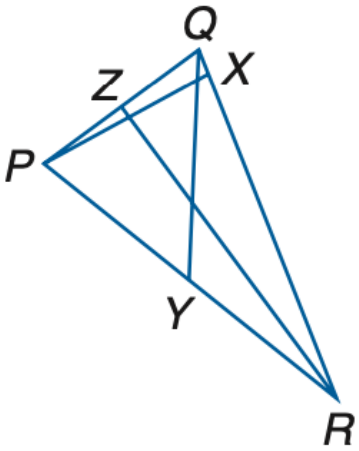
geo231-origin

In \triangle P Q R, Z Q = 3 a - 11, Z P = a + 5, P Y = 2 c - 1, Y R = 4 c - 11, m \angle P R Z = 4 b - 17, m \angle Z R Q = 3 b - 4, m \angle Q Y R = 7 b + 6, and m \angle P X R = 2 a + 10. If Q Y is a perpendicular bisector of P R, find b.

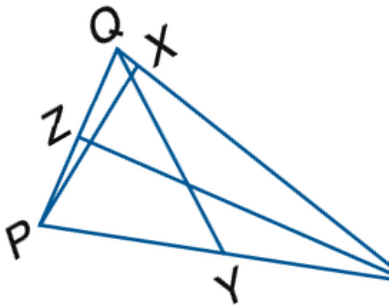
Instructions:

- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

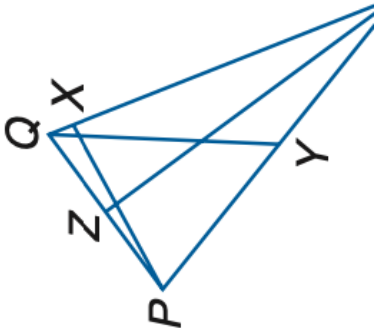
Base



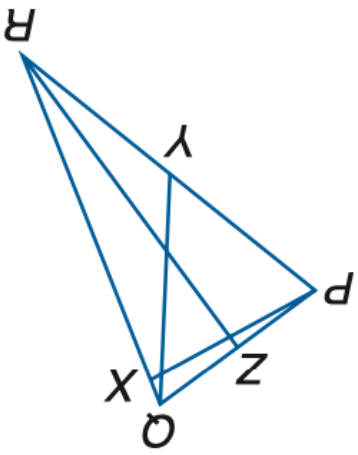
geo231-origin_rot30



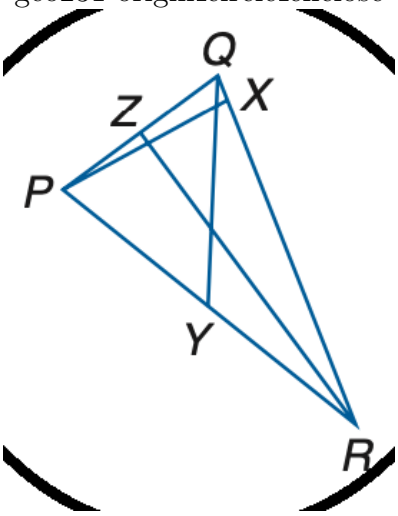
geo231-origin_rot90



geo231-origin_rot180



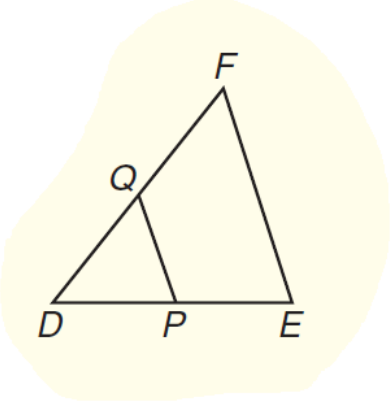
geo231-origin_circle_enclose



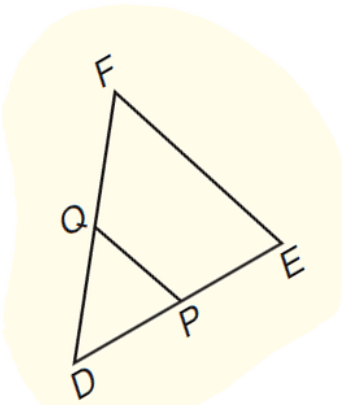
geo233-origin

In \triangle D E F, P is the midpoint of D E, and Q is the midpoint of side D F. If E F = 3 x + 4 and P Q = 20, what is the value of x?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

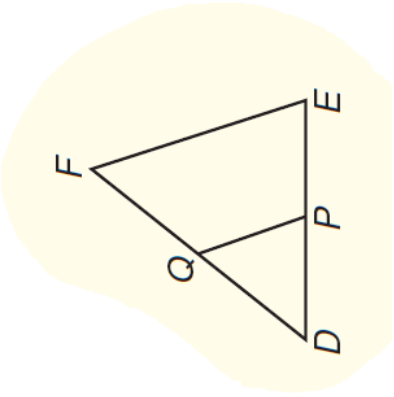
Base



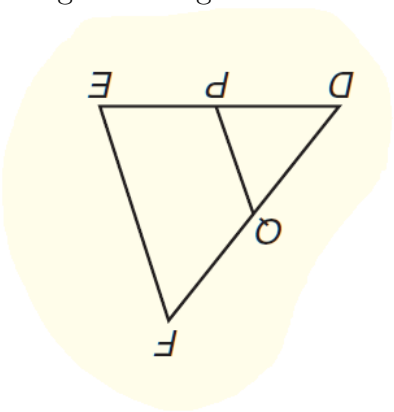
geo233-origin_rot30



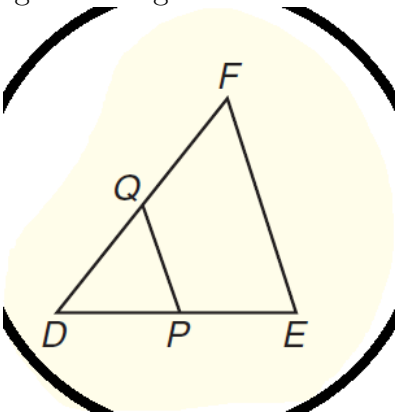
geo233-origin_rot90



geo233-origin_rot180



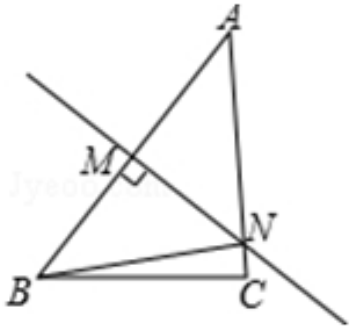
geo233-origin_circle_enclose



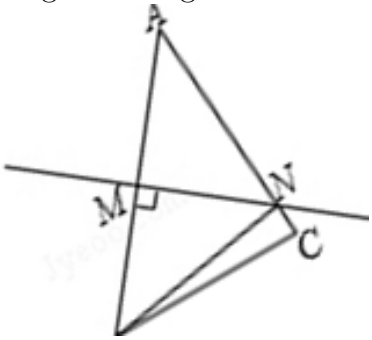
geo313-origin

As shown in the figure, in △ABC, AC = 4 cm, the perpendicular bisector of segment AB intersects AC at point N, and the perimeter of △BCN is 7 cm. What is the length of BC?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

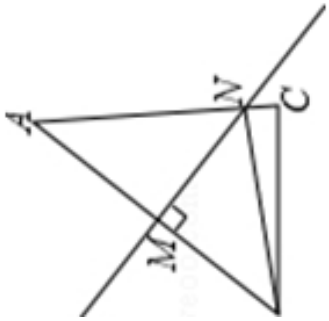
Base



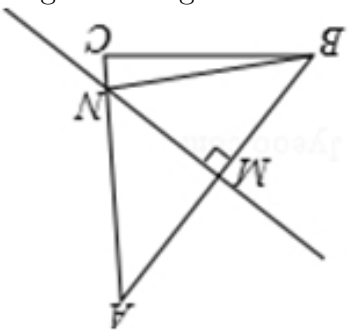
geo313-origin_rot30



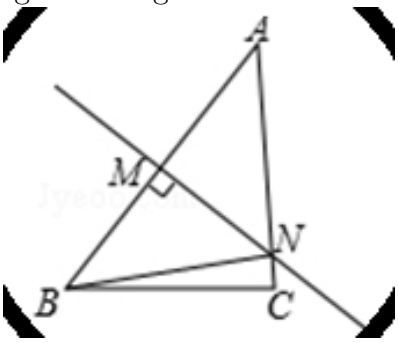
geo313-origin_rot90



geo313-origin_rot180



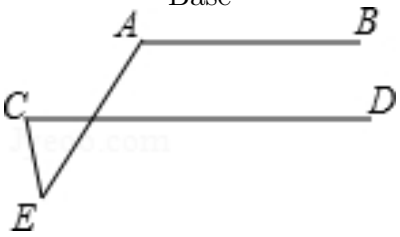
geo313-origin_circle_enclose



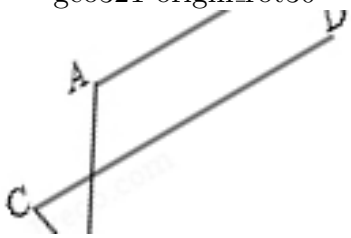
geo321-origin

As shown in the figure, AB ∥ CD, ∠E = 40°, ∠A = 110°, then the degree of ∠C is ()
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

Base

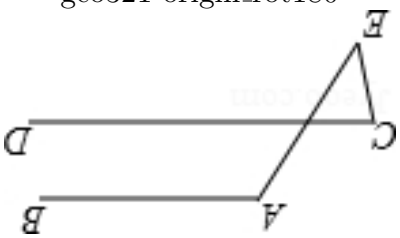


geo321-origin_rot30

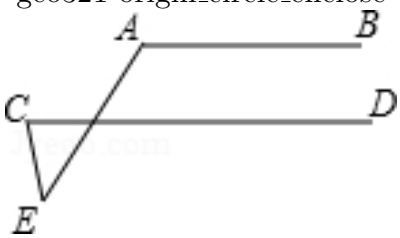


geo321-origin_rot90

geo321-origin_rot180



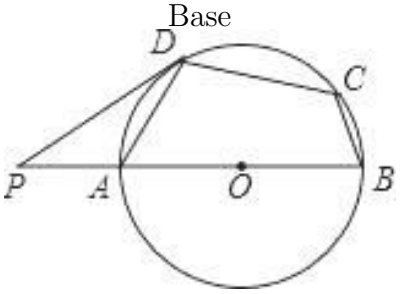
geo321-origin_circle_enclose



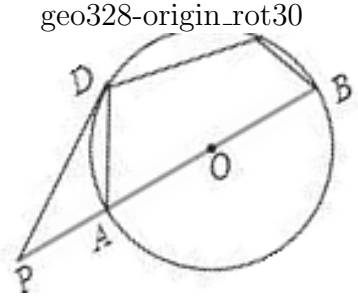
geo328-origin

As shown in the figure, AB is the diameter of circle O, and quadrilateral ABCD is an inscribed quadrilateral of circle O. Point P is on the extension of BA, and PD is tangent to circle O at point D. If ∠BCD = 120°, then what is the measure of ∠APD?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

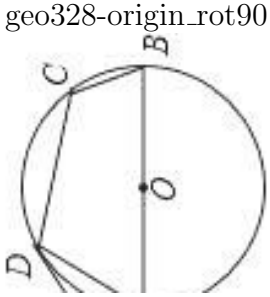
Base



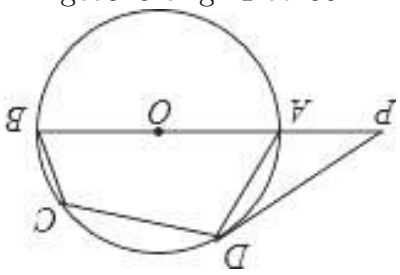
geo328-origin_rot30



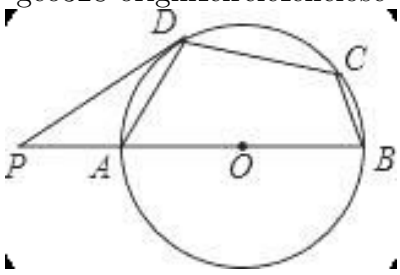
geo328-origin_rot90



geo328-origin_rot180



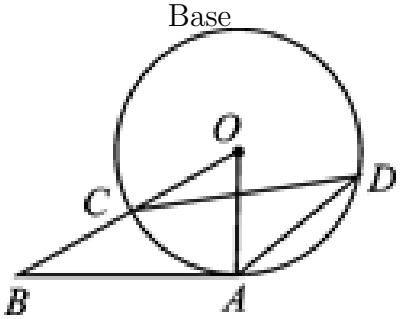
geo328-origin_circle_enclose



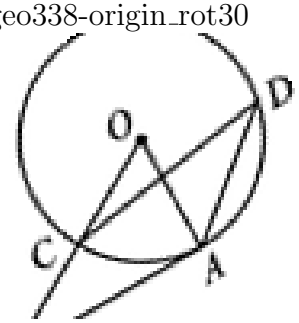
geo338-origin

As shown in the figure, AB is tangent to circle O at point A, BO intersects circle O at point C, and point D is on the major arc AC. Given that ∠CDA = 27°, what is the measure of ∠B?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

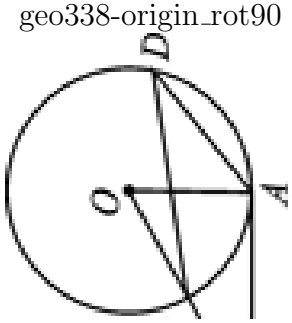
Base



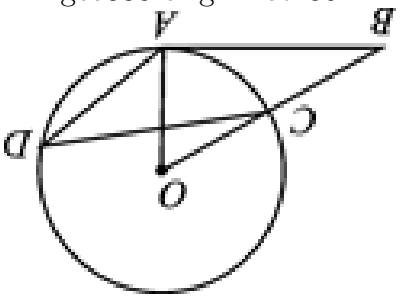
geo338-origin_rot30



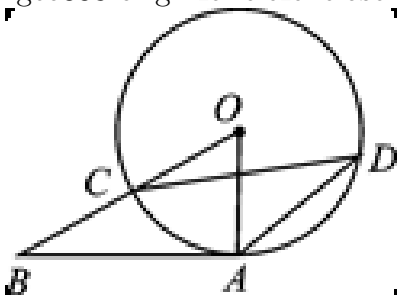
geo338-origin_rot90



geo338-origin_rot180



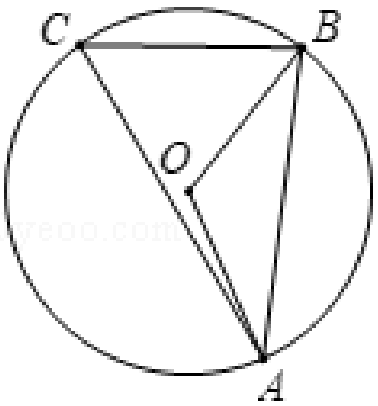
geo338-origin_circle_enclose



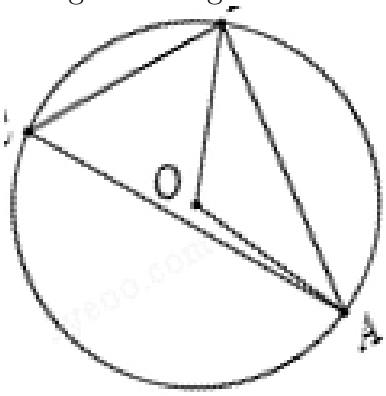
geo373-origin

As shown in the figure, the radius of circle O is 5, the chord AB = $5\sqrt{3}$, and C is a point on the circle. What is the measure of ∠ACB?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

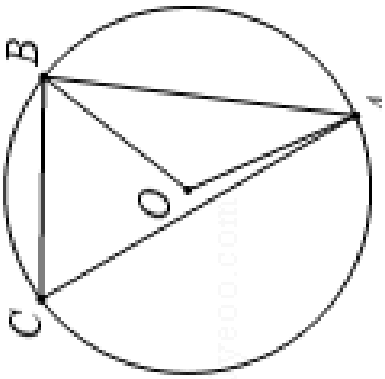
Base



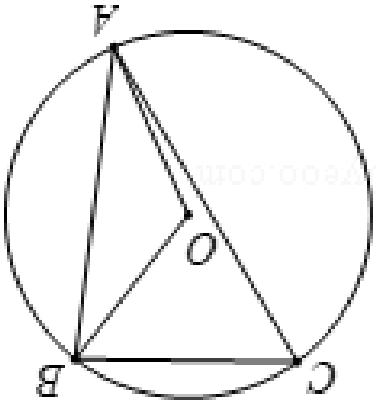
geo373-origin_rot30



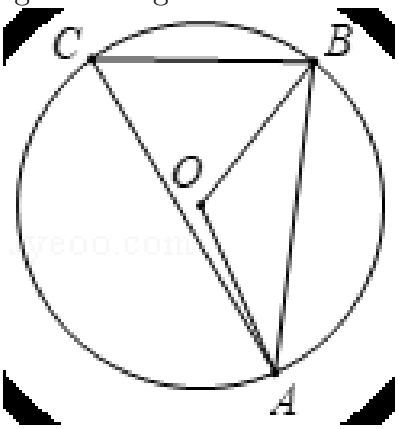
geo373-origin_rot90



geo373-origin_rot180



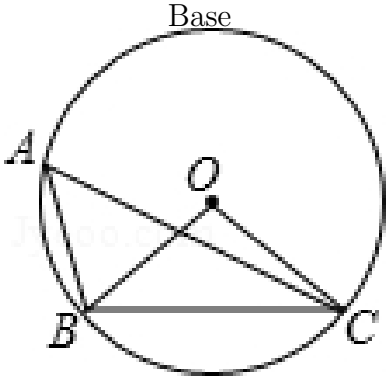
geo373-origin_circle_enclose



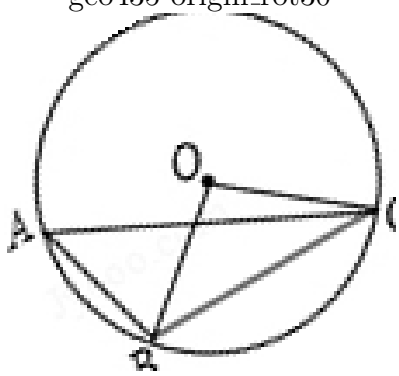
geo435-origin

As shown in the figure, point A is on circle O, and BC is a chord of circle O. If ∠A = 50°, what is the measure of ∠OBC?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

