

CBSE CLASS X
Mathematics Standard (041)

QUESTION PAPER

From previous CBSE Board Exam questions

Code: UJSOFR **Questions: 93** **Maximum Marks: 250** **Generated: 2026-06-15 13:05**

SELECTIONS USED

Source	Previous-year board
Subject	Mathematics
Lessons	Triangles
Year	2022-2026
Questions selected	93

Composition — Types: 37 MCQ · 32 Long · 20 Very short · 4 Short · 1 Assertion–reason · 1 Case-based

Q1. § 4.1 Introduction

[5]

There is a circular park of diameter 65 m as shown in the following figure, where AB is a diameter. An entry gate is to be constructed at a point P on the boundary of the park such that distance of P from A is 35 m more than the distance of P from B. Find distance of point P from A and B respectively.

Previously asked in: 2025 30/6/1 Q32(a)

♦ **Quadratic Equations** Angle in a semicircle (angle in a semicircle is 90°) and Pythagoras theorem application
Forming and solving quadratic equations from geometric conditions (right triangle sides)

Q2. § 6.4 Criteria for Similarity of Triangles

[2]

In the given figure, ABC is a triangle in which $DE \parallel BC$. If $AD = x$, $DB = x - 2$, $AE = x + 2$ and $EC = x - 1$, then find the value of x .

Previously asked in: 2023 30/6/1 Q25(A)

♦ **Triangles** Basic Proportionality Theorem (Thales' Theorem) – finding unknown lengths

Q3. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles

[1]

In the given figure, $DE \parallel BC$. The value of x is :

- (a) 6
- (b) $12 \cdot 5$
- (c) 8
- (d) 10

Previously asked in: 2023 30/5/1 Q4

♦ **Triangles** Basic Proportionality Theorem (Thales' Theorem) – $DE \parallel BC$

Q4. § 6.4 Criteria for Similarity of Triangles

[2]

In $\triangle ABC$, $DE \parallel BC$. If $AD = x$, $DB = x - 2$, $AE = x + 2$ and $EC = x - 1$, then find the value of x .

Previously asked in: 2026 30/1/1 Q22(A)

♦ **Triangles** Basic Proportionality Theorem (Thales' Theorem) – finding unknowns

Q5. § 6.5 Summary**[5]**

Prove that if a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then the other two sides are divided in the same ratio.

Previously asked in: 2026 30/2/1 Q34(a)

♦ **Triangles** 6.2 Basic Proportionality Theorem (Thales' Theorem) – Proof**Q6.** § 6.3 Similarity of Triangles**[5]**

The perimeter of an isosceles triangle is 32 cm. If each equal side is $\frac{6}{8}$ th of the base, find the area of the triangle.

Previously asked in: 2025 30/3/1 Q32

♦ **Triangles** Area of an Isosceles Triangle using Heron's Formula or geometric approach**Q7.** § 6.3 Similarity of Triangles**[5]**

State and prove Basic Proportionality theorem.

Previously asked in: 2026 30/1/1 Q34(A); 2024 30/3/1 Q33 – 2×

♦ **Triangles** Basic Proportionality Theorem (Thales' Theorem) – Statement and Proof**Q8.** § 6.3 Similarity of Triangles § 6.5 Summary**[1]**

In the given figure, $PQ \parallel YZ$ such that $XP : PY = 2 : 3$. If $PQ = 5$ cm, then YZ equals

- (A) 12.5 cm
- (B) 10 cm
- (C) 15 cm
- (D) 7.5 cm

Previously asked in: 2026 30/5/1 Q15

♦ **Triangles** 6.3 Similarity of Triangles**Q9.** § 6.4 Criteria for Similarity of Triangles**[2]**

In the given figure, $AB \parallel DE$ and $AC \parallel DF$. Show that $\triangle ABC \sim \triangle DEF$. If $BC = 10$ cm, $EB = CF = 5$ cm and $AB = 7$ cm, then find the length DE .

Previously asked in: 2026 30/5/1 Q23

♦ **Triangles** 6.3 Similarity of Triangles**Q10.** § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[2]**

Diagonals AC and BD of trapezium ABCD with $AB \parallel DC$ intersect each other at point O. Show that $\frac{OA}{OC} = \frac{OB}{OD}$.

Previously asked in: 2023 30/6/1 Q25(B)

♦ **Triangles** 6.3 Similarity of Triangles**Q11.** § 6.1 Introduction § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles**[1]**

In the given figure, in $\triangle ABC$, $DE \parallel BC$. If $AD = 2 \cdot 4$ cm, $DB = 4$ cm and $AE = 2$ cm, then the length of AC is :

- A $\frac{10}{3}$ cm
- B $\frac{10}{16}$ cm
- C $\frac{16}{3}$ cm
- D $1 \cdot 2$ cm

Previously asked in: 2024 30/5/1 Q17

♦ **Triangles** 6.3 Similarity of Triangles

Q12. § 6.1 Introduction

[1]

If a vertical pole of length 7.5 m casts a shadow 5 m long on the ground and at the same time, a tower casts a shadow 24 m long, then the height of the tower is :

- A 20 m
- B 40 m
- C 60 m
- D 36 m

Previously asked in: 2024 30/5/1 Q18

♦ Triangles

6.3 Similarity of Triangles

Q13. § 6.4 Criteria for Similarity of Triangles

[1]

Assertion (A) : ABCD is a trapezium with $DC \parallel AB$. E and F are points on AD and BC respectively, such that $EF \parallel AB$. Then $\frac{AE}{ED} = \frac{BF}{FC}$.

Reason (R) : Any line parallel to parallel sides of a trapezium divides the non-parallel sides proportionally.

Select the correct answer from the codes (A), (B), (C) and (D) given below.

- A Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).
- B Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
- C Assertion (A) is true, but Reason (R) is false.
- D Assertion (A) is false, but Reason (R) is true.

Previously asked in: 2024 30/5/1 Q19

♦ Triangles

6.3 Similarity of Triangles

Q14. § 6.4 Criteria for Similarity of Triangles

[3]

In the given figure, E is a point on the side CB produced of an isosceles triangle ABC with $AB = AC$. If $AD \perp BC$ and $EF \perp AC$, then prove that $\triangle ABD \sim \triangle ECF$.

Previously asked in: 2023 30/6/1 Q28

♦ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Q15. § 6.4 Criteria for Similarity of Triangles

[5]

D is the mid-point of side BC of $\triangle ABC$. CE and BF intersect at O, a point on AD. AD is produced to G such that $OD = DG$. Prove that

- (i) OBGC is a parallelogram.
- (ii) $EF \parallel BC$
- (iii) $\triangle AEF \sim \triangle ABC$

(i) OBGC is a parallelogram.

(ii) $EF \parallel BC$

(iii) $\triangle AEF \sim \triangle ABC$

Previously asked in: 2026 30/5/1 Q33(a) (OR-1)

♦ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Properties of Parallelograms via Diagonals Bisecting Each Other

Q16. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[5]**

Through the mid-point Q of side CD of a parallelogram $ABCD$, the line AR is drawn which intersects BD at P and produced BC at R . Prove that

- (i) $AQ = QR$
 (ii) $AP = 2PQ$
 (iii) $PR = 2AP$

(i) $AQ = QR$

(ii) $AP = 2PQ$

(iii) $PR = 2AP$

Previously asked in: 2026 30/5/1 Q33(b) (OR-2)

♦ Triangles

6.3 Similarity of Triangles

Q17. § 6.4 Criteria for Similarity of Triangles**[5]**

In the given figure, $\triangle FEC \cong \triangle GDB$ and $\angle 1 = \angle 2$. Prove that $\triangle ADE \sim \triangle ABC$.

Previously asked in: 2024 30/5/1 Q34(a) (OR-1)

♦ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Q18. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[5]**

Sides AB and AC and median AD of a $\triangle ABC$ are respectively proportional to sides PQ and PR and median PM of another $\triangle PQR$. Show that $\triangle ABC \sim \triangle PQR$.

Previously asked in: 2024 30/5/1 Q34(b) (OR-2)

♦ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Q19. § 6.1 Introduction § 6.3 Similarity of Triangles § 6.5 Summary**[1]**

If $\triangle ABC \sim \triangle PQR$, $\angle A = 32^\circ$ and $\angle R = 65^\circ$, then the measure of $\angle B$ is:

- (a) 32°
 (b) 65°
 (c) 83°
 (d) 97°

Previously asked in: 2023 30/2/1 Q3

♦ Triangles

6.3 Similarity of Triangles

Q20. § 6.4 Criteria for Similarity of Triangles**[1]**

In the given figure, $DE \parallel BC$. If $AD = 2$ units, $DB = AE = 3$ units and $EC = x$ units, then the value of x is:

- (a) 2
 (b) 3
 (c) 5
 (d) $\frac{9}{2}$

Previously asked in: 2023 30/2/1 Q12

♦ Triangles

6.3 Similarity of Triangles

Q21. § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[2]**

In the given figure, ABCD is a quadrilateral. Diagonal BD bisects $\angle B$ and $\angle D$ both. Prove that :

(i) $\triangle ABD \sim \triangle CBD$ (ii) $AB = BC$

Previously asked in: 2024 30/1/1 Q24

♦ Triangles

6.3 Similarity of Triangles

Q22. § 6.1 Introduction § 6.3 Similarity of Triangles § 6.5 Summary**[1]**

In the given figure, $AB \parallel PQ$. If $AB = 6$ cm, $PQ = 2$ cm and $OB = 3$ cm, then the length of OP is:

(a) 9 cm

(b) 3 cm

(c) 4 cm

(d) 1 cm

Previously asked in: 2023 30/2/1 Q18

♦ Triangles

6.3 Similarity of Triangles

Q23. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[5]**

In the given figure PA, QB and RC are each perpendicular to AC. If $AP = x$, $BQ = y$ and $CR = z$, then prove that

$$\frac{1}{x} + \frac{1}{z} = \frac{1}{y}.$$

Previously asked in: 2024 30/1/1 Q34(B)

♦ Triangles

Similar Triangles – Proportionality with perpendiculars to a line (Proof using AA similarity)

Q24. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[5]**

Sides AB and BC and median AD of a triangle ABC are respectively proportional to sides PQ and QR and median PM of another triangle PQR. Show that $\triangle ABC \sim \triangle PQR$.

Previously asked in: 2023 30/2/1 Q35(a) (OR-1)

♦ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Q25. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[5]**

Through the mid-point M of the side CD of a parallelogram ABCD, the line BM is drawn intersecting AC in L and AD (produced) in E. Prove that $EL = 2BL$.

Previously asked in: 2023 30/2/1 Q35(b) (OR-2)

♦ Triangles

6.3 Similarity of Triangles

Q26. § 6.1 Introduction § 6.3 Similarity of Triangles § 6.5 Summary**[1]**

In the given figure, $\triangle ABC \sim \triangle QPR$. If $AC = 6$ cm, $BC = 5$ cm, $QR = 3$ cm and $PR = x$; then the value of x is :

(a) 3.6 cm

(b) 2.5 cm

(c) 10 cm

(d) 3.2 cm

Previously asked in: 2023 30/4/1 Q12

♦ Triangles

6.3 Similarity of Triangles

Q27. § 6.1 Introduction § 6.3 Similarity of Triangles

[1]

In $\triangle ABC$, $PQ \parallel BC$. If $PB = 6$ cm, $AP = 4$ cm, $AQ = 8$ cm, find the length of AC .

- (a) 12 cm
- (b) 20 cm
- (c) 6 cm
- (d) 14 cm

Previously asked in: 2023 30/4/1 Q16

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q28. § 6.4 Criteria for Similarity of Triangles

[5]

D is a point on the side BC of a triangle ABC such that $\angle ADC = \angle BAC$, prove that $CA^2 = CB \cdot CD$.

Previously asked in: 2023 30/4/1 Q33(A) (OR-1)

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q29. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[5]

If AD and PM are medians of triangles ABC and PQR, respectively where $\triangle ABC \sim \triangle PQR$, prove that $\frac{AB}{PQ} = \frac{AD}{PM}$.

Previously asked in: 2023 30/4/1 Q33(B) (OR-2)

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q30. § 6.3 Similarity of Triangles § 6.5 Summary

[1]

Devansh proved that $\triangle ABC \sim \triangle PQR$ using SAS similarity criteria. If he found $\angle C = \angle R$, then which of the following was proved true?

- (A) $\frac{AC}{PR} = \frac{AB}{PQ}$
- (B) $\frac{BC}{PR} = \frac{AC}{QR}$
- (C) $\frac{AC}{PR} = \frac{BC}{PQ}$
- (D) $\frac{AC}{PR} = \frac{BC}{QR}$

Previously asked in: 2026 30/5/1 Q5

♦ Triangles 6.4 Criteria for Similarity of Triangles

Q31. § 6.4 Criteria for Similarity of Triangles

[1]

In triangles ABC and DEF, $\frac{AB}{DE} = \frac{BC}{FD}$. Which of the following makes the two triangles similar ?

- (a) $\angle A = \angle D$
- (b) $\angle B = \angle D$
- (c) $\angle B = \angle E$
- (d) $\angle A = \angle F$

Previously asked in: 2023 30/5/1 Q13

♦ Triangles 6.4 Criteria for Similarity of Triangles

Q32. § 6.4 Criteria for Similarity of Triangles

[3]

In the given figure, CD is the perpendicular bisector of AB . EF is perpendicular to CD . AE intersects CD at G .

Prove that $\frac{CF}{CD} = \frac{FG}{DG}$.

Previously asked in: 2023 30/5/1 Q28 (OR-1)

♦ Triangles 6.3 Similarity of Triangles

Q33. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[3]**

In the given figure, $ABCD$ is a parallelogram. BE bisects CD at M and intersects AC at L . Prove that $EL = 2BL$.

Previously asked in: 2023 30/5/1 Q28 (OR-2)

♦ Triangles 6.3 Similarity of Triangles

Q34. § 6.1 Introduction**[3]**

Draw a line segment AB of length 8 cm and locate a point P on AB such that $AP : PB = 1 : 5$.

