

Similar Triangles - Practice Worksheet

Name: _____ Date: _____

Instructions: For each problem, identify the similarity criterion (AA, SAS, or SSS), set up the correct proportion, and solve for the unknown. Show your working.

1. Triangle ABC has angles 50 deg, 60 deg, 70 deg. Triangle DEF has angles 50 deg, 60 deg, 70 deg. Are the triangles similar? State the criterion.

2. Triangle PQR ~ Triangle XYZ. PQ = 6, QR = 8, XY = 9. Find YZ.

3. In triangle ABC, AB = 4, AC = 6. In triangle DEF, DE = 6, DF = 9. Angle A = Angle D = 40 deg. Are the triangles similar? State the criterion.

4. Triangle LMN ~ Triangle PQR. LM = 5, MN = 10, LN = 15. PQ = 2. Find QR and PR.

5. Two triangles have sides 3, 4, 5 and 6, 8, 10. Are they similar? State the criterion.

6. Triangle ABC ~ Triangle DEF. Angle A = 90 deg, AB = 8, BC = 17. DE = 16. Find EF.

7. A tree casts a shadow 15 m long. A 1.8 m tall person standing nearby casts a shadow 2.7 m long. How tall is the tree?

8. Triangle RST ~ Triangle UVW. RS = $x+2$, UV = 12, ST = 8, VW = 16. Find x.

9. In triangle ABC, DE is drawn parallel to BC with D on AB and E on AC. AD = 3, DB = 6, AE = 4. Find EC.

10. Triangle ABC has sides AB = 7, BC = 14, CA = 21. Triangle PQR has sides PQ = 3, QR = 6, RP = 9. Find the ratio of their areas.

Answer Key

1. Yes - AA (or AAA). All three angles match.
2. $YZ = 12$ (ratio $6/9 = 8/YZ$, so $YZ = 12$)
3. Yes - SAS similarity ($AB/DE = 4/6 = 2/3$, $AC/DF = 6/9 = 2/3$, included angles equal)
4. QR = 4, PR = 6 (scale factor $5/2 = 2.5$, so divide each side by 2.5)
5. Yes - SSS similarity (each ratio = $1/2$)
6. EF = 34 (scale factor $16/8 = 2$, so $EF = 17 * 2 = 34$)
7. 10 m ($1.8/2.7 = h/15$, $h = 1.8 * 15 / 2.7 = 10$)
8. $x = 4$ (ratio: $(x+2)/12 = 8/16 = 0.5$, so $x+2 = 6$, $x = 4$)
9. EC = 8 (Basic Proportionality Theorem: $AD/DB = AE/EC \rightarrow 3/6 = 4/EC \rightarrow EC = 8$)
10. Area ratio = $49/9$ (similarity ratio = $7/3$, area ratio = $(7/3)^2 = 49/9$)