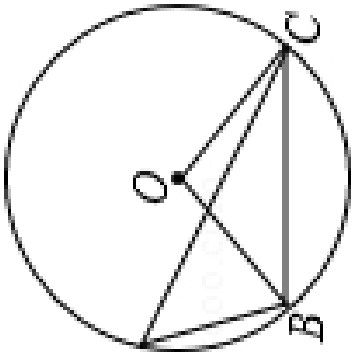
Base



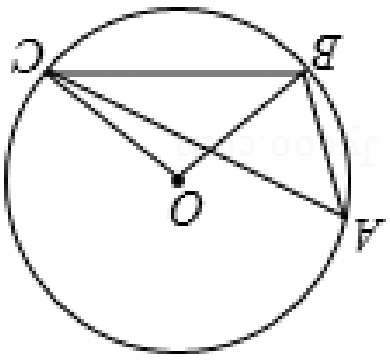
geo435-origin_rot30



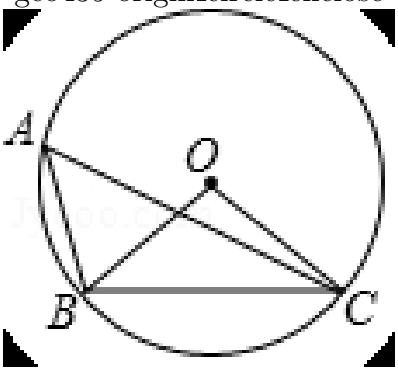
geo435-origin_rot90



geo435-origin_rot180



geo435-origin_circle_enclose



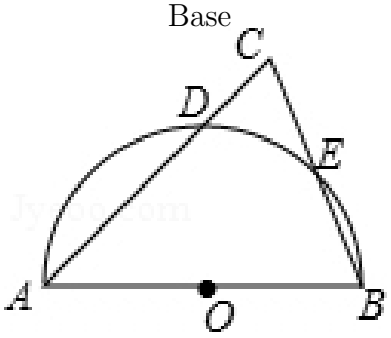
geo485-origin

As shown in the figure, AB is the diameter of the semicircle ⊙O. The sides AC and BC of △ABC intersect the semicircle at D and E respectively, and E is the midpoint of BC. Given that ∠BAC = 50°, find ∠C.

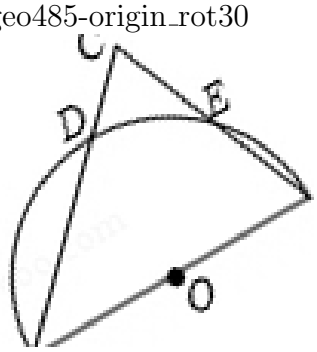
Instructions:

- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

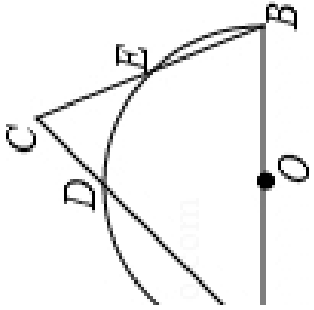
Base



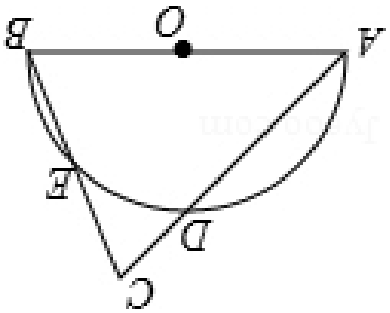
geo485-origin_rot30



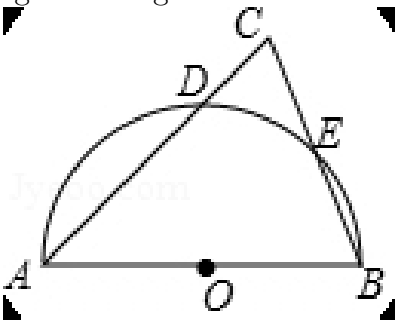
geo485-origin_rot90



geo485-origin_rot180



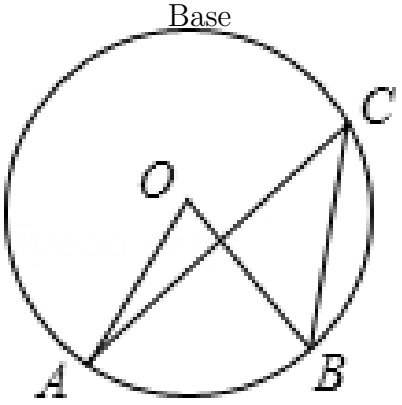
geo485-origin_circle_enclose



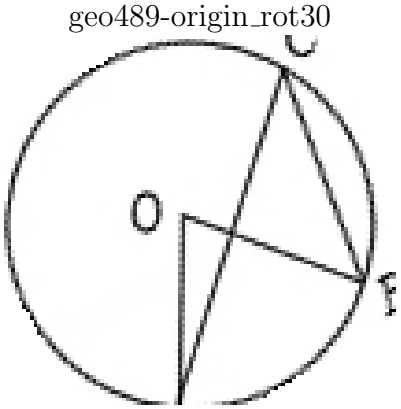
geo489-origin

As shown in the figure, the central angle ∠AOB = 60°, then the measure of the inscribed angle ∠ACB is ()
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

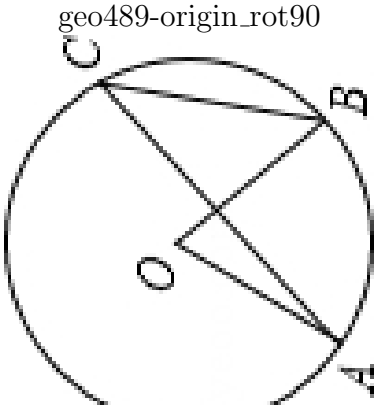
Base



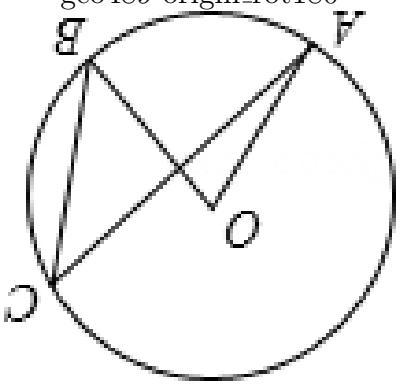
geo489-origin_rot30



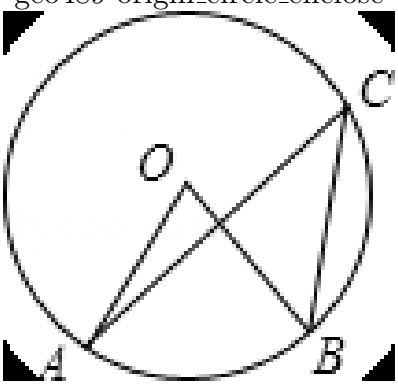
geo489-origin_rot90



geo489-origin_rot180



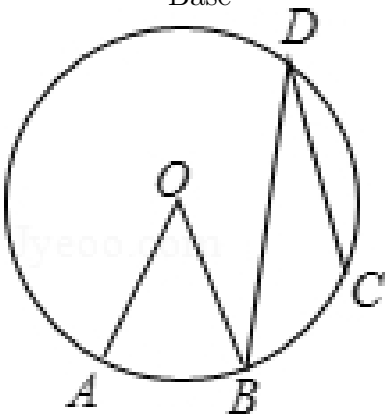
geo489-origin_circle_enclose



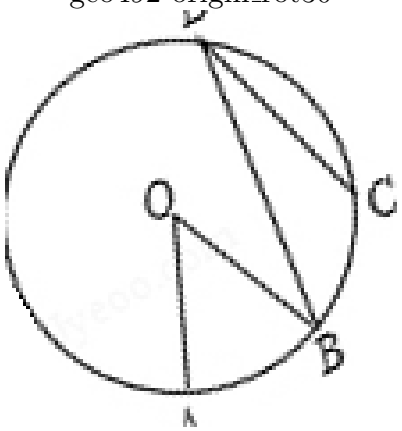
geo492-origin

As shown in the figure, in circle O, arc AB is equal to arc BC, point D is on circle O, and angle CDB is 20°. What is the measure of angle AOB?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

