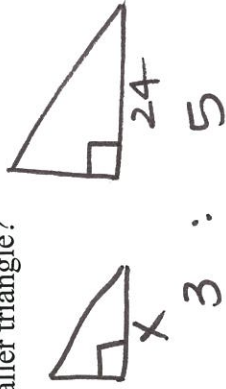


Chapter 7 Group Review

1. Two similar triangles have a ratio of $\frac{3}{5}$. If the altitude of the larger triangle is 24 inches, what is the altitude of the smaller triangle?



$$\frac{3}{5} = \frac{x}{24}$$

$$72 = 5x$$

$$x = \frac{72}{5} = 14.4 \text{ in}$$

2. Two similar triangles have a pair of corresponding sides of length 12 meters and 8 meters. The larger triangle has a perimeter of 48 meters and an area of 180 square meters. Find the perimeter and area of the smaller triangle.



$$A = 180$$

$$P = 48$$



$$A = 48$$

$$P = 32$$

S.F. = per. ratio
(S.F.)² = area ratio

$$\frac{12^2}{8^2} = \frac{48}{x}$$

$$\frac{144}{64} = \frac{48}{x}$$

$$\frac{9}{4} = \frac{48}{x}$$

$$9x = 192$$

$$x = 24$$

$$\left(\frac{12}{8}\right)^2 = \frac{180}{x}$$

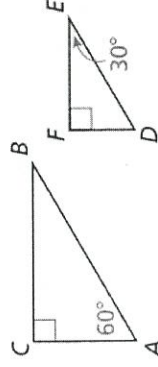
$$\frac{9}{4} = \frac{180}{x}$$

$$9x = 720$$

$$x = 80$$

3. Write a two-column proof.

Given: $m\angle C = m\angle F = 90^\circ$, $m\angle A = 60^\circ$ and $m\angle E = 30^\circ$
Prove: $\triangle ABC \sim \triangle DEF$



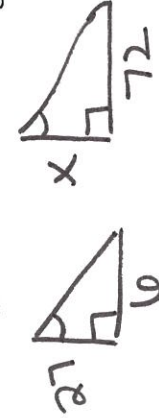
Statements

Reasons

- 1) $m\angle C = m\angle F = 90^\circ$,
- 2) $m\angle A = 60^\circ$, $m\angle E = 30^\circ$
- 3) $m\angle B + 90 + 60 = 180$
- 4) $m\angle B = 30^\circ$
- 5) $m\angle E = m\angle B$
- 6) $\angle C \cong \angle F$, $\angle A \cong \angle E$
- 7) $\triangle ABC \sim \triangle DEF$

- 1) Given
- 2) Δ Sum Thm
- 3) Subtraction prop. =
- 4) Trans. prop. =
- 5) if $\angle$'s $\Rightarrow \angle$'s $\cong$
- 6) AA ~ (5, 5)

4. A cellular telephone tower casts a shadow that is 72 feet long, while nearby a tree that is 27 feet tall casts a shadow that is 6 feet long. How tall is the tower?



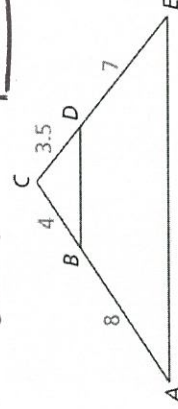
$$\frac{27}{6} = \frac{x}{72}$$

$$x = 324$$

The tower is 324 ft tall.

5. Write a two-column proof.

Given: the diagram
Prove: $\triangle CBD \sim \triangle CAE$



Statements

Reasons

- 1) $CB = 4$, $CD = 3.5$, $BA = 8$, $DE = 7$
- 2) $CA = 12$, $CE = 10.5$
- 3) $\frac{CB}{CA} = \frac{4}{12} = \frac{1}{3}$
- 4) $\frac{CD}{CE} = \frac{3.5}{10.5} = \frac{1}{3}$
- 5) $\angle C \cong \angle C$
- 6) $\triangle CBD \sim \triangle CAE$

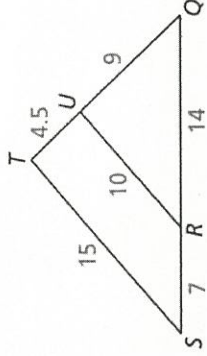
- 1) Given
- 2) Seg. Add. Post.
- 3) Corresp. ratios