Previously asked in: 2022 30/3/1 Q7(a) (OR-1)

♦ Triangles Division of a Line Segment in a Given Ratio

Q35. § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[1]**

It is given that $\triangle ABC \sim \triangle EDF$. Which of the following is not true?

- A $\frac{\text{Perimeter of } \triangle ABC}{\text{Perimeter of } \triangle EDF} = \frac{AB}{ED}$
 B $\frac{AB}{ED} = \frac{AC}{EF}$
 C $\angle A = \angle D, \angle C = \angle F$
 D $\frac{AB + BC}{DE + DF} = \frac{AC}{EF}$

Previously asked in: 2026 30/4/1 Q2

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q36. § 6.1 Introduction § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[1]**

In the given figure, $DE \parallel BC$. If $\frac{AD}{DB} = \frac{1}{3}$ and $AC = 6$ cm, then length AE is

- A 1.5 cm
 B 1 cm
 C 2 cm
 D 3 cm

Previously asked in: 2026 30/4/1 Q6

♦ Triangles 6.3 Similarity of Triangles

Q37. § 6.4 Criteria for Similarity of Triangles**[1]**

If $\triangle ABC$ and $\triangle DEF$ are similar such that $2AB = DE$ and $BC = 8$ cm, then EF is equal to :

- (a) 4 cm
 (b) 8 cm
 (c) 12 cm
 (d) 16 cm

Previously asked in: 2026 30/1/1 Q7

♦ Triangles 6.3 Similarity of Triangles

Q38. § 6.1 Introduction § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles**[2]**

D is a point on the side BC of $\triangle ABC$ such that $\angle CAB = \angle CDA$. Show that $CA^2 = CB \times CD$.

Previously asked in: 2026 30/4/1 Q22

♦ Triangles 6.4 Criteria for Similarity of Triangles

Q39. § 6.1 Introduction § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles

[2]

In the figure given above, $\triangle ABC \sim \triangle XYZ$, then find the values of x and y .

Previously asked in: 2026 30/1/1 Q22(B)

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q40. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[4]

Carom board is a very popular game. The board is a square of side length 65 cm. It has circular pockets in each corner.

Ansh strikes a disc, kept at position P with a striker. The disc, hits the boundary of the board at R and goes straight to pocket at corner C. It is given that PS = 9 cm, PQ = 35 cm, BR = x , $\angle PRQ = \alpha$ and $\angle CRB = \beta$.

Based on the above information, answer the following questions:

- (i) Using law of reflection i.e. $\angle PRT = \angle CRT$, prove that $\alpha = \beta$. [1]
- (ii) Prove that $\triangle PQR \sim \triangle CBR$ given that PQ is perpendicular to AB. [1]
- (iii) Find the value of x using similarity of triangles. [2]

Previously asked in: 2026 30/4/1 Q36

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q41. § 6.1 Introduction § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[5]

In the given figure, CM and RN are respectively the medians of $\triangle ABC$ and $\triangle PQR$. If $\triangle ABC \sim \triangle PQR$, then prove that :

- (i) $\triangle AMC \sim \triangle PNR$
- (ii) $\triangle CMB \sim \triangle RNQ$

Previously asked in: 2026 30/1/1 Q34(B)

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q42. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[1]

In triangles ABC and PQR, $\angle A = \angle Q$ and $\angle B = \angle R$, then AB : AC is equal to :

- A PQ : PR
- B PQ : QR
- C QR : QP
- D PR : QR

Previously asked in: 2026 30/2/1 Q8

♦ Triangles 6.4 Criteria for Similarity of Triangles

Q43. § 6.4 Criteria for Similarity of Triangles

[1]

In triangles ABC and DEF, $\angle B = \angle E$, $\angle F = \angle C$ and $AB = 3 DE$. Then, the two triangles are:

- A congruent but not similar
- B congruent as well as similar
- C neither congruent nor similar
- D similar but not congruent

Previously asked in: 2025 30/1/1 Q8

♦ Triangles 6.4 Criteria for Similarity of Triangles

Q44. § 6.1 Introduction § 6.5 Summary**[2]**

In the given figure, $\triangle AHK \sim \triangle ABC$. If $AK = 10$ cm, $BC = 3.5$ cm and $HK = 7$ cm, find the length of AC .

Previously asked in: 2026 30/2/1 Q22(a)

♦ Triangles 6.3 Similarity of Triangles

Q45. § 6.1 Introduction § 6.3 Similarity of Triangles**[2]**

In the given figure, $XY \parallel QR$, $\frac{PQ}{XQ} = \frac{7}{3}$ and $PR = 6.3$ cm. Find the length of YR .

Previously asked in: 2026 30/2/1 Q22(b)

♦ Triangles 6.3 Similarity of Triangles

Q46. § 6.1 Introduction § 6.3 Similarity of Triangles**[2]**

If $\triangle ABC \sim \triangle PQR$ in which $AB = 6$ cm, $BC = 4$ cm, $AC = 8$ cm and $PR = 6$ cm, then find the length of $(PQ + QR)$.

Previously asked in: 2025 30/1/1 Q24 (OR-1)

♦ Triangles 6.3 Similarity of Triangles

Q47. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[2]**

In the given figure, $\angle 1 = \angle 2$, show that $\triangle PQS \sim \triangle TQR$.

Previously asked in: 2025 30/1/1 Q24 (OR-2)

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q48. **[5]**

As shown in the given figure, a girl of height 90 cm is walking away from the base of a lamp post at a speed of 1.2 m/s. If the lamp is 3.6 m above the ground, find the length of her shadow after 4 seconds.

Previously asked in: 2026 30/2/1 Q34(b)

♦ Triangles Similar Triangles — Shadow/Lamp Post Problems

Q49. § 6.4 Criteria for Similarity of Triangles**[5]**

The diagonal BD of a parallelogram $ABCD$ intersects the line segment AE at the point F , where E is any point on the side BC . Prove that $DF \times EF = FB \times FA$.

Previously asked in: 2025 30/1/1 Q33 (OR-1)

♦ Triangles 6.4 Criteria for Similarity of Triangles

Q50. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[5]**

In $\triangle ABC$, if $AD \perp BC$ and $AD^2 = BD \cdot DC$, then prove that $\angle BAC = 90^\circ$.

Previously asked in: 2025 30/1/1 Q33 (OR-2)

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q51. § 6.4 Criteria for Similarity of Triangles**[1]**

In $\triangle DEF$, $AB \parallel EF$. The value of x is :

- A 0, 2
- B 2 only
- C -2
- D 1

Previously asked in: 2026 30/3/1 Q3

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q52. § 6.1 Introduction § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles

[1]

It is given that $\triangle ABC \sim \triangle QRP$ such that $AB = 9$ cm, $BC = 5$ cm and $PR = 2$ cm. Length of side QR is :

- A 0.9 cm
 B $\frac{5}{18}$ cm
 C $\frac{10}{9}$ cm
 D 3.6 cm

Previously asked in: 2026 30/3/1 Q13

♦ Triangles 6.3 Similarity of Triangles

Q53. § 6.1 Introduction § 6.3 Similarity of Triangles § 6.5 Summary

[1]

In the given figure, $PQ \parallel BC$. If $\frac{AP}{PB} = \frac{2}{3}$ and $AC = 20.4$ cm, then the length of AQ is :

- A 2.8 cm
 B 5.8 cm
 C 3.8 cm
 D 4.8 cm

Previously asked in: 2025 30/2/1 Q8

♦ Triangles 6.3 Similarity of Triangles

Q54. § 6.2 Similar Figures

[1]

Which of the following statements is incorrect ?

- A Two congruent figures are always similar.
 B A square and a rhombus of the same area are always similar.
 C Two equilateral triangles are always similar.
 D Two similar triangles need not be congruent.

Previously asked in: 2025 30/2/1 Q9

♦ Triangles 6.2 Similar Figures 6.3 Similarity of Triangles

Q55. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[2]

The diagonals of a quadrilateral $ABCD$ intersect each other at the point O such that $\frac{AO}{OC} = \frac{BO}{OD}$. Show that quadrilateral $ABCD$ is a trapezium.

Previously asked in: 2026 30/3/1 Q24

♦ Triangles 6.3 Similarity of Triangles

Q56. § 6.4 Criteria for Similarity of Triangles

[2]

In the given figure, D is a point on the side BC of $\triangle ABC$ such that $\angle ADC = \angle BAC$. Show that $CA^2 = CD \cdot CB$.

Previously asked in: 2025 30/2/1 Q24 (OR-1)

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q57. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[2]

In the given figure, $OA \cdot OB = OC \cdot OD$. Show that $\angle A = \angle C$ and $\angle B = \angle D$.

Previously asked in: 2025 30/2/1 Q24 (OR-2)

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q58. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[5]**

Prove that a line drawn parallel to one side of a triangle to intersect the other two sides in distinct points divides the other two sides in the same ratio. Hence, in the figure given below, prove that $\frac{BM}{ML} = \frac{DN}{NL}$ where $LM \parallel CB$ and $LN \parallel CD$.

Previously asked in: 2025 30/2/1 Q34

♦ Triangles

6.2 Basic Proportionality Theorem (Thales' Theorem)

6.3 Similarity of Triangles

Q59. § 6.1 Introduction § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles**[1]**

$\triangle ABC$ and $\triangle PQR$ are shown in the adjoining figures. The measure of $\angle C$ is :

- (a) 140°
- (b) 80°
- (c) 60°
- (d) 40°

Previously asked in: 2025 30/4/1 Q7

♦ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Q60. § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[1]**

E and F are points on the sides AB and AC respectively of a $\triangle ABC$ such that $\frac{AE}{EB} = \frac{AF}{FC} = \frac{1}{2}$. Which of the following relation is true ?