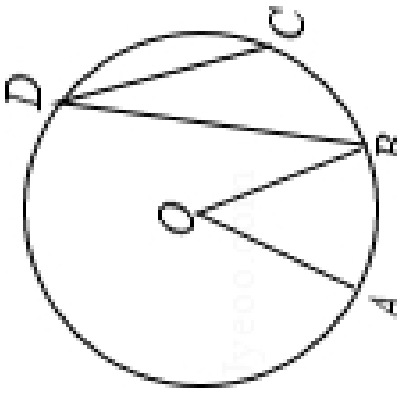
Base



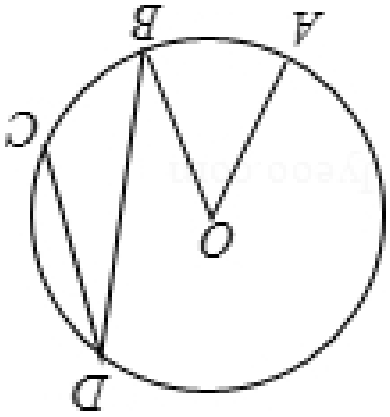
geo492-origin_rot30



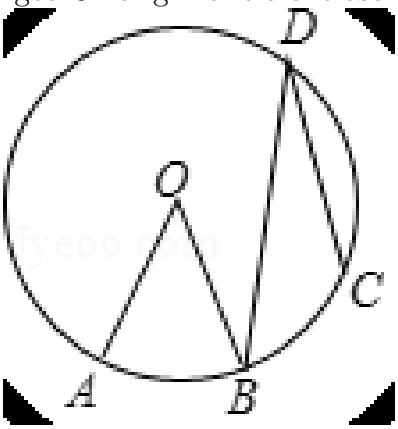
geo492-origin_rot90



geo492-origin_rot180



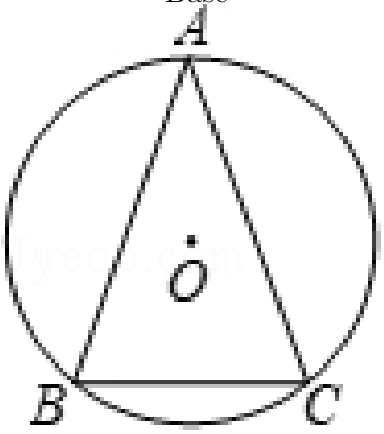
geo492-origin_circle_enclose



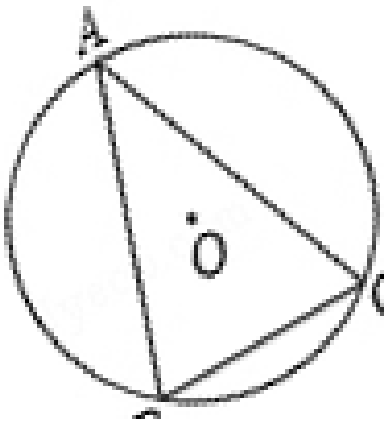
geo500-origin

As shown in the figure, in circle O, arc AB = arc AC, ∠C = 75°, then the degree of ∠A is ()
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

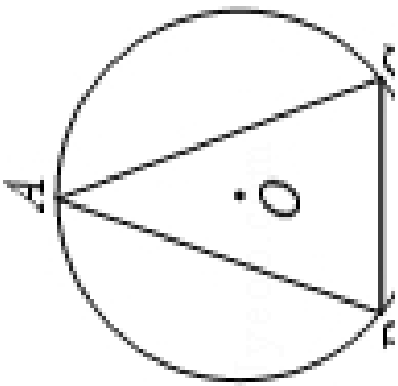
Base



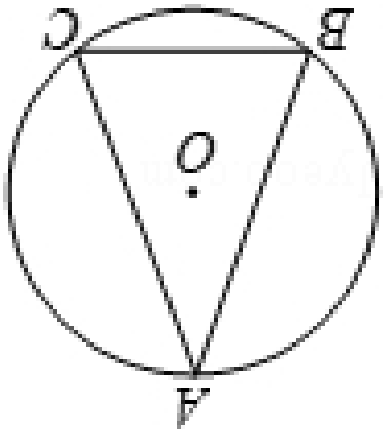
geo500-origin_rot30



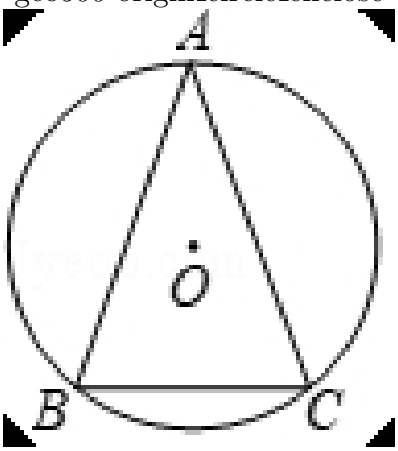
geo500-origin_rot90



geo500-origin_rot180



geo500-origin_circle_enclose



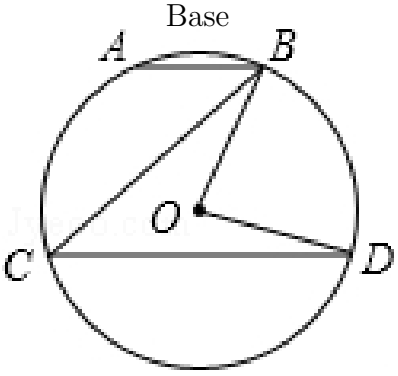
geo501-origin

As shown in the figure, in circle O, chord AB is parallel to chord CD. If ∠ABC = 30°, then ∠BOD = ()

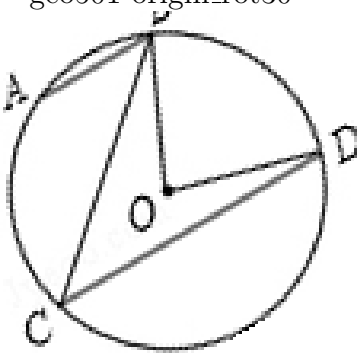
Instructions:

- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

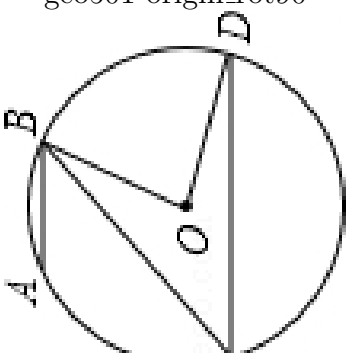
Base



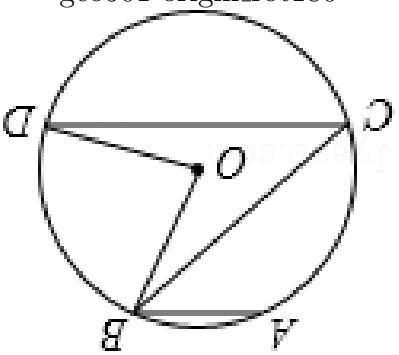
geo501-origin_rot30



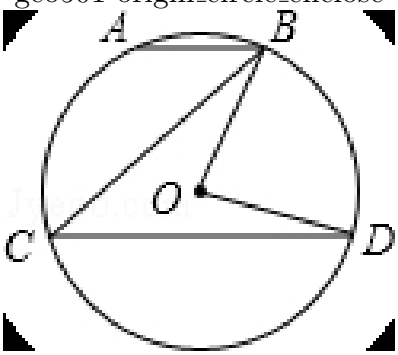
geo501-origin_rot90



geo501-origin_rot180



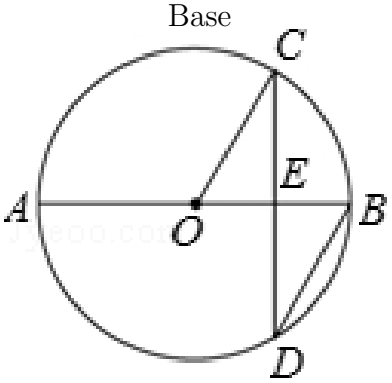
geo501-origin_circle_enclose



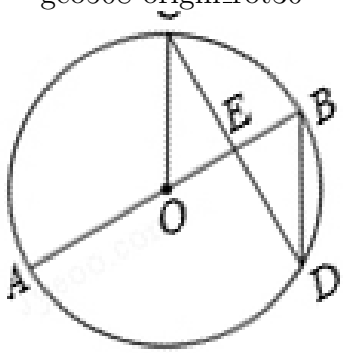
geo508-origin

As shown in the figure, AB is the diameter of circle O, and chord CD is perpendicular to AB at point E. Given that ∠CDB = 30° and the radius of circle O is 6, what is the length of the distance OE from the center O to chord CD?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

