

Geometry

8.22 Working with Similar Δ 's

Goals

I can write proportionality statements.

I can use facts about similar triangles to solve problems.

I can prove triangles similar.

Complete.

A 1. Given: $\Delta STY \sim \Delta QRY$

$$\frac{ST}{?} = \frac{TY}{RY}$$

3. Given: $\Delta SXY \sim \Delta SPQ$

$$\frac{SY}{SQ} = \frac{XY}{?}$$

5. Given: $\Delta STY \sim \Delta SQP$

$$\frac{ST}{?} = \frac{?}{PQ}$$

2. Given: $\Delta TYS \sim \Delta QYR$

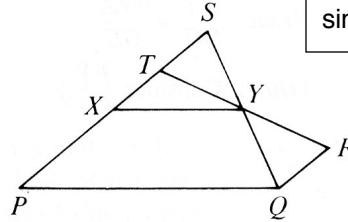
$$\frac{TY}{QY} = \frac{SY}{?}$$

4. Given: $\Delta SXY \sim \Delta SPQ$

$$\frac{PQ}{XY} = \frac{?}{SX}$$

6. Given: $\Delta STY \sim \Delta SQP$

$$\frac{?}{TY} = \frac{?}{SY}$$



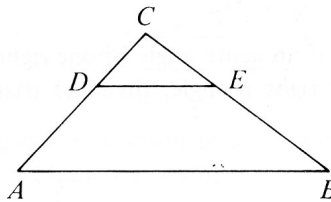
Exercises 7-10 refer to ΔABC , in which $\overline{DE} \parallel \overline{AB}$.

7. If $CD = 5$, $AD = 10$, and $AB = 18$, find DE .

8. If $AD = DC$ and $DE = 8$, find AB .

9. If $DE = 15$, $AB = 20$, and $DC = 12$, find AC .

10. If $CB = 10$, $AB = 16$, and $DE = 12$, find CE .



11-14. Solve the proportions in Oral Exercises 5-8.

15. Corresponding altitudes of two similar triangles have lengths 12 and 15. If the perimeter of the smaller triangle is 56, find the perimeter of the larger.

16. The perimeters of two similar triangles are 32 and 80. If an altitude of the smaller triangle has length 6, what is the length of the corresponding altitude of the larger triangle?

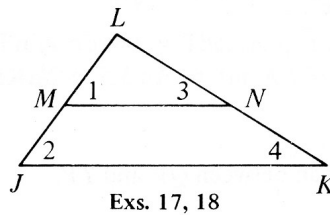
Write two-column proofs.

17. Given: $\angle 1 \cong \angle 2$

Prove: $\Delta MLN \sim \Delta JLK$

18. Given: $\overline{MN} \parallel \overline{JK}$

Prove: $\Delta MLN \sim \Delta JLK$



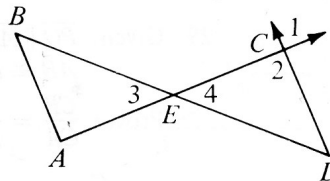
Exs. 17, 18

19. Given: $\angle 1 \cong \angle A$

Prove: $\Delta ABE \sim \Delta CDE$

20. Given: $\overline{AB} \parallel \overline{CD}$

Prove: $\Delta ABE \sim \Delta CDE$



Exs. 19, 20

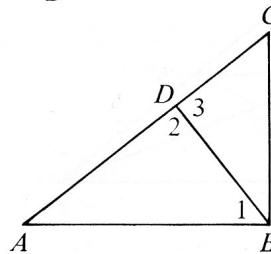
B 21. Given: $\angle 1 \cong \angle C$

Prove: $AC \cdot AD = (AB)^2$

22. Given: $\overline{BD} \perp \overline{AC}$;

$\angle 1 \cong \angle C$

Prove: $BC \cdot BD = AB \cdot CD$



Exs. 21, 22