- (a) $EF = 2BC$
- (b) $BC = 2EF$
- (c) $EF = 3BC$
- (d) $BC = 3EF$

Previously asked in: 2025 30/4/1 Q16

♦ Triangles

6.3 Similarity of Triangles

Q61. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[1]**

If in two triangles DEF and PQR, $\angle D = \angle Q$ and $\angle R = \angle E$, then which of the following is not true?

- A $\frac{EF}{PR} = \frac{DF}{PQ}$
- B $\frac{DE}{PQ} = \frac{EF}{RP}$
- C $\frac{DE}{QR} = \frac{DF}{PQ}$
- D $\frac{EF}{RP} = \frac{DE}{QR}$

Previously asked in: 2025 30/3/1 Q10

♦ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Q62. § 6.1 Introduction § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[1]**

The measurements of $\triangle LMN$ and $\triangle ABC$ are shown in the figure given below. The length of side AC is:

- A 16 cm
- B 7 cm
- C 8 cm
- D 4 cm

Previously asked in: 2025 30/3/1 Q11

♦ Triangles

6.4 Criteria for Similarity of Triangles

Q63. § 6.4 Criteria for Similarity of Triangles

[2]

In parallelogram ABCD, side AD is produced to a point E and BE intersects CD at F. Prove that $\triangle ABE \sim \triangle CFB$

Previously asked in: 2025 30/4/1 Q22(B)

◆ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Q64. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[1]

In the given figure, in $\triangle ABC$, $AD \perp BC$ and $\angle BAC = 90^\circ$. If $BC = 16$ cm and $DC = 4$ cm, then the value of x (= AC) is:

A 4 cm

B 5 cm

C 8 cm

D 3 cm

Previously asked in: 2025 30/3/1 Q18

◆ Triangles

6.3 Similarity of Triangles

Q65. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[5]

The corresponding sides of $\triangle ABC$ and $\triangle PQR$ are in the ratio 3 : 5. $AD \perp BC$ and $PS \perp QR$ as shown in the following figures :

(i) Prove that $\triangle ADC \sim \triangle PSR$ (ii) If $AD = 4$ cm, find the length of PS .(iii) Using (ii) find $\text{ar}(\triangle ABC) : \text{ar}(\triangle PQR)$

Previously asked in: 2025 30/4/1 Q33(A)

◆ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Areas of Similar Triangles (ratio of areas equals square of ratio of corresponding sides)

Q66. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[5]

State basic proportionality theorem. Use it to prove the following : If three parallel lines l, m, n are intersected by transversals q and s as shown in the adjoining figure, then $\frac{AB}{BC} = \frac{DE}{EF}$.

Previously asked in: 2025 30/4/1 Q33(B)

◆ Triangles

6.3 Similarity of Triangles

Basic Proportionality Theorem (Thales' Theorem) — Statement and Application

Q67. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[5]

In the given figure, PA, QB and RC are perpendicular to AC . If $PA = x$ units, $QB = y$ units and $RC = z$ units, prove that $\frac{1}{x} + \frac{1}{z} = \frac{1}{y}$.

Previously asked in: 2025 30/3/1 Q34 (OR-1)

◆ Triangles

6.3 Similarity of Triangles

Q68. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[5]

Sides AB and BC and median AD of triangle ABC are respectively proportional to sides PQ and QR and median PM of $\triangle PQR$. Show that $\triangle ABC \sim \triangle PQR$.

Previously asked in: 2025 30/3/1 Q34 (OR-2)

◆ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Q69. § 6.2 Similar Figures

[1]

Which of the following statements is false ?

- A Two right triangles are always similar.
 B Two squares are always similar.
 C Two equilateral triangles are always similar.
 D Two circles are always similar.

Previously asked in: 2025 30/5/1 Q8; 2025 30/5/1 Q10 — 2×

♦ Triangles

6.3 Similarity of Triangles

Assertion–Reason: True/False analysis of geometric statements

Q70. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[1]

In the adjoining figure, ABCD is a trapezium in which $XY \parallel AB \parallel CD$. If $AX = \frac{2}{3}AD$, then $CY : YB =$

- A 2 : 3
 B 3 : 2
 C 1 : 3
 D 1 : 2

Previously asked in: 2025 30/5/1 Q9

♦ Triangles

6.3 Similarity of Triangles

Q71. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[1]

In the given figure $\triangle ABC$ is shown. DE is parallel to BC. If $AD = 5$ cm, $DB = 2.5$ cm and $BC = 12$ cm, then DE is equal to