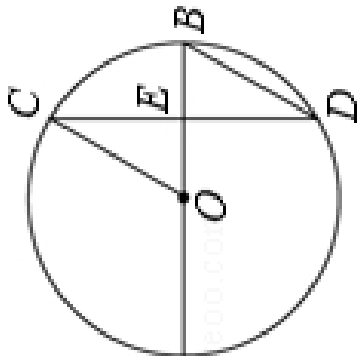
Base



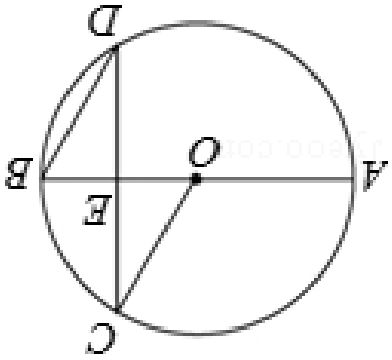
geo508-origin_rot30



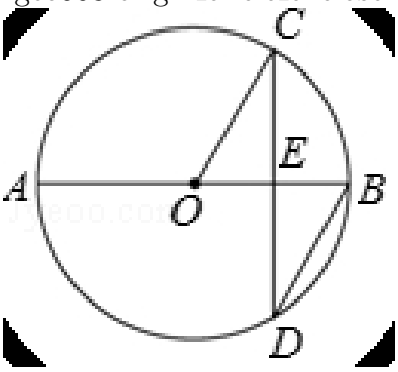
geo508-origin_rot90



geo508-origin_rot180



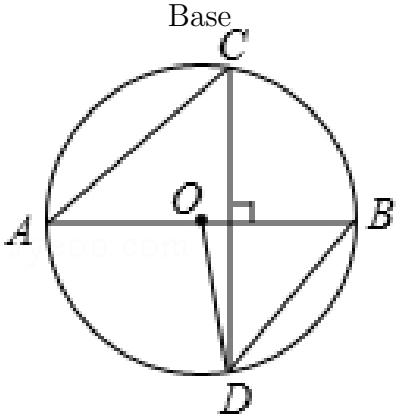
geo508-origin_circle_enclose



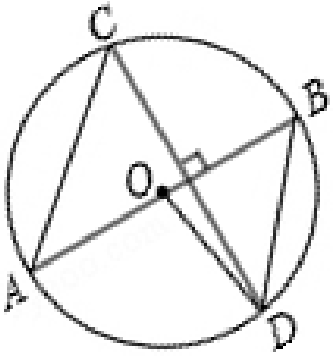
geo509-origin

As shown in the figure, AB is the diameter of circle O, and chord CD is perpendicular to AB. Given that ∠CAB = 40°, connect BD and OD. What is the sum of ∠AOD and ∠ABD?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

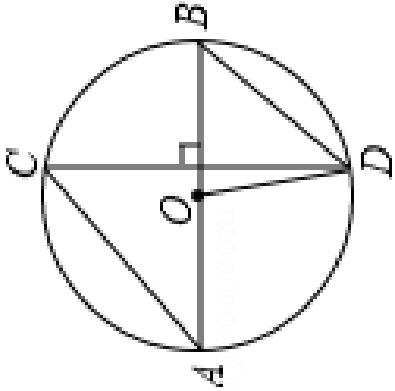
Base



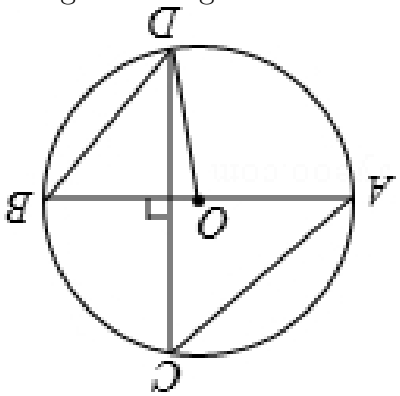
geo509-origin_rot30



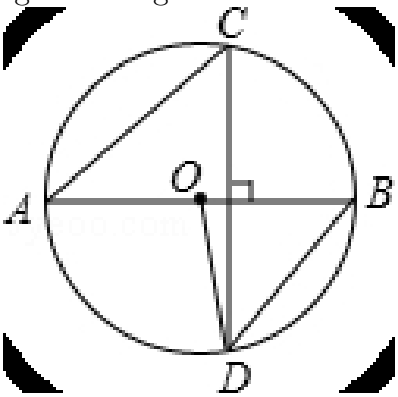
geo509-origin_rot90



geo509-origin_rot180



geo509-origin_circle_enclose



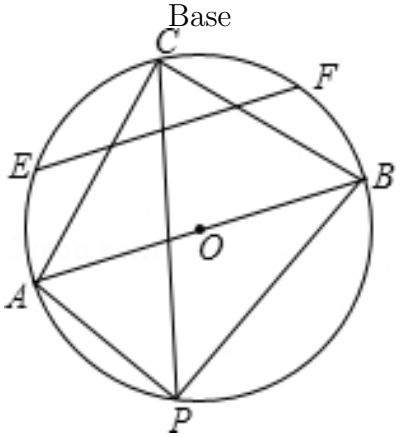
geo557-origin

As shown in the figure, AB is the diameter of circle O with a radius of 4. P is an arbitrary point on the circle other than A and B. The bisector of ∠APB intersects circle O at point C. Connect AC and BC. The line containing the midline of △ABC intersects circle O at points E and F. What is the length of EF?

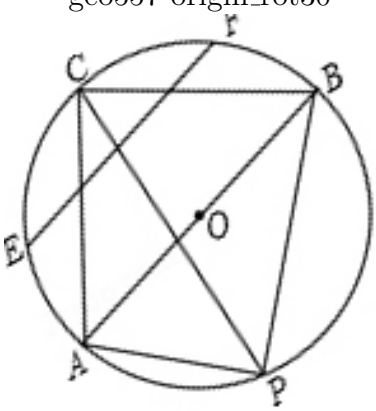
Instructions:

- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

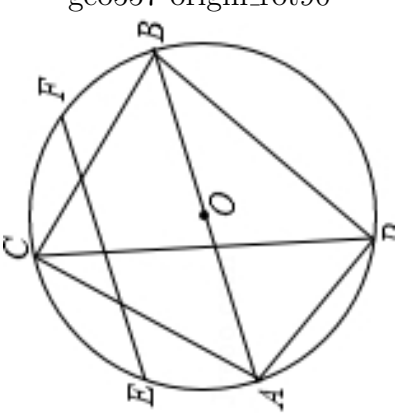
Base



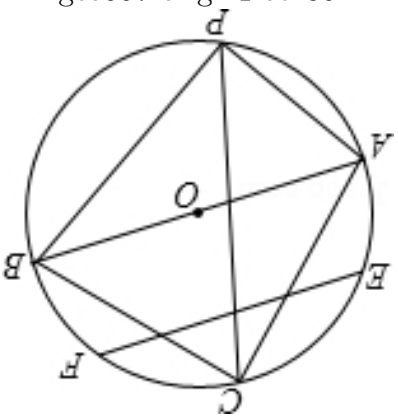
geo557-origin_rot30



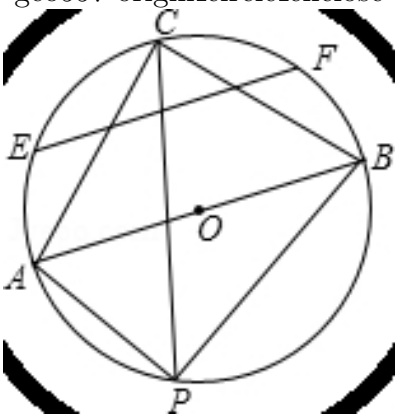
geo557-origin_rot90



geo557-origin_rot180



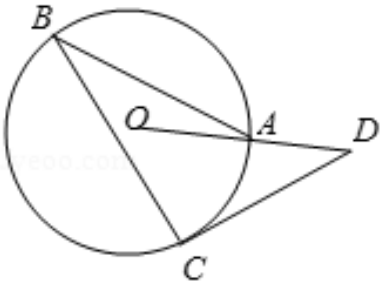
geo557-origin_circle_enclose



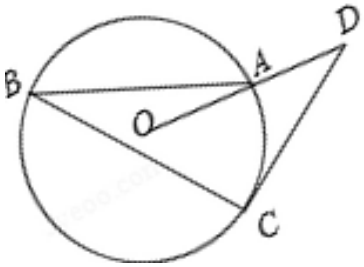
geo578-origin

As shown in the figure, points A, B, and C are on circle O, ∠ABC=29°. A tangent to circle O is drawn through point C and intersects the extension of OA at point D. What is the measure of ∠D?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

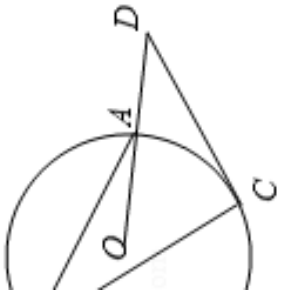
Base



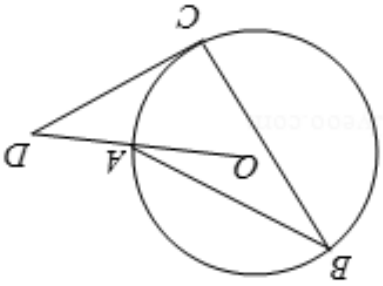
geo578-origin_rot30



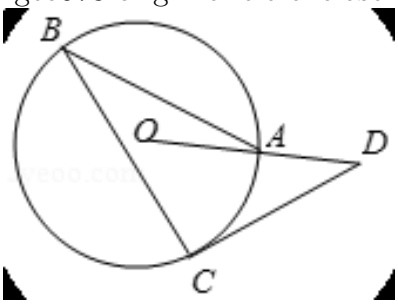
geo578-origin_rot90



geo578-origin_rot180



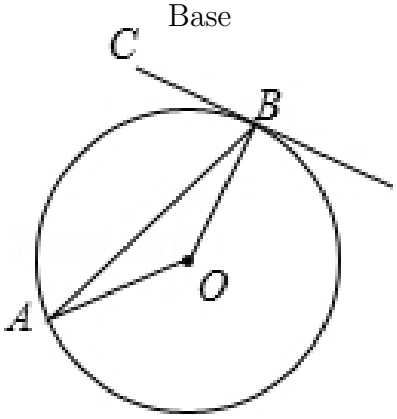
geo578-origin_circle_enclose



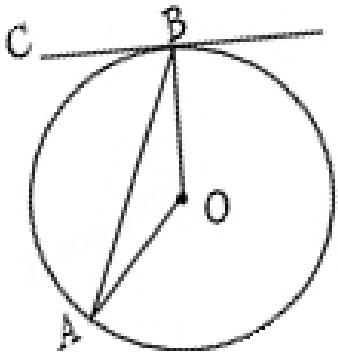
geo585-origin

As shown in the figure, AB is a chord of circle O, and BC is tangent to circle O at point B. Connect OA. If ∠ABC = 70°, then ∠A equals ()
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

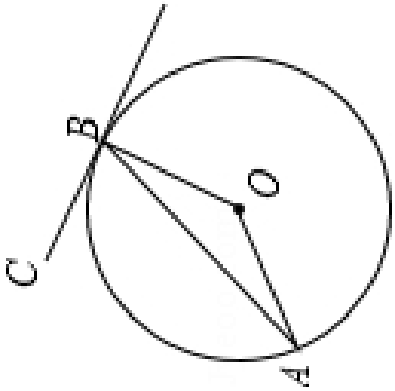
Base



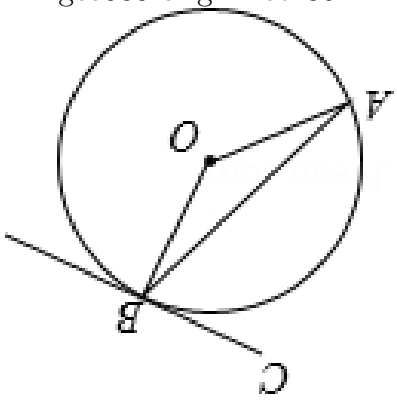
geo585-origin_rot30



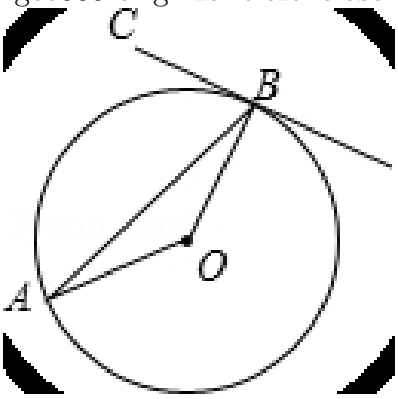
geo585-origin_rot90



geo585-origin_rot180



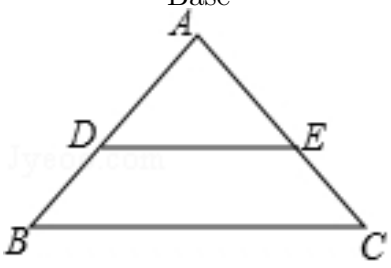
geo585-origin_circle_enclose



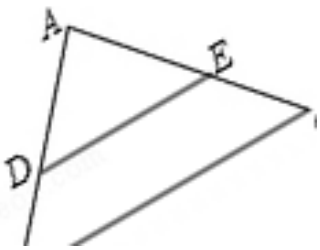
geo609-origin

As shown in the figure, in △ABC, points D and E are on sides AB and AC respectively, and DE ∥ BC. If AD:DB = 3:2 and AE = 6, then what is the length of EC?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

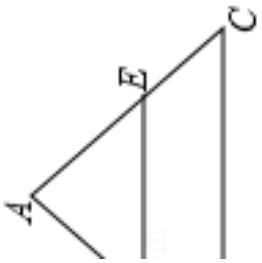
Base



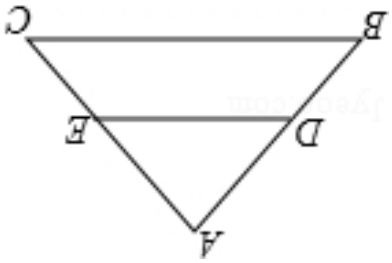
geo609-origin_rot30



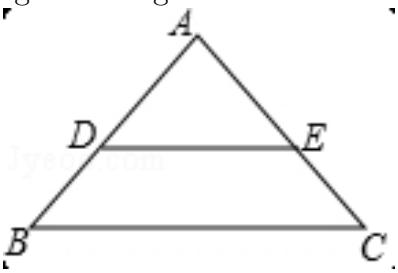
geo609-origin_rot90



geo609-origin_rot180



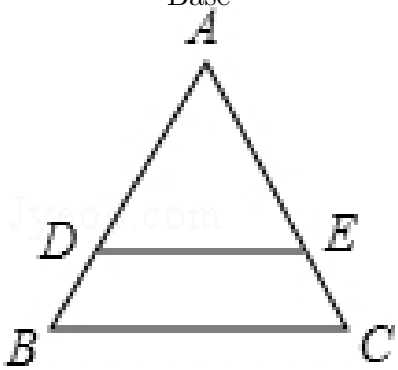
geo609-origin_circle_enclose



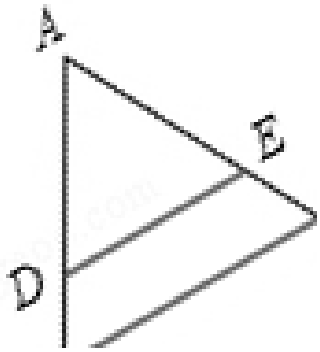
geo619-origin

As shown in the figure, in △ABC, points D and E are on sides AB and AC respectively, and DE ∥ BC. If AE:EC = 3:1 and AD = 6, then BD equals ()
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

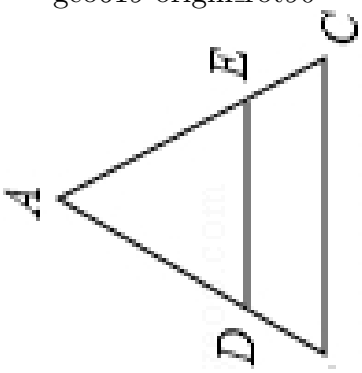
Base



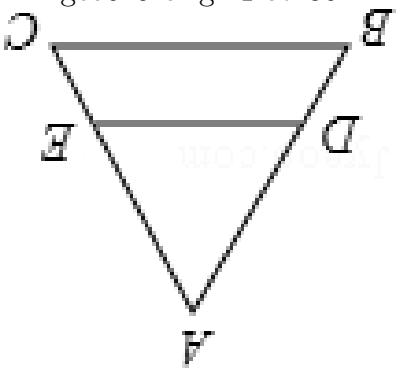
geo619-origin_rot30



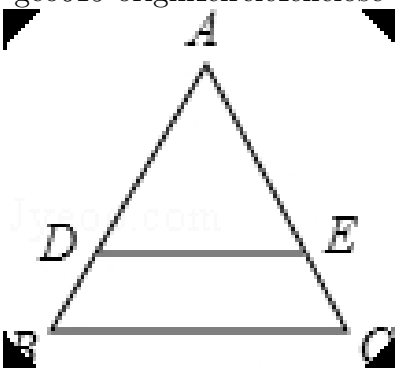
geo619-origin_rot90



geo619-origin_rot180



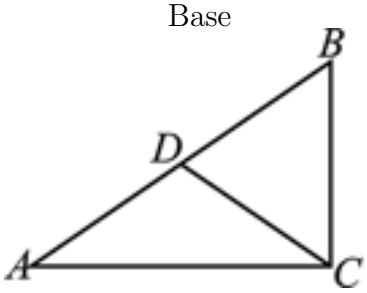
geo619-origin_circle_enclose



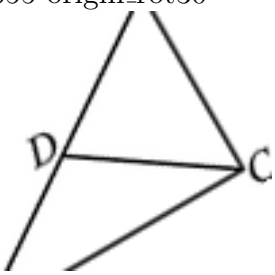
geo655-origin

As shown in the figure, in △ABC, ∠ACB=90°, ∠A=30°, BC=4cm, point D is the midpoint of AB, then CD=()
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

