EduSahara™ Worksheet

Name : Chapter Based Worksheet

Chapter : Similarity (As a Size Transformation)

Grade : ICSE Grade X

1. A model of a ship is made to a scale of 1 : 150. If the area of the deck of the model ship is 64 sq.m, calculate the area of the deck of the ship.

   (i) 1500000.00 sq.m (ii) 1670000.00 sq.m (iii) 1260000.00 sq.m (iv) 1290000.00 sq.m

   (v) 1440000.00 sq.m

2. △ABC is a triangle with sides BC = 12 cm, CA = 10 cm and AB = 11 cm. △ABC is reduced to △A'B'C' such that the smallest side of △A'B'C' is 3.33 cm. Find the corresponding lengths of the reduced triangle △A'B'C'.

   (i) 4 cm, 3.33 cm, 3.67 cm (ii) 2 cm, 1.33 cm, 1.67 cm (iii) 3 cm, 2.33 cm, 2.67 cm

   (iv) 5 cm, 4.33 cm, 4.67 cm (v) 6 cm, 5.33 cm, 5.67 cm

3. The measurements of a triangular field △ABC are BC = 13 cm, AB = 7 cm and ∠ABC = 90° on a map drawn to a scale of 1 : 23000. Calculate the actual area of the plot in sq.km.

   (i) 1.41 sq.km (ii) 2.41 sq.km (iii) 3.41 sq.km (iv) 0.41 sq.km (v) 4.41 sq.km

4. A model of building is made with a scale factor of 1 : 70. Find the volume of the tank on the top of the model if its actual volume is 74088000 cu.cm.

   (i) 216.00 cu.cm (ii) 214.00 cu.cm (iii) 217.00 cu.cm (iv) 218.00 cu.cm (v) 215.00 cu.cm

5. Which of the following are true?

   a) Any two squares are congruent.
   b) Any two circles are congruent.
   c) Any two triangles are congruent.
   d) Any two triangles are similar.
   e) Any two circles are similar.
   f) Any two squares are similar.

   (i) {a,e} (ii) {e,f} (iii) {b,f} (iv) {a,f,e} (v) {c,d,e}

6. A triangle having an area 62.93 sq.cm is enlarged such that the area of its image is 161.1 sq.cm. Find the scale factor.

   (i) 0.6 (ii) 2.6 (iii) 1.6 (iv) 9.6 (v) 3.6

7. A model of a ship is made to a scale of 1 : 160. If the volume of the ship is 20123648000 cu.m, calculate the volume of the model ship.

   (i) 4853.00 cu.m (ii) 4963.00 cu.m (iii) 4733.00 cu.m (iv) 5033.00 cu.m (v) 4913.00 cu.m

8. A triangle having an area 42.15 sq.cm is enlarged by a scale factor of 2.67. Find the area of its image.

   (i) 300.51 sq.cm (ii) 287.51 sq.cm (iii) 302.51 sq.cm (iv) 324.51 sq.cm (v) 285.51 sq.cm

9. Which of the following are true?

a) A circle is a polygonal region.
b) A triangle is a polygonal region.
c) A square is a polygonal region.
d) A semi-circle is a polygonal region.
e) A sector is a polygonal region.

(i) {a,b} (ii) {d,c} (iii) {e,a,b} (iv) {d,c,b} (v) {b,c}

10. Which of the following are necessary conditions for similarity of two polygons ?

a) The corresponding angles are proportional.
b) The corresponding sides are proportional.
c) The corresponding sides are equal.
d) The corresponding angles are equal.

(i) {c,d} (ii) {a,d,b} (iii) {a,b} (iv) {b,d} (v) {a,c,b}

11. A rectangle having an area 342.00 sq.cm is reduced such that the area of its image is 85.50 sq.cm. Find the scale factor.

(i) 0.5 (ii) 8.5 (iii) 1.5 (iv) 7.5 (v) 2.5

12. A model of a ship is made to a scale of 1 : 80. If the length of the ship is 640 m, calculate length of the model ship.

(i) 8.00 m (ii) 6.00 m (iii) 9.00 m (iv) 7.00 m (v) 10.00 m

13. Which of the following are true?

a) Any two triangles are similar if the corresponding angles are equal.
b) Any two quadrilaterals are similar if the corresponding sides are proportional.
c) Any two quadrilaterals are similar if the corresponding angles are equal.
d) Any two triangles are similar if the corresponding sides are proportional.

