

Similarity

Scale factor, proportional reasoning, dilation, and similar-triangle structure.

Name _____ Date _____

32 main 2-up grid 3 pages

Completion Reward



Shown here as a small pack artifact, not a preview destination.

1. What do similar figures preserve?

- A. Exact side lengths only
- B. Perimeter only
- C. Area only
- D. Angle measures and side-length ratios

2. If the scale factor between two similar figures is 3, how does area change?

- A. By a factor of 3
- B. By a factor of 9
- C. By a factor of 6
- D. It stays the same

3. Which statement describes similar figures?

- A. They have equal corresponding sides only.
- B. They have equal corresponding angles and proportional corresponding sides.
- C. They must have the same area.
- D. They must be the same size.

4. Which information is enough to prove two triangles are similar?

- A. Three pairs of corresponding sides are equal.
- B. One side length is equal.
- C. Two pairs of corresponding angles are congruent.
- D. One angle is a right angle.

5. How is congruence related to similarity?

- A. Congruent figures are never similar.
- B. Congruent figures are similar with scale factor 1.
- C. Similar figures always have different sizes.
- D. Similarity only applies to circles.

6. What is the key difference between similar and congruent figures?

- A. Congruent figures can have different shapes.
- B. Similar figures must have equal area.
- C. Similar figures can have different sizes.
- D. Congruent figures cannot be rotated.

7. If triangle ABC is similar to triangle DEF, which angle corresponds to angle B?

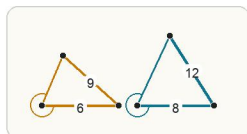
- A. Angle E
- B. Angle D
- C. Angle F
- D. Angle A

8. If two angles of one triangle match two angles of another triangle, what can you conclude?

- A. The triangles are congruent by AAA.
- B. The triangles are similar by AA.
- C. The triangles are perpendicular.
- D. Nothing can be concluded.

9. A point moves from (2, 3) to (6, 9) under a dilation centered at the origin. What is the scale factor? Answer with a number.

10. The smaller triangle has a corresponding side of 6 and the larger triangle has the matching side 8. What is the scale factor from smaller to larger?



In similar triangles, the scale factor comes from the ratio of corresponding side lengths.

- A. 4/3
- B. 3/4
- C. 2
- D. 14

11. If two triangles already have two matching angle pairs, what is the best next conclusion?

- A. The triangles are congruent.
- B. The triangles are similar.
- C. The triangles are perpendicular.
- D. The triangles have equal area.

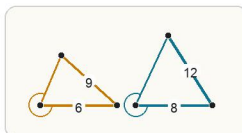
12. You know two triangles are similar and want to find a missing side. What should you do next?

- A. Write a proportion using corresponding side lengths.
- B. Add the side lengths together.
- C. Multiply all the side lengths by 2.
- D. Assume the triangles are congruent.

13. Two triangles are formed by a segment parallel to one side of a larger triangle. What is the best next step toward proving the triangles similar?

- A. Show pairs of corresponding angles are congruent.
- B. Show all three sides are equal.
- C. Show the perimeters are the same.
- D. Show the areas are equal.

14. A student says a side length goes from 6 to 8 by adding 2, so every other side should also just add 2. What is the mistake?



Corresponding sides in similar figures scale by a common ratio, so adding a fixed number to each side is not the right model.

- A. Adding 2 always works for similar figures.
- B. You should subtract 2 instead of add 2.
- C. Only angles may change under similarity.
- D. Similarity uses multiplication by a scale factor, not adding the same amount.

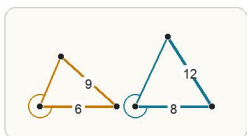
15. A student says a side changes from 6 to 10 by a scale factor of 4 because $10 - 6 = 4$. What is the mistake?

- A. Scale factors only use angles.
- B. The factor should always be greater than 10.
- C. The student should divide 6 by 10 and stop.
- D. Scale factors are multiplicative, not additive.

16. A student writes a proportion using one shortest side and one longest side as if they correspond. What is the likely problem?

- A. The student should add the side lengths.
- B. The triangles must be congruent instead.
- C. The student mismatched corresponding sides.
- D. The scale factor must be 1.

19. What is the most important first step when solving with similar triangles?



Before solving, identify which sides and angles correspond so the scale factor is built from the right pair.

- A. Add all the side lengths immediately.
- B. Match corresponding sides before writing a proportion.
- C. Assume the triangles are congruent.
- D. Square both side lengths.

22. A triangle has perimeter 18. A similar triangle is made with scale factor $\frac{4}{3}$. What is the new perimeter? Answer with a number.

25. Solve for x : $\frac{4}{6} = \frac{x}{9}$ Answer with a number.

28. Solve for x : $\frac{6}{9} = \frac{10}{x}$ Answer with a number.

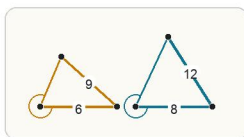
17. A figure is reduced by scale factor $\frac{1}{2}$. If a side was 18, what is the new side length? Answer with a number.

20. A student says a scale factor of 2 makes area double. What is the error?

- A. Area never changes under similarity.
- B. Area scales by the square of the scale factor, so it should quadruple.
- C. Area should be halved instead.
- D. Only perimeter changes under similarity.

23. A similar figure uses a scale factor of $\frac{3}{2}$. If the original side length is 8, what is the image side length? Answer with a number.

26. In similar triangles, one pair of corresponding sides is 6 and 8. If another side on the smaller triangle is 9, what is the matching side on the larger triangle? Answer with a number.



Once the side ratio is known, apply that same scale factor to the corresponding side length.

29. A figure with area 9 is dilated by scale factor 2. What is the new area? Answer with a number.

18. If two pairs of corresponding sides are proportional and the included angle matches, what theorem applies?

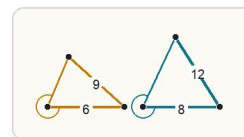
- A. SSS congruence
- B. SAS similarity
- C. HL
- D. CPCTC

21. Two similar triangles have corresponding sides 4 and 10. If the side corresponding to 10 is x in the smaller triangle, and the matching larger side is 25, what is x ? Answer with a number.

24. A similar figure uses scale factor 1.5. If the original perimeter is 14, what is the new perimeter? Answer with a number.

27. A small model tower is 6 inches tall. A similar real tower is 15 feet tall. What is the scale factor from model to real tower if you convert 15 feet to 180 inches first? Answer with a number.

30. Which proportion keeps corresponding sides in the correct order if 6 matches 8 and 9 matches x ?



Similar triangles keep angle measures while corresponding side lengths scale by the same factor.

- A. $\frac{6}{8} = \frac{9}{x}$
- B. $\frac{6}{9} = \frac{8}{x}$
- C. $\frac{6}{8} = \frac{x}{9}$
- D. $\frac{8}{6} = \frac{9}{x}$ and $\frac{6}{8} = \frac{9}{x}$ are both impossible

31. Student A solves $\frac{4}{6} = \frac{x}{9}$ by cross multiplying to get $6x = 36$. Student B gets $4x = 54$. Who is correct?

- A. Student B
- B. Student A
- C. Both students
- D. Neither student

32. Point P is at (2, 1). A dilation centered at the origin uses scale factor 3. Where is P'? Answer as an ordered pair.

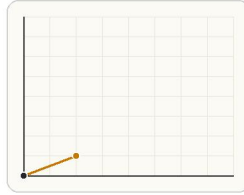


Image coordinates scale away from the origin by the dilation factor.