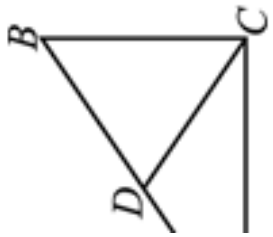
Base



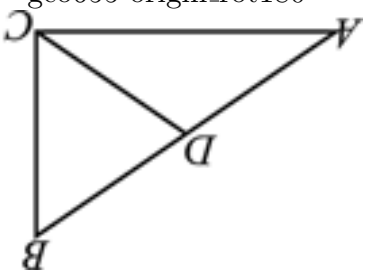
geo655-origin_rot30



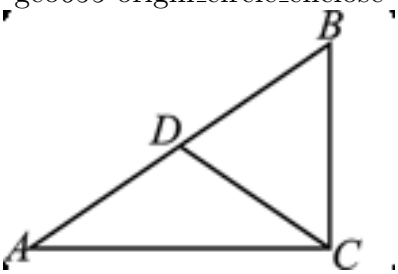
geo655-origin_rot90



geo655-origin_rot180



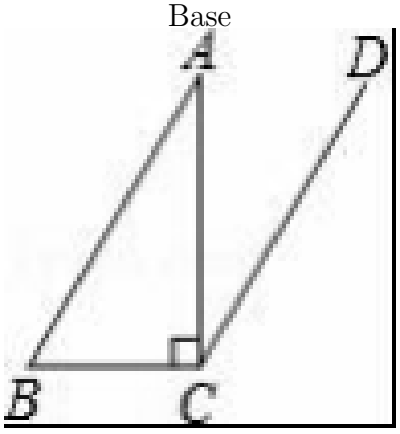
geo655-origin_circle_enclose



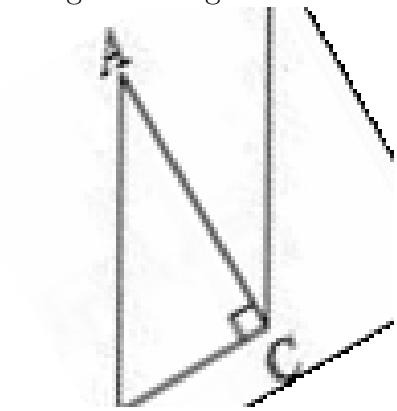
geo663-origin

As shown in the figure, in △ABC, ∠ACB=90°, CD∥AB, ∠ACD=35°, then the degree of ∠B is ()
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

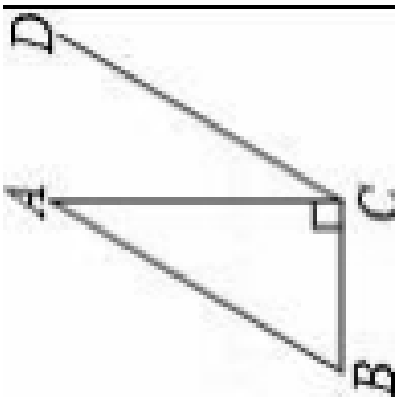
Base



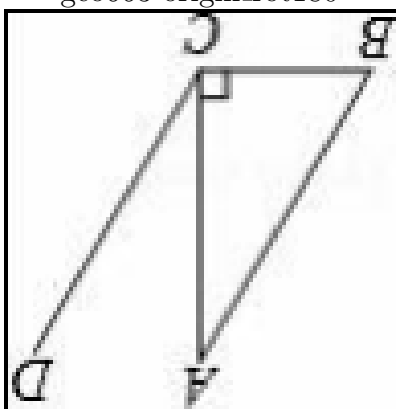
geo663-origin_rot30



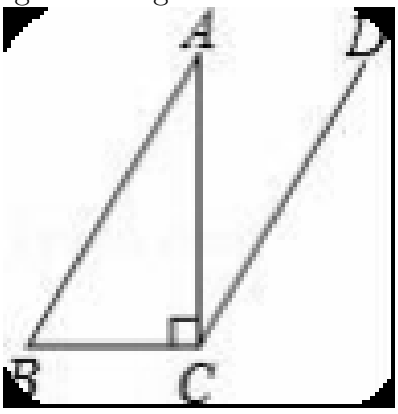
geo663-origin_rot90



geo663-origin_rot180



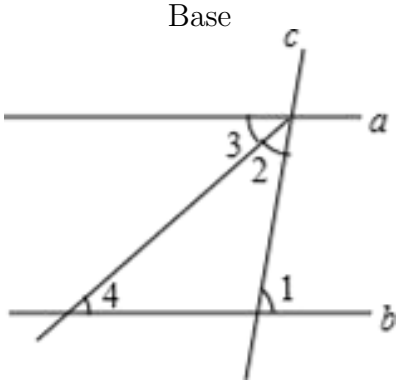
geo663-origin_circle_enclose



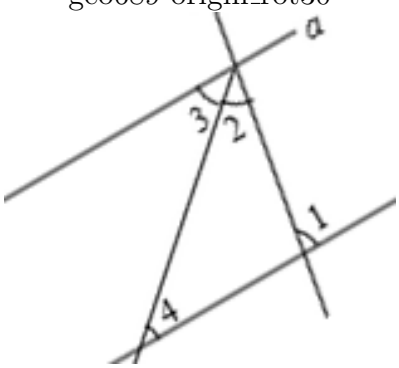
geo689-origin

As shown in the figure, lines a and b are intersected by line c, a∥b, ∠2=∠3. If ∠1=80°, then ∠4 equals ()
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

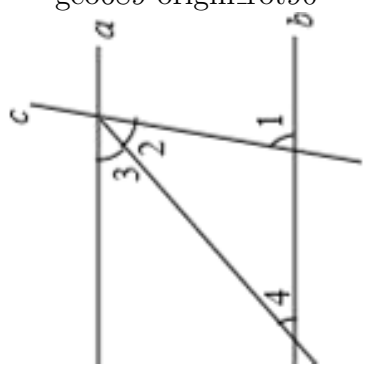
Base



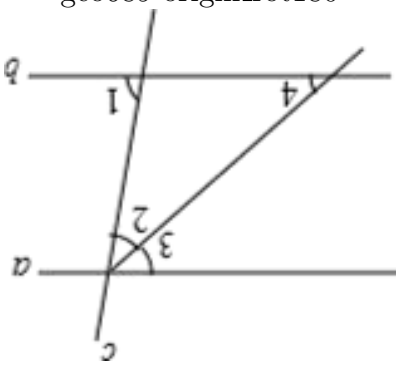
geo689-origin_rot30



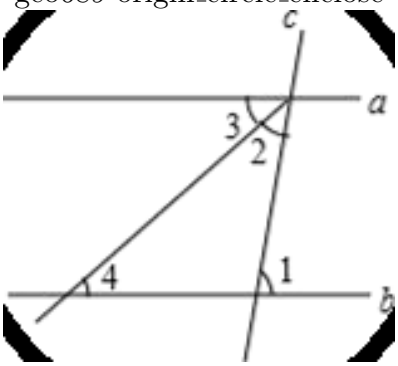
geo689-origin_rot90



geo689-origin_rot180



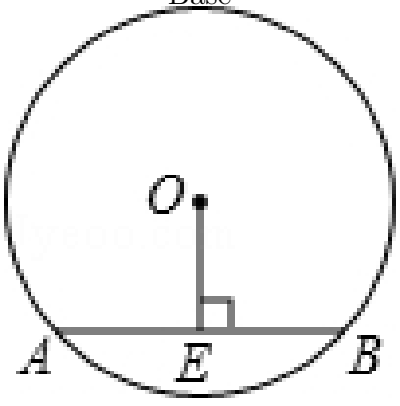
geo689-origin_circle_enclose



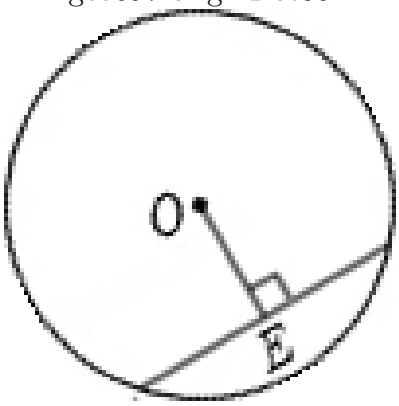
geo697-origin

As shown in the figure, chord AB of circle O is 8, OE is perpendicular to AB at point E, and OE is 3. What is the radius of circle O?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

