EduSahara™ Worksheet

Name : Chapter Based Worksheet

Chapter : Similarity (As a Size Transformation)

Grade : ICSE Grade X

1. The dimensions of the model of a multi-storey building are 7.5 cm × 8 cm × 10 cm. If the model is drawn to a scale of 1 : 105, find the actual dimensions of the building.

   (i) 787.5 cm × 840 cm × 1050 cm (ii) 788.5 cm × 841 cm × 1050 cm (iii) 787.5 cm × 841 cm × 1050 cm

   (iv) 787.5 cm × 840 cm × 1051 cm (v) 788.5 cm × 840 cm × 1050 cm

2. A triangle having an area 52.39 sq.cm is reduced by a scale factor of 0.25. Find the area of its image.

   (i) 1.27 sq.cm (ii) 2.27 sq.cm (iii) 4.27 sq.cm (iv) 3.27 sq.cm (v) 5.27 sq.cm

3. A triangle having an area 28.28 sq.cm is enlarged such that the area of its image is 38.72 sq.cm. Find the scale factor.

   (i) 0.17 (ii) 9.17 (iii) 3.17 (iv) 1.17 (v) 2.17

4. A model of a ship is made to a scale of 1 : 135. If the area of the deck of the ship is 164025 sq.m, calculate the area of the deck of the model ship.

   (i) 8.00 sq.m (ii) 7.00 sq.m (iii) 10.00 sq.m (iv) 9.00 sq.m (v) 11.00 sq.m

5. The measurements of a triangular field △ABC are BC = 12 cm, AB = 9 cm and ∠ABC = 90° on a map drawn to a scale of 1 : 24000. Calculate the actual area of the plot in sq.km.

   (i) 1.11 sq.km (ii) 3.11 sq.km (iii) 2.11 sq.km (iv) 5.11 sq.km (v) 4.11 sq.km

6. The dimensions of the model of a multi-storey building are 9 cm × 7 cm × 6.5 cm. If the model is drawn to a scale of 1 : 110, find the floor area of a room of the building whose area in the model is 81 sq.cm.

   (i) 98.01 sq.m (ii) 101.01 sq.m (iii) 95.01 sq.m (iv) 93.01 sq.m (v) 103.01 sq.m

7. A model of a ship is made to a scale of 1 : 120. If length of the model ship is 17 m, calculate the length of the ship.

   (i) 1900.00 m (ii) 2070.00 m (iii) 1870.00 m (iv) 2320.00 m (v) 2040.00 m

8. △ABC is a triangle with sides BC = 10 cm, CA = 15 cm and AB = 14 cm. △ABC is reduced to △A'B'C' such that the smallest side of △A'B'C' is 2.5 cm. Find the corresponding lengths of the reduced triangle △A'B'C'.

   (i) 1.5 cm, 2.75 cm, 2.5 cm (ii) 0.5 cm, 1.75 cm, 1.5 cm (iii) 3.5 cm, 4.75 cm, 4.5 cm

   (iv) 2.5 cm, 3.75 cm, 3.5 cm (v) 4.5 cm, 5.75 cm, 5.5 cm

9. AB = 20.00 cm, BC = 18.00 cm are the measurements of a rectangular field of land ABCD on a map drawn to a scale of 1 : 18000. Calculate the diagonal distance of the field.

   (i) 3.84 km (ii) 6.84 km (iii) 2.84 km (iv) 5.84 km (v) 4.84 km

10. Which of the following are true?

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

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

11. AB = 14.00 cm, BC = 12.00 cm are the measurements of a rectangular field of land ABCD on a map drawn to a scale of 1 : 15000. Calculate the area of the field.

(i) 3.78 sq.km (ii) 4.78 sq.km (iii) 5.78 sq.km (iv) 1.78 sq.km (v) 2.78 sq.km

12. A model of building is made with a scale factor of 1 : 30. Find the actual height of the building if the height of the model is 9 cm.

(i) 0.70 m (ii) 3.70 m (iii) 4.70 m (iv) 2.70 m (v) 1.70 m

13. The measurements of a triangular field $\triangle ABC$ are BC = 6 cm, AB = 12 cm and $\angle ABC = 90°$ on a map drawn to a scale of 1 : 16000. Calculate the actual length of CA in km.

(i) 0.15 km (ii) 4.15 km (iii) 3.15 km (iv) 1.15 km (v) 2.15 km

14. 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 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.
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) {d,b} (ii) {c,b,a} (iii) {c,a} (iv) {a,b} (v) {c,d,a}

15. $\triangle ABC$ is a triangle with sides BC = 11 cm, CA = 10 cm and AB = 13 cm. $\triangle ABC$ is reduced to $\triangle A'B'C'$ such that the smallest side of $\triangle A'B'C'$ is 3.33 cm. Find the scale factor.

(i) $\frac{3}{7}$ (ii) $\frac{1}{3}$ (iii) $\frac{3}{11}$ (iv) $\frac{1}{9}$ (v) $\frac{5}{9}$

16. A rectangle having an area 77.00 sq.cm is reduced by a scale factor of 0.43. Find the area of its image.

(i) 11.24 sq.cm (ii) 14.24 sq.cm (iii) 17.24 sq.cm (iv) 9.24 sq.cm (v) 19.24 sq.cm

17. Which of the following are true?

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

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

18. A model of a ship is made to a scale of 1 : 140. If the area of the deck of the model ship is 25 sq.m, calculate the area of the deck of the ship.

(i) 490000.00 sq.m (ii) 502000.00 sq.m (iii) 465000.00 sq.m (iv) 506000.00 sq.m (v) 487000.00 sq.m

19. Which of the following are true?

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

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

20. A model of a ship is made to a scale of 1 : 130. If the volume of the model ship is 5832 cu.m, calculate the volume of the ship.

(i) 12788904000.00 cu.m (ii) 12804904000.00 cu.m (iii) 12827904000.00 cu.m

(iv) 12815904000.00 cu.m (v) 12812904000.00 cu.m

21. A model of building is made with a scale factor of 1 : 60. Find the volume of the tank on the top of the model if its actual volume is 9261000 cu.cm.

(i) 43.88 cu.cm (ii) 42.88 cu.cm (iii) 41.88 cu.cm (iv) 44.88 cu.cm (v) 40.88 cu.cm

22. The dimensions of the model of a multi-storey building are 7.5 cm × 3 cm × 4.5 cm. If the model is drawn to a scale of 1 : 80, find the volume of the room in the model whose actual volume is 1124.864 cu.m.

(i) 2467.00 cu.cm (ii) 2157.00 cu.cm (iii) 2377.00 cu.cm (iv) 2197.00 cu.cm (v) 2027.00 cu.cm

23. A rectangle having an area 170.00 sq.cm is reduced such that the area of its image is 18.51 sq.cm. Find the scale factor.

(i) 0.33 (ii) 1.33 (iii) 7.33 (iv) 2.33 (v) 8.33

24. A model of a ship is made to a scale of 1 : 105. If the volume of the ship is 250047000 cu.m, calculate the volume of the model ship.

(i) 209.00 cu.m (ii) 220.00 cu.m (iii) 216.00 cu.m (iv) 200.00 cu.m (v) 228.00 cu.m

25. 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) $5:10$ (ii) $11:5$ (iii) $9:5$ (iv) $10:3$ (v) $10:7$

Assignment Key

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