

LESSON 63 Similar Triangles: AA

6. $\triangle ABE \sim \triangle CDE$ because $\angle ABE \cong \angle CDE$ and $\angle BAE \cong \angle DCE$ as alternate interior angles.

7. Answers may vary. Sample: $\frac{AE}{CE} = \frac{BE}{DE}$

8. Answers may vary. Sample: $\triangle AED$ and $\triangle BEC$

9. Corresponding sides of similar triangles are proportional, so $\frac{AB}{CD} = \frac{AE}{CE}$.

Set up and solve the proportion $\frac{10}{22} = \frac{7}{CE}$ to get $CE = 15.4$.

$$AC = AE + CE = 7 + 15.4 = 22.4.$$

10. $m\angle A = 180 - 90 - 35 = 55^\circ$ and $m\angle E = 180 - 90 - 55 = 35^\circ$. All three pairs of angles are congruent, so $\triangle ABC \sim \triangle DEF$.

11. $\frac{AB}{DE} = \frac{BC}{EF}$ and thus $\frac{20}{15} = \frac{k}{EF}$.

Solve the proportion for EF to get $EF = \frac{3}{4}k$.

12. $k = 16$

13. right, right, similar

14. Congruent triangles have the same shape and size. Similar triangles only have the same shape. Congruent triangles are always similar. Similar triangles are not always congruent.

15. No, there is not enough information given. Only vertical angles are congruent

16. Yes, $\triangle KNL \sim \triangle MNJ$ because $\angle KNL \cong \angle MNJ$ and $\angle LKN \cong \angle JMN$

17. Yes, $\triangle IFH \sim \triangle IGF$ because $\angle I \cong \angle I$ and $\angle IFH \cong \angle IGF$.

18. $m\angle C = 180 - 60 - 40 = 80^\circ$

$$m\angle ABE = 180 - 100 = 80^\circ$$

Yes, $\triangle ABE \sim \triangle ACD$ because $\angle A \cong \angle A$ and $\angle ABE \cong \angle C$.

19. $m\angle QPR = 180 - 45 - 75 = 60^\circ$

$$m\angle QPS = 180 - 45 - 55 = 80^\circ$$

No, the triangles are not similar.

20. Yes, $\triangle TUW \sim \triangle XUV$ because $\angle TUW \cong \angle XUV$ and $\angle WTU \cong \angle VXU$.

21. $m\angle D = 180 - 65 - 80 = 35^\circ$

$$m\angle FEG = 180 - 140 = 40^\circ$$

No, the triangles are not similar.