(i) {c,b} (ii) {a,b,d} (iii) {c,a} (iv) {c,a,b} (v) {c,d}

14. AB = 18.00 cm, BC = 17.00 cm are the measurements of a rectangular field of land ABCD on a map drawn to a scale of 1 : 9000. Calculate the diagonal distance of the field.

(i) 3.23 km (ii) 0.23 km (iii) 4.23 km (iv) 1.23 km (v) 2.23 km

15. $\triangle ABC$ is a triangle with sides BC = 11 cm, CA = 13 cm and AB = 12 cm. $\triangle ABC$ is enlarged to $\triangle A'B'C'$ such that the smallest side of $\triangle A'B'C'$ is 44 cm. Find the scale factor.

(i) 8 (ii) 2 (iii) 3 (iv) 4 (v) 5

16. A model of a ship is made to a scale of 1 : 115. If the area of the deck of the ship is 2592100 sq.m, calculate the area of the deck of the model ship.

(i) 222.00 sq.m (ii) 178.00 sq.m (iii) 209.00 sq.m (iv) 182.00 sq.m (v) 196.00 sq.m

17. Which of the following are true?

a) Similarity is transitive.
b) Similarity is reflexive.
c) Similarity is anti symmetric.
d) Similarity is symmetric.

(i) {c,a,b} (ii) {c,a} (iii) {c,b} (iv) {c,d} (v) {a,b,d}

18. A model of building is made with a scale factor of 1 : 40. Find the actual height of the building if the height of the model is 10 cm.

(i) 3.00 m (ii) 5.00 m (iii) 6.00 m (iv) 4.00 m (v) 2.00 m

19. The dimensions of the model of a multi-storey building are 3 cm × 6 cm × 2 cm. If the model is drawn to a scale of 1 : 65, find the volume of the room in the model whose actual volume is 94.1964 cu.m.

(i) 356.00 cu.cm (ii) 316.00 cu.cm (iii) 325.00 cu.cm (iv) 343.00 cu.cm (v) 361.00 cu.cm

20. AB = 15.00 cm, BC = 10.00 cm are the measurements of a rectangular field of land ABCD on a map drawn to a scale of 1 : 6000. Calculate the area of the field.

(i) 0.54 sq.km (ii) 2.54 sq.km (iii) 1.54 sq.km (iv) 7.54 sq.km (v) 8.54 sq.km

21. The dimensions of the model of a multi-storey building are 5 cm × 9.5 cm × 4 cm. If the model is drawn to a scale of 1 : 130, find the actual dimensions of the building.

(i) 651 cm × 1235 cm × 520 cm (ii) 650 cm × 1236 cm × 520 cm (iii) 650 cm × 1235 cm × 520 cm

(iv) 650 cm × 1235 cm × 521 cm (v) 651 cm × 1236 cm × 520 cm

22. Which of the following are true?

a) Area of a convex polygonal region is equal to the sum of the areas of all triangles formed by joining the vertices of the polygon with an interior point.
b) Area of the union of two polygonal region is not equal to the sum of the individual area.
c) Area of the union of two polygonal region is the sum of the individual area.
d) A polygonal region can be divided into a finite number of triangles in a unique way.

(i) {c,b,a} (ii) {c,a} (iii) {d,b} (iv) {c,d,a} (v) {a,b}

23. A model of a ship is made to a scale of 1 : 175. If the volume of the model ship is 1000 cu.m, calculate the volume of the ship.

(i) 5529375000.00 cu.m (ii) 5199375000.00 cu.m (iii) 5509375000.00 cu.m (iv) 5359375000.00 cu.m

(v) 5239375000.00 cu.m

24. The ratio of the bases of two triangles ABC and DEF is $10:5$.
If the triangles are equal in area, then the ratio of their heights is

(i) $11:5$ (ii) $10:2$ (iii) $9:5$ (iv) $5:10$ (v) $10:8$

25. The dimensions of the model of a multi-storey building are 9 cm × 4.5 cm × 8.5 cm. If the model is drawn to a scale of 1 : 190, find the floor area of a room of the building whose area in the model is 81 sq.cm.

(i) 276.41 sq.m (ii) 268.41 sq.m (iii) 315.41 sq.m (iv) 292.41 sq.m (v) 309.41 sq.m

Assignment Key

1) (v)	2) (i)	3) (ii)	4) (i)	5) (ii)	6) (iii)
7) (v)	8) (i)	9) (v)	10) (iv)	11) (i)	12) (i)
13) (ii)	14) (v)	15) (iv)	16) (v)	17) (v)	18) (iv)
19) (iv)	20) (i)	21) (iii)	22) (v)	23) (iv)	24) (iv)
25) (iv)					