SmartKalike

CBSE Class 10 · Maths

Triangles

10 most probable questions for Boards 2027

Q1. 1 mark · Very short answer

If DE ∥ BC in triangle ABC, with D on AB and E on AC, write the proportionality relating AD/AB and AE/AC.

Answer

AD/AB = AE/AC. The Basic Proportionality Theorem gives this relation because DE is parallel to BC.

Q2. 1.5 marks · Short answer

In triangle PQR, ∠PST = ∠PRQ and the given parallel-line condition yields ∠PST = ∠PQR. What equality of sides follows, and what type of triangle is PQR?

Answer

PQ = PR, so triangle PQR is isosceles. The given equality ∠PST = ∠PRQ, together with ∠PST = ∠PQR from the parallel lines, gives ∠PRQ = ∠PQR; equal angles have equal opposite sides.

Q3. 2 marks · Short answer

State the Basic Proportionality Theorem for a line drawn parallel to one side of a triangle.

Answer

The Basic Proportionality Theorem states that if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio.

Q4. 3 marks · Medium answer

State the two conditions that establish similarity of two triangles, and explain how the correspondence of their angles and sides is expressed.

Answer

1. Two triangles are similar when corresponding angles are equal and corresponding sides are in the same ratio (or proportion); triangles with equal corresponding angles are equiangular.
2. For triangles ABC and PQR, with A ↔ P, B ↔ Q and C ↔ R, ∠A = ∠P, ∠B = ∠Q, ∠C = ∠R, and AB/PQ = BC/QR = AC/PR.

Q5. 3.5 marks · Long answer

In triangle ABC, points D and E lie on AB and AC respectively, and AD/DB = AE/EC. Prove that DE is parallel to BC.

Answer

The converse of the Basic Proportionality Theorem proves the required parallelism.
1. In triangle ABC, D lies on AB, E lies on AC, and AD/DB = AE/EC. Suppose, for contradiction, that DE is not parallel to BC.
2. Through D, draw DE′ parallel to BC, meeting AC at E′. By the Basic Proportionality Theorem, AD/

DB = AE′/E′C.
3. Comparing this equality with the given relation gives AE/EC = AE′/E′C. Let AE = x, AE′ = y and AC = L; then EC = L − x and E′C = L − y.
4. Thus x/(L − x) = y/(L − y). Cross-multiplication gives xL − xy = yL − xy, so x = y and E coincides with E′.
Therefore, DE coincides with DE′ and is parallel to BC.

Q6. 5 marks · Long answer

State and explain the SAS similarity criterion for triangles, identifying the angle and the two sides that must satisfy its conditions.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/triangles

Q7. 10 marks · Very long answer

Prove that if two triangles are equiangular, the ratios of their corresponding sides are equal.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/triangles

Q8. 1 mark · Multiple choice

If the three sides of one triangle are proportional to the three sides of another triangle in corresponding order, which criterion establishes that the triangles are similar? (a) AA (b) SSS (c) SAS (d) RHS

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/triangles

Q9. 2 marks · Short answer

In trapezium ABCD, AB ∥ DC. Points E and F lie on AD and BC, respectively, and EF ∥ AB. State the proportional relationship between AE, ED, BF and FC.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/triangles

Q10. 3 marks · Medium answer

A pole 2 m tall casts a shadow 1.5 m long. At the same time, a tree casts a shadow 9 m long. Assuming the sun’s rays make the same angle with the ground, use similar figures to find the tree’s height.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/triangles

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