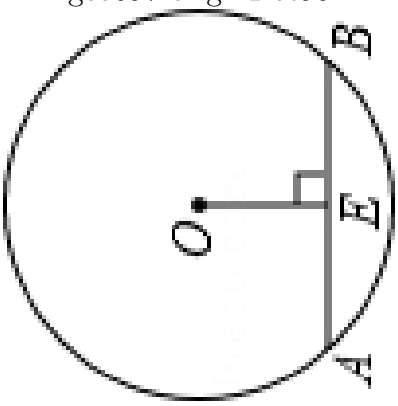
Base



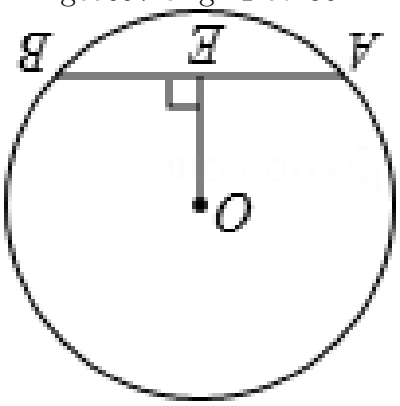
geo697-origin_rot30



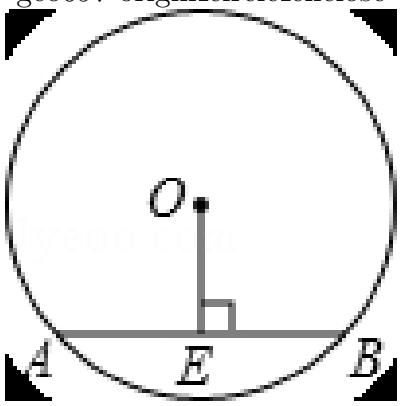
geo697-origin_rot90



geo697-origin_rot180



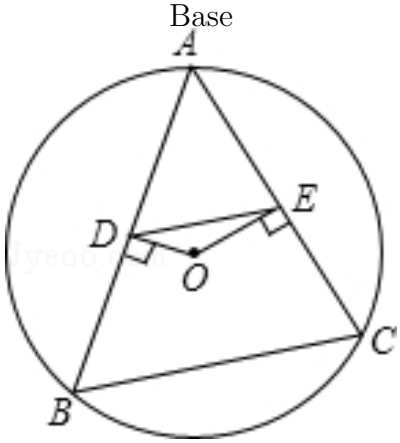
geo697-origin_circle_enclose



geo698-origin

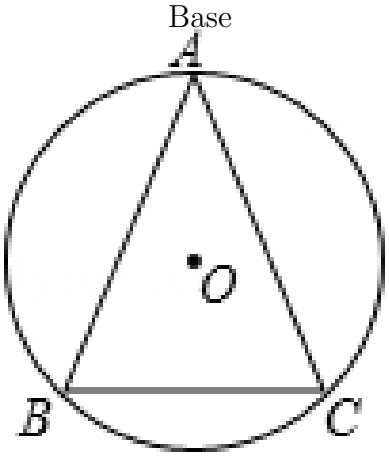
As shown in the figure, △ABC is an inscribed triangle of circle O, with O as the center. OD is perpendicular to AB, and D is the foot of the perpendicular. OE is perpendicular to AC, and E is the foot of the perpendicular. If DE = 3, then what is the length of BC?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

Base



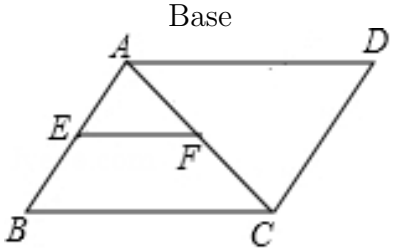
geo713-origin

As shown in the figure, in circle O, arc AB is equal to arc AC, and angle A is 40°. What is the measure of angle B?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.



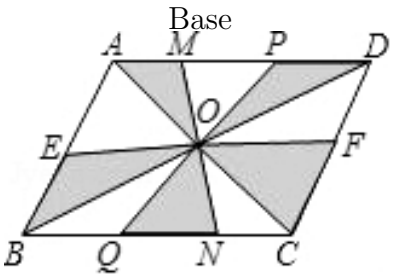
geo738-origin

As shown in the figure, in the parallelogram ABCD, point E is the midpoint of side AB, and point F is the midpoint of diagonal AC. If EF = 6, then what is the length of AD?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.



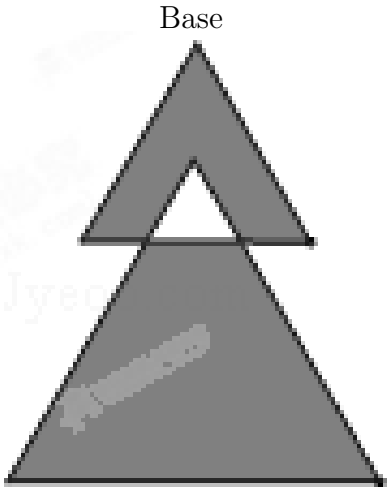
geo739-origin

As shown in the figure, in the parallelogram ABCD, the diagonals AC and BD intersect at point O. The line segments MN, PQ, and EF pass through point O. Given that BC = 10 and the height from BC is 6, find the area of the shaded region.
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.



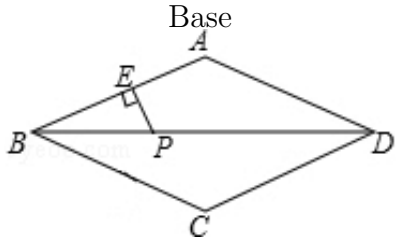
geo751-origin

As shown in the figure, two equilateral triangles with areas of 9 and 16 respectively overlap, resulting in two shaded areas with areas a and b (a ¡ b). What is the value of b - a?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.



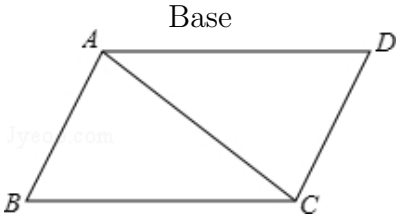
geo847-origin

As shown in the figure, P is a point on the diagonal BD of the rhombus ABCD. PE is perpendicular to AB at E, and PE = 4 cm. What is the distance from point P to BC?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.



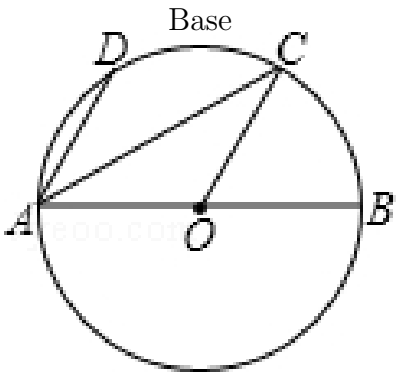
geo875-origin

In the parallelogram ABCD shown in the figure, AB=3, AC=4, BC=5, then the area of parallelogram ABCD is ()
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.



geo905-origin

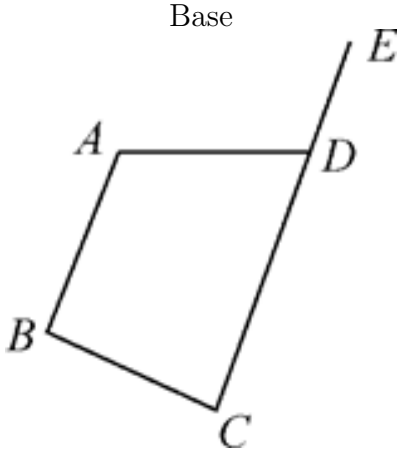
As shown in the figure, AB is the diameter of circle O, and points D and C are on circle O. AD is parallel to OC, and ∠DAB = 60°. Connect AC, then what is ∠DAC equal to?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.



geo932-origin

As shown in the figure, given that AB∥CE and ∠A=110°, what is the measure of ∠ADE?
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

Base



geo977-origin

Given that AB ∥ CD and ∠ACD = 55°, find ∠BAC.
Instructions:
- Do NOT assume figures are to scale.
- Use ONLY marks visible in the diagram unless explicitly stated in the text.
- Follow the output contract below exactly.

Base