- (A) 10 cm
 (B) 6 cm
 (C) 8 cm
 (D) 7.5 cm

Previously asked in: 2024 30/2/1 Q6

♦ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Q72. § 6.3 Similarity of Triangles § 6.5 Summary

[1]

The perimeters of two similar triangles ABC and PQR are 56 cm and 48 cm respectively. $\frac{PQ}{AB}$ is equal to

- (A) $\frac{7}{8}$
 (B) $\frac{6}{7}$
 (C) $\frac{7}{6}$
 (D) $\frac{8}{7}$

Previously asked in: 2024 30/2/1 Q10

♦ Triangles

6.3 Similarity of Triangles

Q73. § 6.2 Similar Figures § 6.4 Criteria for Similarity of Triangles

[1]

AB and CD are two chords of a circle intersecting at P. Choose the correct statement from the following:

- (A) $\triangle ADP \sim \triangle CBA$
 (B) $\triangle ADP \sim \triangle BPC$
 (C) $\triangle ADP \sim \triangle BCP$
 (D) $\triangle ADP \sim \triangle CBP$

Previously asked in: 2024 30/2/1 Q11

♦ Triangles

6.3 Similarity of Triangles

Angle in a semicircle / inscribed angle theorem

Q74. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[2]**

AD and PS are medians of triangles ABC and PQR respectively such that $\triangle ABD \sim \triangle PQS$. Prove that $\triangle ABC \sim \triangle PQR$.

Previously asked in: 2025 30/5/1 Q24

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q75. § 6.5 Summary**[5]**

If a line is drawn parallel to one side of a triangle intersecting the other two sides in distinct points then it divides the two sides in the same ratio. Prove it. Also, state the converse of the above statement.

Previously asked in: 2025 30/5/1 Q33

♦ Triangles 6.3 Similarity of Triangles

Q76. § 6.5 Summary**[5]**

If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, then prove that the other two sides are divided in the same ratio.

Previously asked in: 2024 30/2/1 Q33(a) (OR-1); 2024 30/1/1 Q34(A) — 2×

♦ Triangles 6.3 Similarity of Triangles

Q77. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[5]**

Sides AB and AC and median AD to $\triangle ABC$ are respectively proportional to sides PQ and PR and median PM of another triangle PQR. Show that $\triangle ABC \sim \triangle PQR$.

Previously asked in: 2024 30/2/1 Q33(b) (OR-2)

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q78. § 6.3 Similarity of Triangles**[1]**

In the adjoining figure, $PQ \parallel XY \parallel BC$, $AP = 2$ cm, $PX = 1.5$ cm and $BX = 4$ cm. If $QY = 0.75$ cm, then $AQ + CY =$

- A 6 cm
- B 4.5 cm
- C 3 cm
- D 5.25 cm

Previously asked in: 2025 30/6/1 Q6

♦ Triangles 6.3 Similarity of Triangles

Q79. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[1]**

Given $\triangle ABC \sim \triangle PQR$, $\angle A = 30^\circ$ and $\angle Q = 90^\circ$. The value of $(\angle R + \angle B)$ is

- A 90°
- B 120°
- C 150°
- D 180°

Previously asked in: 2025 30/6/1 Q7

♦ Triangles 6.3 Similarity of Triangles

Q80. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary

[1]

If the diagonals of a quadrilateral divide each other proportionally, then it is a :

- A parallelogram
- B rectangle
- C square
- D trapezium

Previously asked in: 2024 30/3/1 Q11

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q81. § 6.1 Introduction § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles

[1]

In $\triangle ABC$, $DE \parallel BC$ (as shown in the figure). If $AD = 2$ cm, $BD = 3$ cm, $BC = 7.5$ cm, then the length of DE (in cm) is :

- A 2.5
- B 3
- C 5
- D 6

Previously asked in: 2024 30/3/1 Q12

♦ Triangles 6.3 Similarity of Triangles

Q82. § 6.1 Introduction § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles

[2]

P is a point on the side BC of $\triangle ABC$ such that $\angle APC = \angle BAC$. Prove that $AC^2 = BC \cdot CP$.

Previously asked in: 2025 30/6/1 Q24

♦ Triangles 6.3 Similarity of Triangles

Q83. § 6.4 Criteria for Similarity of Triangles

[2]

In the given figure, $\frac{EA}{EC} = \frac{EB}{ED}$, prove that $\triangle EAB \sim \triangle ECD$.

Previously asked in: 2024 30/3/1 Q24

♦ Triangles 6.3 Similarity of Triangles 6.4 Criteria for Similarity of Triangles

Q84. § 6.5 Summary

[5]

If a line drawn parallel to one side of triangle intersecting the other two sides in distinct points divides the two sides in the same ratio, then it is parallel to third side. State and prove the converse of the above statement.

