EduSahara™ Worksheet

Name : Chapter Based Worksheet

Chapter : Similarity (As a Size Transformation)

Grade : ICSE Grade X

1. Which of the following are true?

a) If two figures are congruent, then they are similar too.
b) Similar and congruent are not synonymous.
c) Similar figures have same area.
d) Congruent figures have same area.
e) If two figures are similar, then they are congruent too.

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

2. A model of a ship is made to a scale of 1 : 200. If the volume of the ship is 17576000000 cu.m, calculate the volume of the model ship.

(i) 2197.00 cu.m (ii) 2477.00 cu.m (iii) 2067.00 cu.m (iv) 2257.00 cu.m (v) 1927.00 cu.m

3. The dimensions of the model of a multi-storey building are 5 cm × 3 cm × 1.5 cm. If the model is drawn to a scale of 1 : 120, find the actual dimensions of the building.

(i) 600 cm × 360 cm × 180 cm (ii) 600 cm × 361 cm × 180 cm (iii) 601 cm × 361 cm × 180 cm

(iv) 600 cm × 360 cm × 181 cm (v) 601 cm × 360 cm × 180 cm

4. AB = 17.00 cm, BC = 9.00 cm are the measurements of a rectangular field of land ABCD on a map drawn to a scale of 1 : 21000. Calculate the diagonal distance of the field.

(i) 4.04 km (ii) 5.04 km (iii) 6.04 km (iv) 3.04 km (v) 2.04 km

5. Which of the following are true?

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

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

6. A model of a ship is made to a scale of 1 : 140. If the length of the ship is 1680 m, calculate length of the model ship.

(i) 17.00 m (ii) 9.00 m (iii) 15.00 m (iv) 12.00 m (v) 7.00 m

7. A triangle having an area 20.69 sq.cm is reduced by a scale factor of 0.20. Find the area of its image.

(i) 1.83 sq.cm (ii) 0.83 sq.cm (iii) 2.83 sq.cm (iv) 7.83 sq.cm (v) 8.83 sq.cm

8. A model of a ship is made to a scale of 1 : 85. If the area of the deck of the ship is 1849600 sq.m, calculate the area of the deck of the model ship.

(i) 268.00 sq.m (ii) 253.00 sq.m (iii) 231.00 sq.m (iv) 256.00 sq.m

9. A rectangle having an area 180.00 sq.cm is reduced by a scale factor of 0.22. Find the area of its image.

(i) 9.71 sq.cm (ii) 8.71 sq.cm (iii) 6.71 sq.cm (iv) 10.71 sq.cm (v) 7.71 sq.cm

10. A model of building is made with a scale factor of 1 : 80. Find the volume of the tank on the top of the model if its actual volume is 13824000 cu.cm.

(i) 28.00 cu.cm (ii) 25.00 cu.cm (iii) 27.00 cu.cm (iv) 26.00 cu.cm (v) 29.00 cu.cm

11. The dimensions of the model of a multi-storey building are 4.5 cm × 5.5 cm × 10 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 926.8594 cu.m.

(i) 3555.00 cu.cm (ii) 3395.00 cu.cm (iii) 3215.00 cu.cm (iv) 3205.00 cu.cm (v) 3375.00 cu.cm

12. Which of the following are true?

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

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

13. △ABC is a triangle with sides BC = 13 cm, CA = 14 cm and AB = 12 cm. △ABC is enlarged to △A'B'C' such that the smallest side of △A'B'C' is 20 cm. Find the scale factor.

(i) $\frac{5}{3}$ (ii) 1 (iii) $\frac{7}{3}$ (iv) 5

14. A model of a ship is made to a scale of 1 : 180. If length of the model ship is 19 m, calculate the length of the ship.

(i) 3270.00 m (ii) 3540.00 m (iii) 3490.00 m (iv) 3300.00 m (v) 3420.00 m

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

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

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

16. Which of the following are true?

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

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

17. A triangle having an area 79.99 sq.cm is reduced such that the area of its image is 6.73 sq.cm. Find the scale factor.

(i) 2.29 (ii) 8.29 (iii) 7.29 (iv) 0.29 (v) 1.29

18. The dimensions of the model of a multi-storey building are 3.5 cm × 8 cm × 8.5 cm. If the model is drawn to a scale of 1 : 145, find the floor area of a room of the building whose area in the model is 225 sq.cm.

(i) 457.06 sq.m (ii) 475.06 sq.m (iii) 496.06 sq.m (iv) 460.06 sq.m (v) 473.06 sq.m

19. Which of the following are true?

a) Area of the union of two polygonal region is not equal to the sum of the individual area.
b) Area of the union of two polygonal region is the sum of the individual area.
c) A polygonal region can be divided into a finite number of triangles in a unique way.
d) 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.

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

20. A rectangle having an area 300.00 sq.cm is reduced such that the area of its image is 75.00 sq.cm. Find the scale factor.

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

21. The measurements of a triangular field $\triangle ABC$ are BC = 7 cm, AB = 15 cm and $\angle ABC = 90°$ on a map drawn to a scale of 1 : 23000. Calculate the actual area of the plot in sq.km.

(i) 0.78 sq.km (ii) 3.78 sq.km (iii) 2.78 sq.km (iv) 1.78 sq.km (v) 4.78 sq.km

22. The ratio of the bases of two triangles ABC and DEF is $5:3$.
If the triangles are equal in area, then the ratio of their heights is

(i) $6:3$ (ii) $5:5$ (iii) $4:3$ (iv) $5:1$ (v) $3:5$

23. A model of a ship is made to a scale of 1 : 160. If the volume of the model ship is 5832 cu.m, calculate the volume of the ship.

(i) 23887872000.00 cu.m (ii) 22387872000.00 cu.m (iii) 24587872000.00 cu.m

(iv) 25287872000.00 cu.m (v) 23287872000.00 cu.m

24. Which of the following are true?

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

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

25. The measurements of a triangular field $\triangle ABC$ are BC = 12 cm, AB = 10 cm and $\angle ABC = 90°$ on a map drawn to a scale of 1 : 22000. Calculate the actual length of CA in km.

(i) 4.44 km (ii) 1.44 km (iii) 2.44 km (iv) 3.44 km (v) 5.44 km

Assignment Key

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