

Geometric Description Generation via Information Recovery

QA Example1

Q: $\odot O$ is the circumscribed circle of $\triangle ABC$, ... $\angle ABO=30.0$, then the size of $\angle ACB$ is ?

A: In triangle AOB, $OA=OB$, $\angle ABO=30^\circ$; Therefore, $\angle AOB=180^\circ - 2\angle ABO=120^\circ$; Therefore, $\angle ACB=1/2 \angle AOB=60^\circ$

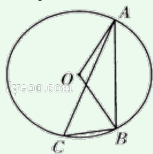


Image Description

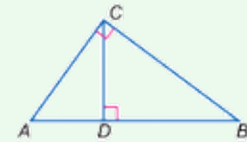
The diagram consists of a triangle ABC inscribed within a circle O. Points A, B, and C are the vertices of the triangle, and they lie on the circumference of the circle. The center of the circle is marked as point O.

Diagram Representation Uniqueness

Generate Contrastive QA Pairs for Basic Elements

Logic Form

Similar(Triangle(A,B,C),Triangle(C,B,D))
...



Info Items

1. Triangle ABC is similar to triangle CBD.
...

Contrastive QA pairs

Q: Is point D the lies on line BC?
A: No, ... , point D lies on the line segment AB.

Logic Structure Uniqueness

Geometry Characteristic

Geometric Solution Generalizability

Variable Substitution and Equation Solving

QA Example2

Q: Point B is in line AC, line AB is 1, line AC is 3, line BC is ?
A: Line BC is 2.

Q: Point B is in line AC, line AB is x ($x=1$), line AC is y ($y=3$), line BC is ?

A: Denote BC as z , we can build the equation $x+z=y$, therefore $z=y-x$, which simplifies to $z=3-1=2$. Thus, BC is 2.

Geometric Scalability

Value Scaling

QA Example2

Q: Point B is in line AC, line AB is 2, line AC is 6, line BC is ?
A: The length of BC is 4 units, obtained by subtracting AB (2 units) from AC (6 units).

Conditional Uniqueness

Re-Formulating Condition as Unknown

QA Example2

Q: Point B is in line AC, line AB is u , line AC is 3, line BC is 2.
What is the value of u ?
A: Denote AB as u , we can determine u by solving $u+2=3$. Therefore, u equals 1.

Reasoning Diversity

Sentence Paraphrase

QA Example2

Q: Given that Point B lies on line segment AC, with $AB=1$ unit and $AC=3$ units, what is the length of segment BC?
A: BC can be determined by subtracting the length of segment AB from the length of segment AC. Since AB is 1 unit and AC is 3 units, $BC = AC - AB$, which equals 2 units.