Previously asked in: 2025 30/6/1 Q33(a)

♦ Triangles 6.3 Similarity of Triangles

Q85. § 6.1 Introduction § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles

[5]

In the adjoining figure, $\triangle CAB$ is a right triangle, right angled at A and $AD \perp BC$. Prove that $\triangle ADB \sim \triangle CDA$. Further, if $BC = 10$ cm and $CD = 2$ cm, find the length of AD.

Previously asked in: 2025 30/6/1 Q33(b)

♦ Triangles 6.3 Similarity of Triangles

Q86. § 6.1 Introduction § 6.4 Criteria for Similarity of Triangles**[1]**

In $\triangle ABC$, $DE \parallel BC$ (as shown in the figure). If $AD = 4$ cm, $AB = 9$ cm and $AC = 13.5$ cm, then the length of EC is :

- A 6 cm
- B 7.5 cm
- C 9 cm
- D 5.7 cm

Previously asked in: 2024 30/4/1 Q13

♦ Triangles

6.3 Similarity of Triangles

Q87. § 6.1 Introduction § 6.3 Similarity of Triangles § 6.5 Summary**[2]**

In the given figure, XZ is parallel to BC . $AZ = 3$ cm, $ZC = 2$ cm, $BM = 3$ cm and $MC = 5$ cm. Find the length of XY .

Previously asked in: 2023 30/1/1 Q22

♦ Triangles

6.3 Similarity of Triangles

Q88. § 6.5 Summary**[5]**

If a line is drawn parallel to one side of a triangle to intersect the other two sides at distinct points, prove that the other two sides are divided in the same ratio.

Previously asked in: 2023 30/1/1 Q32

♦ Triangles

6.3 Similarity of Triangles

Q89. § 6.1 Introduction**[2]**

In the given figure, $\triangle AHK \sim \triangle ABC$. If $AK = 8$ cm, $BC = 3.2$ cm and $HK = 6.4$ cm, then find the length of AC .

Previously asked in: 2024 30/4/1 Q25

♦ Triangles

6.3 Similarity of Triangles

Q90. § 6.4 Criteria for Similarity of Triangles**[5]**

E is a point on the side AD produced of a parallelogram $ABCD$ and BE intersects CD at F . Show that $\triangle ABE \sim \triangle CFB$.

Previously asked in: 2024 30/4/1 Q33(a) (OR-1)

♦ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Q91. § 6.3 Similarity of Triangles § 6.4 Criteria for Similarity of Triangles § 6.5 Summary**[5]**

Sides AB , BC and the median AD of $\triangle ABC$ are respectively proportional to sides PQ , QR and the median PM of another $\triangle PQR$. Prove that $\triangle ABC \sim \triangle PQR$.

Previously asked in: 2024 30/4/1 Q33(b) (OR-2)

♦ Triangles

6.3 Similarity of Triangles

6.4 Criteria for Similarity of Triangles

Q92. § 6.1 Introduction § 6.3 Similarity of Triangles**[1]**

If $\triangle PQR \sim \triangle ABC$; $PQ = 6$ cm, $AB = 8$ cm and the perimeter of $\triangle ABC$ is 36 cm, then the perimeter of $\triangle PQR$ is

- A 20.25 cm
- B 27 cm
- C 48 cm
- D 64 cm

Previously asked in: 2023 30/6/1 Q8

♦ Triangles

6.3 Similarity of Triangles

Q93. § 6.1 Introduction § 6.4 Criteria for Similarity of Triangles**[1]**

In the given figure, $DE \parallel BC$. If $AD = 3$ cm, $AB = 7$ cm and $EC = 3$ cm, then the length of AE is

- A 2 cm
- B 2.25 cm
- C 3.5 cm
- D 4 cm

Previously asked in: 2023 30/6/1 Q10

♦ Triangles

6.3 Similarity of Triangles

Q94. § 10.1 Introduction § 10.2 Tangent to a Circle § 10.4 Summary**[4]**

In Figure 1, a triangle ABC with $\angle B = 90^\circ$ is shown. Taking AB as diameter, a circle has been drawn intersecting AC at point P . Prove that the tangent drawn at point P bisects BC .

Previously asked in: 2022 30/1/1 Q12

♦ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

6.3 Similarity of Triangles

Q95. § 10.1 Introduction**[4]**

In Figure 3, two circles with centres at O and O' of radii $2r$ and r respectively, touch each other internally at A . A chord AB of the bigger circle meets the smaller circle at C . Show that C bisects AB .

Previously asked in: 2022 30/3/1 Q11(a) (OR-1)

♦ Circles

10.2 Tangent to a Circle

10.3 Number of Tangents from a Point on a Circle

6.3 Similarity of Triangles

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