- 4) Trans. prop. =
- 5) reflex. prop. $\cong$
- 6) SAS ~

6. Write a two-column proof.

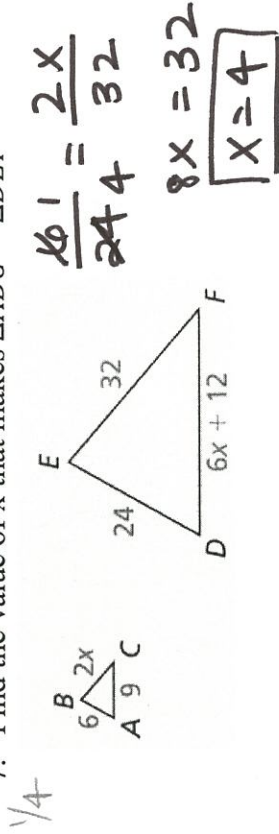
Given: the diagram

Prove: $\triangle QUR \sim \triangle QTS$



Statements	Reasons
① $ST = 15$, $RU = 10$, $TU = 4.5$, $UQ = 9$, $SR = 7$, $RQ = 14$	① Given
② $TQ = 13.5$, $SQ = 21$	② seg. Add. post
③ $\frac{ST}{RU} = \frac{15}{10} = \frac{3}{2}$; $\frac{TQ}{QU} = \frac{13.5}{9} = \frac{3}{2}$	③ corresp. ratios
$\frac{SQ}{RQ} = \frac{21}{14} = \frac{3}{2}$	
④ $\frac{ST}{RU} = \frac{TQ}{QU} = \frac{SQ}{QR}$ ⑤ $\triangle QUR \sim \triangle QTS$	④ Trans. prop. = ⑤ SSS ~

7. Find the value of x that makes $\triangle ABC \sim \triangle DEF$

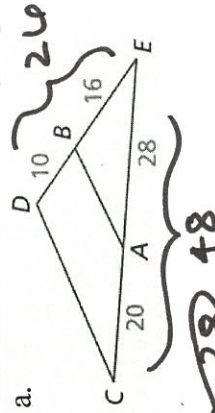


$$\frac{6}{24} = \frac{2x}{32}$$

$$8x = 32$$

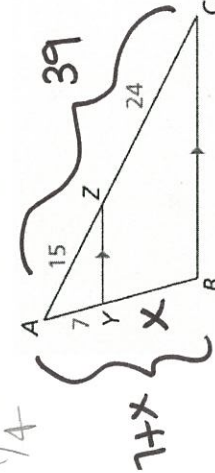
$$\boxed{x = 4}$$

8. Decide whether $\overline{AB} \parallel \overline{CD}$. Briefly explain your answer.



No, the proportions are not $\frac{CA}{AE} = \frac{CB}{BE}$ so $\overline{AB}$ is not $\parallel$ to $\overline{CD}$

9. Find YB. Then find AB.



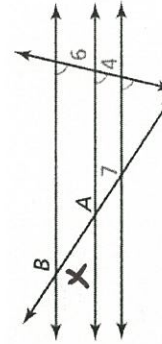
$$\frac{15}{39} = \frac{7}{7+x}$$

$$273 = 105 + 15x$$

$$168 = 15x$$

$$11.2 = x$$

10. Find AB.

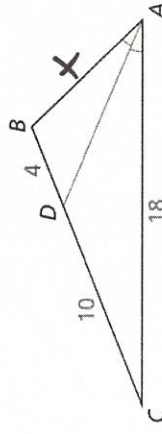


$$\frac{36}{24} = \frac{x}{7}$$

$$2x = 21$$

$$x = 10.5$$

$$\boxed{AB = 10.5}$$



$$\frac{24}{518} = \frac{x}{18}$$

$$5x = 36$$

$$x = 7.2$$

$$\boxed{AB = 7.2}$$

Chapter 7 Group Review

1. Two similar triangles have a ratio of $\frac{3}{5}$. If the altitude of the larger triangle is 24 inches, what is the altitude of the smaller triangle?

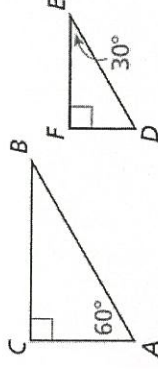
$\frac{1}{4}$

2. Two similar triangles have a pair of corresponding sides of length 12 meters and 8 meters. The larger triangle has a perimeter of 48 meters and an area of 180 square meters. Find the perimeter and area of the smaller triangle.

$\frac{1}{2}$

3. Write a two-column proof.

Given: $m\angle C = m\angle F = 90^\circ$, $m\angle A = 60^\circ$ and $m\angle E = 30^\circ$
 Prove: $\triangle ABC \sim \triangle DEF$



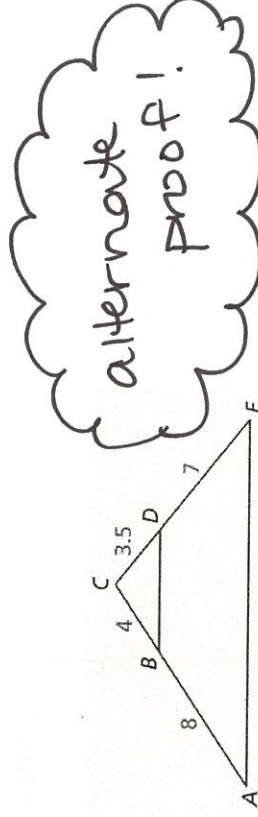
Statements	Reasons

4. A cellular telephone tower casts a shadow that is 72 feet long, while nearby a tree that is 27 feet tall casts a shadow that is 6 feet long. How tall is the tower?

$\frac{1}{4}$

5. Write a two-column proof.

Given: the diagram
 Prove: $\triangle CBD \sim \triangle CAE$

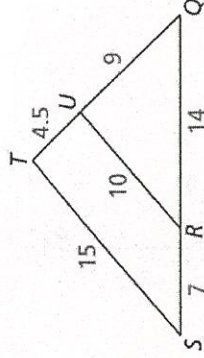


Statements	Reasons
1) $CB = 4$, $BA = 4$, $CD = 3.5$, $DE = 7$	1) Given
2) $CA = 12$, $CE = 10.5$	2) seg. add. post.
3) $\frac{CB}{CA} = \frac{4}{12} = \frac{1}{3}$; $\frac{CD}{CE} = \frac{3.5}{10.5} = \frac{1}{3}$	3) corresp. ratios
4) $\frac{CB}{CA} = \frac{CD}{CE}$	4) trans. prop. =
5) $\overline{BD} \parallel \overline{AE}$	5) if prop. $\rightarrow \parallel$ (conv. of $\triangle$ prop.)
6) $\angle A \cong \angle CBD$, $\angle E \cong \angle CDB$	6) if corresp. $\parallel$ $\rightarrow$ $\angle$'s $\cong$
7) $\triangle CBD \sim \triangle CAE$	7) AA $\sim$ (6, 6)

6. Write a two-column proof.

Given: the diagram

Prove: $\triangle QUR \sim \triangle QTS$



Statements

Reasons

① $UQ = 9, TU = 4.5, RQ = 14, SR = 7$, ① Given

$ST = 15, UR = 10$

② $TQ = 13.5, SQ = 21$

③ $\frac{QU}{QT} = \frac{9}{13.5} = \frac{2}{3}; \frac{QR}{QS} = \frac{14}{21} = \frac{2}{3}$

④ $\frac{QU}{QT} = \frac{QR}{QS}$

⑦ $\angle Q \cong \angle Q$

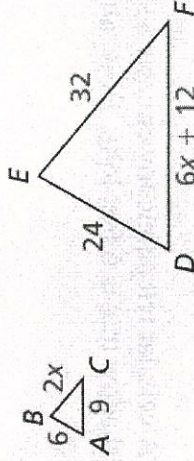
⑤ $UR \parallel ST$

⑧ $\triangle QUR \sim \triangle QTS$

⑥ $\angle T \cong \angle QUR$

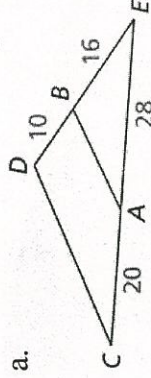
7. Find the value of x that makes $\triangle ABC \sim \triangle DEF$

① $\frac{1}{4}$

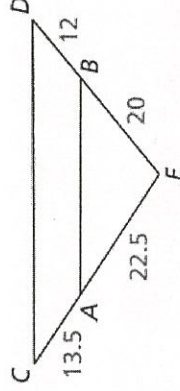


8. Decide whether $\overline{AB} \parallel \overline{CD}$. Briefly explain your answer.

① $\frac{1}{2}$

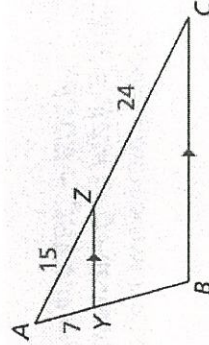


b.



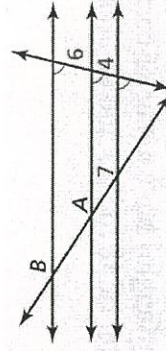
9. Find YB. Then find AB.

① $\frac{1}{4}$

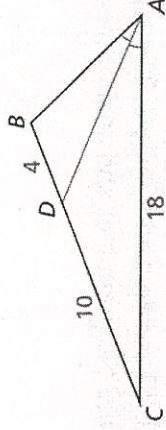


10. Find AB.

① $\frac{1}{2}$



a.



b.

alternate
proof