

Grade 7 • Unit 1 Worksheet

Scale Drawings

Name: _____

Date: _____

Part A • Warm-Up: Scale Factors

Find the missing length. Each row uses the same scale factor.

original 4 cm, copy 12 cm. Scale factor = ? = _____	original 5 in, scale factor 2, copy = ? = _____
original 9 mm, copy 3 mm. Scale factor = ? = _____	original 6 cm, scale factor $\frac{1}{2}$, copy = ? = _____

Part B • Scaled Copies

1. Polygon Q is a scaled copy of Polygon P. P has sides 3 cm, 4 cm, and 5 cm. Q has sides 9 cm, 12 cm, and 15 cm.

- What is the scale factor from P to Q? _____
- What is the scale factor from Q to P? _____
- P has an angle of 53° . What is the corresponding angle in Q? _____
- Explain in your own words how angles behave when you scale a figure.

2. Andre says: "To make a scaled copy with scale factor 3, just ADD 3 to each side length." Is Andre correct?

Try Andre's rule on a triangle with sides 2, 3, 4. Add 3 to each side. Is the new triangle a scaled copy of the original? Explain.

The right answer: _____

Part C • Areas Scale Differently

3. A 2 cm by 3 cm rectangle is scaled by a factor of 4.
- The scaled rectangle has dimensions _____ cm by _____ cm.
 - The original area is _____ sq cm. The scaled area is _____ sq cm.
 - The AREA was multiplied by what factor? _____
 - How does the area scale factor relate to the side-length scale factor? Explain.
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Part D • Scale Drawings & Maps

4. On a map, the scale is 1 cm represents 50 km.
- Two cities are 8 cm apart on the map. The actual distance is _____ km.
 - Two cities are actually 175 km apart. How far apart are they on the map? _____ cm
 - Express the scale "1 cm to 50 km" without units (1 cm to ? cm). _____
5. A floor plan uses the scale 1 inch represents 4 feet. A room on the plan is 3.5 inches by 5 inches.

What are the actual dimensions of the room? Show your work.

Actual area of the room = _____ square feet.

If you carpet the room at \$6 per square foot, total cost = _____

Part E • Two-Method Problem

6. A scale drawing of a basketball court uses the scale 1 cm to 2 m. The drawing shows the court as 14 cm by 7.5 cm.

Method 1. Find the actual length and width in meters, then multiply for area.

Method 2. Find the area on the drawing (in sq cm), then convert using the area scale factor.

Do both methods give the same area? ☐ Yes ☐ No. Final answer: _____ square meters.

Part F • Error Analysis & Reasoning

7. Lin's drawing shows a triangle with sides 4 cm, 6 cm, and an angle of 50° . A SCALED COPY at scale factor 2 should have which measurements? Circle ALL correct.

- a) sides 8 cm and 12 cm, angle 50°
- b) sides 8 cm and 12 cm, angle 100°
- c) sides 6 cm and 8 cm, angle 50°
- d) sides 8 cm and 12 cm, angle of 50° and area 4 times the original

Pick a wrong answer above. Explain WHY it's wrong.

8. Diego is making a scale drawing of his bedroom on a piece of paper. His room is $12\text{ ft} \times 15\text{ ft}$. The paper is 8 inches by 10 inches.

Suggest a scale that would let the drawing FIT on the paper but not be tiny.

Justify your choice — what would the room look like on the paper at your scale?

9. Two different scale drawings show the SAME building. Drawing A uses scale 1 cm to 2 m. Drawing B uses scale 1 cm to 5 m. Which drawing is larger? Explain.

10. Write your OWN problem: invent a scale drawing situation (map, floor plan, model). Give the scale, one measurement on the drawing, and the actual measurement. Provide an answer key.

My problem:

My answer key:
