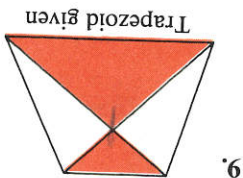
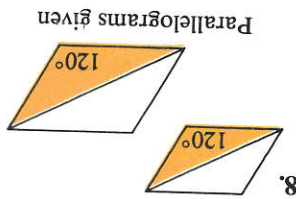
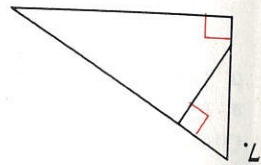
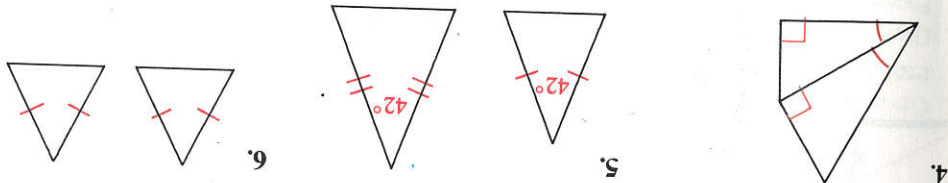
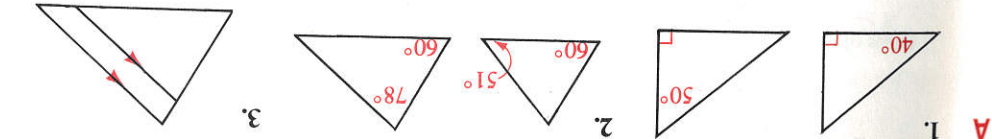


### Written Exercises

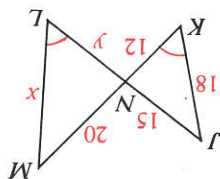
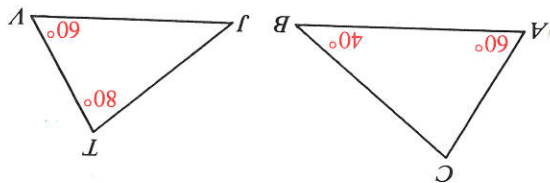
Tell whether the triangles are similar or not similar. If you can't reach a conclusion, write *no conclusion is possible*.



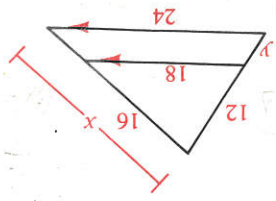
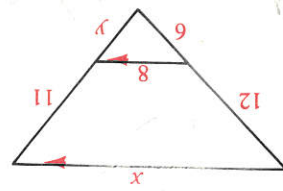
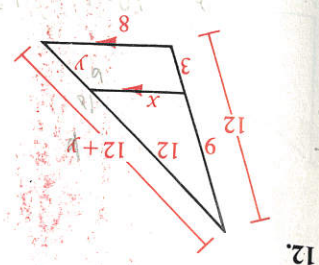
Complete.

10. a.  $\triangle ABC \sim ?$   
 b.  $\frac{AB}{AC} = \frac{BC}{AC} = \frac{?}{?}$

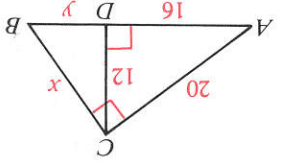
11. a.  $\triangle JKN \sim ?$   
 b.  $\frac{JK}{KN} = \frac{18}{15} = \frac{?}{12}$  and  $\frac{?}{15} = \frac{12}{12}$   
 c.  $x = \frac{?}{?}$  and  $y = \frac{?}{?}$



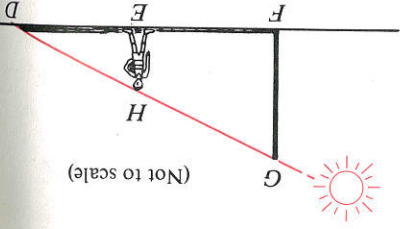
Find the values of  $x$  and  $y$ .



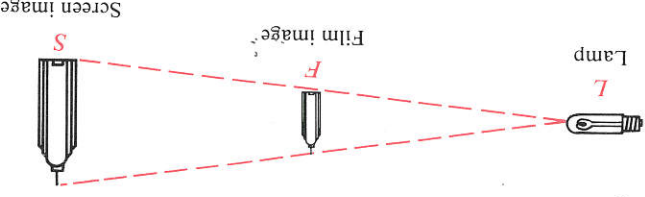
**B** 15. a. Name two triangles that are similar to  $\triangle ABC$ .  
 b. Find the values of  $x$  and  $y$ .



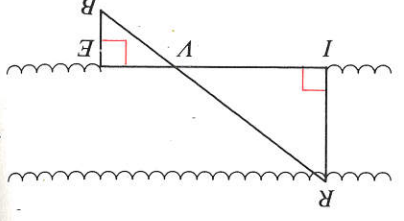
16. To estimate the height of a pole, a basketball player exactly 2 m tall stood so that the ends of the shadows coincided. He found that  $DE$  and  $DF$  measured 1.6 m and 4.4 m, respectively. About how tall was the pole?



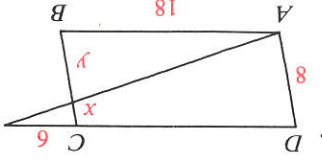
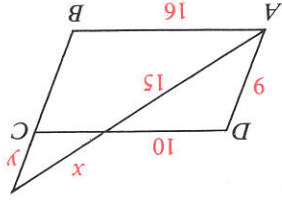
17. The diagram, *not* drawn to scale, shows a film being projected on a screen.  $LF = 6$  cm and  $LS = 24$  m. The screen image is 2.2 m tall. How tall is the film image?



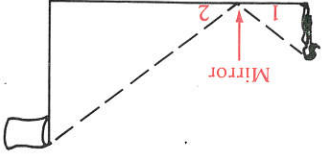
18. If  $IV = 36$  m,  $VE = 20$  m, and  $EB = 15$  m, find the width,  $RI$ , of the river.



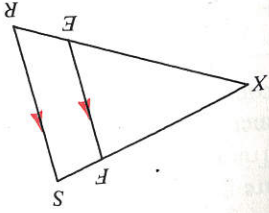
In Exercises 19 and 20,  $ABCD$  is a parallelogram. Find the values of  $x$  and  $y$ .



21. You can estimate the height of a flagpole by placing a mirror on level ground so that you see the top of the flagpole in it. The girl shown is 172 cm tall. Her eyes are about 12 cm from the top of her head. By measurement,  $AM$  is about 120 cm and  $AM$  is about 4.5 m. From physics it is known that  $\angle 1 \cong \angle 2$ . Explain why the triangles

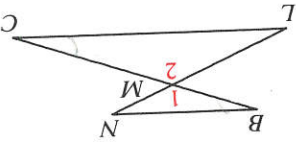
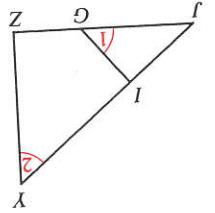


22. Given:  $\overline{EF} \parallel \overline{RS}$   
 Prove: a.  $\triangle FXE \sim \triangle SXR$   
 b.  $\frac{FX}{SX} = \frac{EF}{RS}$

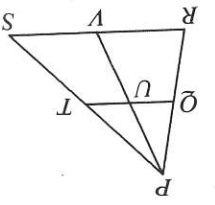


24. Given:  $\angle B \cong \angle C$   
 Prove:  $NM \cdot CM = LM \cdot BM$

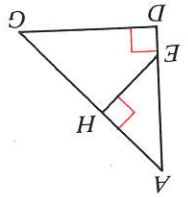
23. Given:  $\angle 1 \cong \angle 2$   
 Prove: a.  $\triangle JIG \sim \triangle JZY$   
 b.  $\frac{JG}{JY} = \frac{GI}{YZ}$



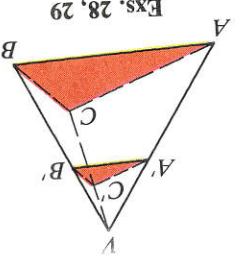
27. Given:  $\overline{QT} \parallel \overline{RS}$   
 Prove:  $\frac{QU}{UT} = \frac{RV}{VS}$



26. Given:  $\angle D$  and  $\angle AHE$  are right angles.  
 a. Prove two triangles similar.  
 b. Prove  $AE \cdot DG = AG \cdot HE$



In the diagram for Exercises 28 and 29, the plane of  $\triangle A'B'C'$  is parallel to the plane of  $\triangle ABC$ .



28.  $VA' = 15$  and  $A'A = 20$   
 a. If  $VC' = 18$ , then  $VC = \frac{?}{?}$ .  
 b. If  $VB = 49$ , then  $BB' = \frac{?}{?}$ .  
 c. If  $A'B' = 24$ , then  $AB = \frac{?}{?}$ .

29. If  $VA = 10$ ,  $VA' = 25$ ,  $AB = 20$ ,  $BC = 14$ , and  $AC = 16$ , find the perimeter of  $\triangle A'B'C'$ .

30. Prove that the lengths of corresponding altitudes of similar triangles have the same ratio as the lengths of corresponding sides.

31. Prove that in any triangle the product of the lengths of one side and the altitude to that side is equal to the product of the lengths of another side and the altitude to that side.

32. Two vertical poles have heights 6 ft and 12 ft. A rope is stretched from the top of each pole to the bottom of the other. How far above the ground do the ropes cross? (*Hint*: The lengths and do not affect the answer.)

