



## give me the questions with diagram if it contains the diagram and question paper should be of 40 marks

Here is a **40-mark practice paper** on **Chapter 1 – Similarity (Maths 2, SSC Maharashtra Board, Class 10)**, with **diagram-based questions clearly described** so you can draw them yourself while solving.

### Similarity – Chapter 1 (Maths 2) – Self-Test Paper (40 marks)

**Time:** 90 minutes

#### Section A – Very Short Answer (1 mark each)

(Attempt any 6 out of 8)

1. State **Basic Proportionality Theorem (Thales Theorem)** in one sentence.
2. If  $\triangle ABC \sim \triangle PQR$  and  $AB = 8$  cm,  $PQ = 12$  cm, find the ratio of their areas.
3. In  $\triangle ABC$ ,  $DE \parallel BC$ . If  $AD = 4$  cm,  $DB = 6$  cm, find  $\frac{AE}{EC}$ .
4. If the ratio of corresponding sides of two similar triangles is  $2 : 5$ , what is the ratio of their corresponding altitudes?
5. Write the **AA-test of similarity** for triangles.
6. If the areas of two similar triangles are in the ratio  $9 : 64$ , what is the ratio of their corresponding medians?
7. In the figure below,  $BC \parallel DE$ . If  $AB = 3$  cm,  $BD = 2$  cm,  $AC = 4.5$  cm, find  $CE$ .

**Diagram description:**

- Draw  $\triangle ABC$ .
  - Point  $D$  on  $AB$  such that  $BD = 2$  cm.
  - Point  $E$  on  $AC$  such that  $DE \parallel BC$ .
8. In the figure,  $\triangle ABC \sim \triangle DEF$ . If  $AB = 5$  cm,  $DE = 10$  cm and area of  $\triangle ABC = 20$  cm<sup>2</sup>, find area of  $\triangle DEF$ .

**Diagram description:**

- Draw two triangles  $ABC$  and  $DEF$  such that corresponding angles are equal.

## Section B – Short Answer (2 marks each)

(Attempt any 6 out of 8)

9. In  $\triangle ABC$ ,  $DE \parallel BC$ . If  $AD = 6$  cm,  $DB = 4$  cm,  $AE = 9$  cm, find  $EC$ .
10.  $\triangle ABC \sim \triangle PQR$ . If  $AB = 12$  cm,  $PQ = 8$  cm and area of  $\triangle ABC = 72$  cm<sup>2</sup>, find area of  $\triangle PQR$ .
11. In  $\triangle PQR$ , ray  $PS$  bisects  $\angle P$ . If  $PQ = 10$  cm,  $PR = 15$  cm,  $QR = 20$  cm, find  $QS$  and  $SR$ .
12. In  $\triangle XYZ$ ,  $LM \parallel YZ$ . If  $XL = 3$  cm,  $LZ = 4$  cm,  $YM = 6$  cm, find  $MZ$ .
13. In the figure,  $DE \parallel BC$ . If  $AD = 2$  cm,  $DB = 3$  cm,  $AE = 4$  cm, find  $EC$ .

**Diagram description:**

- Draw  $\triangle ABC$ .
  - Points  $D$  on  $AB$ ,  $E$  on  $AC$  such that  $DE \parallel BC$ .
14. The perimeters of two similar triangles are 20 cm and 30 cm. If the area of the smaller triangle is 36 cm<sup>2</sup>, find the area of the larger triangle.
  15. In the figure,  $BC \parallel DE$ . If  $AB = 4$  cm,  $BD = 6$  cm,  $AC = 5$  cm, find  $CE$ .

**Diagram description:**

- Draw  $\triangle ABC$ .
  - Point  $D$  on  $AB$  extended beyond  $B$ .
  - Point  $E$  on  $AC$  such that  $DE \parallel BC$ .
16. State the **converse of Basic Proportionality Theorem** and write one numerical example.

## Section C – Medium–Long Answer (3 marks each)

(Attempt any 4 out of 6)

17. In  $\triangle ABC$ ,  $DE \parallel BC$ . If  $AD = 5$  cm,  $DB = 3$  cm,  $AE = 10$  cm, find  $EC$ . Also find  $\frac{\text{ar}(\triangle ADE)}{\text{ar}(\triangle ABC)}$ .
18.  $\triangle ABC \sim \triangle PQR$ . If  $AB = 10$  cm,  $BC = 14$  cm,  $AC = 16$  cm and  $PQ = 5$  cm, find  $QR$  and  $PR$ .
19. In  $\triangle ABC$ , ray  $AD$  bisects  $\angle A$ . If  $AB = 12$  cm,  $AC = 18$  cm,  $BD = 4$  cm, find  $DC$  and  $BC$ .
20. In  $\triangle XYZ$ ,  $LM \parallel YZ$ . If  $XL = 5$  cm,  $LZ = 10$  cm,  $YM = 6$  cm, find  $MZ$ . Also find the ratio of areas of  $\triangle XLM$  and  $\triangle XYZ$ .
21. In the figure,  $DE \parallel BC$ . If  $AD = 3$  cm,  $DB = 2$  cm,  $AE = 6$  cm, find  $EC$ . Also find  $\frac{\text{ar}(\triangle ADE)}{\text{ar}(\triangle ABC)}$ .

**Diagram description:**

- Draw  $\triangle ABC$ .

- Points  $D$  on  $AB$ ,  $E$  on  $AC$  such that  $DE \parallel BC$ .

22. In the figure,  $\triangle ABC \sim \triangle DEF$ . If  $AB = 9$  cm,  $BC = 12$  cm,  $AC = 15$  cm and  $DE = 6$  cm, find  $EF$  and  $DF$ .

**Diagram description:**

- Draw two triangles  $ABC$  and  $DEF$  with corresponding angles equal.

## Section D – Hard / Theorem-Based (4 marks each)

(Attempt any 4 out of 5)

23. In  $\triangle ABC$ ,  $DE \parallel BC$ .

(a) Prove that  $\frac{AD}{DB} = \frac{AE}{EC}$ .

(b) If  $AD = 6$  cm,  $DB = 9$  cm,  $AE = 4$  cm, find  $EC$ .

**Diagram description:**

- Draw  $\triangle ABC$ .
- Points  $D$  on  $AB$ ,  $E$  on  $AC$  such that  $DE \parallel BC$ .

24.  $\triangle ABC \sim \triangle DEF$ .

(a) Prove that the ratio of their areas is equal to the square of the ratio of their corresponding sides.

(b) If  $AB : DE = 3 : 4$  and area of  $\triangle ABC = 54$  cm<sup>2</sup>, find the area of  $\triangle DEF$ .

**Diagram description:**

- Draw two triangles  $ABC$  and  $DEF$  with corresponding angles equal.

25. In  $\triangle PQR$ , ray  $PS$  bisects  $\angle P$ .

(a) Prove that  $\frac{QS}{SR} = \frac{PQ}{PR}$ .

(b) If  $PQ = 14$  cm,  $PR = 21$  cm,  $QR = 30$  cm, find  $QS$  and  $SR$ .

**Diagram description:**

- Draw  $\triangle PQR$ .
- Ray  $PS$  from  $P$  meeting  $QR$  at  $S$  such that  $\angle QPS = \angle RPS$ .

26. In the figure,  $DE \parallel BC$ .

(a) Prove that  $\frac{AD}{AB} = \frac{AE}{AC}$ .

(b) If  $AD = 4$  cm,  $AB = 10$  cm,  $AE = 6$  cm, find  $AC$ .

**Diagram description:**

- Draw  $\triangle ABC$ .
- Points  $D$  on  $AB$ ,  $E$  on  $AC$  such that  $DE \parallel BC$ .

27. In the figure,  $AB \perp BC$  and  $DC \perp BC$ .

(a) Prove that  $\triangle ABC \sim \triangle BCD$ .

(b) If  $AB = 6$  cm,  $DC = 4$  cm, find  $\frac{\text{ar}(\triangle ABC)}{\text{ar}(\triangle BCD)}$ .

**Diagram description:**

- Draw line segment  $BC$ .
- From  $B$ , draw  $AB \perp BC$ .
- From  $C$ , draw  $DC \perp BC$  on the same side of  $BC$  as  $AB$ .
- Join  $A$  to  $C$  and  $D$  to  $B$ .

### Mark Distribution (Total 40 marks)

- Section A:  $6 \times 1 = 6$  marks
- Section B:  $6 \times 2 = 12$  marks
- Section C:  $4 \times 3 = 12$  marks
- Section D:  $4 \times 4 = 16$  marks

When you finish, you can send your answers (or a photo of your rough work) and I'll give you a **detailed marking scheme + corrections**.

Or say:

▮ "Give me the solutions with steps and diagrams."



1. <https://byjus.com/msbshse/maharashtra-board-solutions-class-10-maths-part-2-chapter-1/>
2. [https://www.youtube.com/watch?v=p-r\\_8oDv8kU](https://www.youtube.com/watch?v=p-r_8oDv8kU)
3. [https://www.shaalaa.com/textbook-solutions/c/scert-maharashtra-solutions-geometry-mathematics-2-english-10-standard-ssc-chapter-1-similarity\\_5417](https://www.shaalaa.com/textbook-solutions/c/scert-maharashtra-solutions-geometry-mathematics-2-english-10-standard-ssc-chapter-1-similarity_5417)
4. <https://cdn1.byjus.com/wp-content/uploads/2020/04/msbshse-sol-class-10-maths-part-2-chapter-1.pdf>
5. <https://www.scribd.com/document/825805740/maharashtra-ssc-geometry-maths-2-similarity-question-bank-2025>
6. [https://www.shaalaa.com/textbook-solutions/c/balbharati-solutions-mathematics-2-english-standard-10-maharashtra-state-board-chapter-1-similarity\\_690](https://www.shaalaa.com/textbook-solutions/c/balbharati-solutions-mathematics-2-english-standard-10-maharashtra-state-board-chapter-1-similarity_690)
7. [https://www.maa.ac.in/prashnapedhi2023/10th/eng/10th\\_Maths\\_Part\\_II\\_ENG\\_QueBank\\_MSCERT.pdf](https://www.maa.ac.in/prashnapedhi2023/10th/eng/10th_Maths_Part_II_ENG_QueBank_MSCERT.pdf)
8. [https://www.shaalaa.com/textbook-solutions/c/balbharati-solutions-geometry-mathematics-2-english-10-standard-ssc-maharashtra-state-board-chapter-1-similarity\\_690](https://www.shaalaa.com/textbook-solutions/c/balbharati-solutions-geometry-mathematics-2-english-10-standard-ssc-maharashtra-state-board-chapter-1-similarity_690)
9. <https://www.youtube.com/watch?v=Pz6KRO0RIPw>
10. <https://www.youtube.com/watch?v=rFzX4nYY1qE>