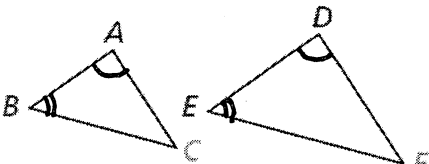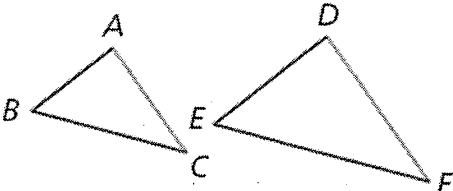# Proving Similar Triangles

The similarity theorems below can be used to prove that two triangles are similar.
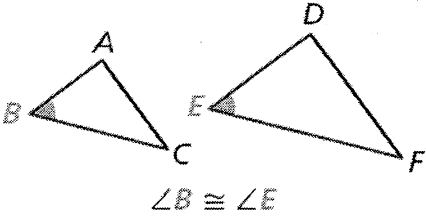
Postulate 7-3-1 Angle-Angle (AA) Similarity

| POSTULATE	HYPOTHESIS	CONCLUSION
If two angles of one triangle are congruent to two angles of another triangle, then the triangles are similar.		$\triangle ABC \sim \triangle DEF$

Theorem 7-3-2 Side-Side-Side (SSS) Similarity

| THEOREM	HYPOTHESIS	CONCLUSION
If the three sides of one triangle are proportional to the three corresponding sides of another triangle, then the triangles are similar.		$\triangle ABC \sim \triangle DEF$

Theorem 7-3-3 Side-Angle-Side (SAS) Similarity

THEOREM	HYPOTHESIS	CONCLUSION
If two sides of one triangle are proportional to two sides of another triangle and their included angles are congruent, then the triangles are similar.	$\angle B \cong \angle E$	$\triangle ABC \sim \triangle DEF$

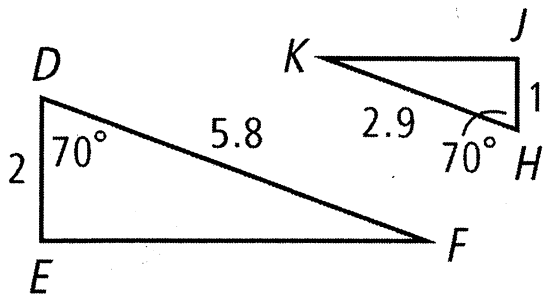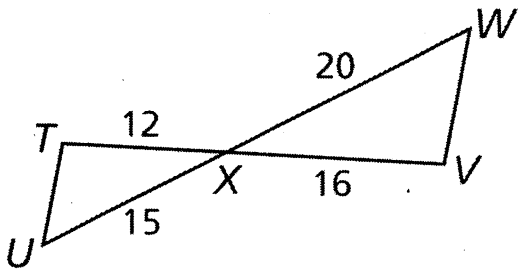**1. Explain why the triangles are similar and write a similarity statement:**
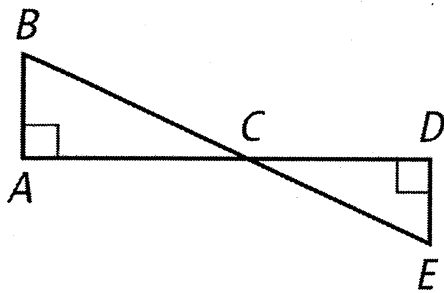
Vertical angles:
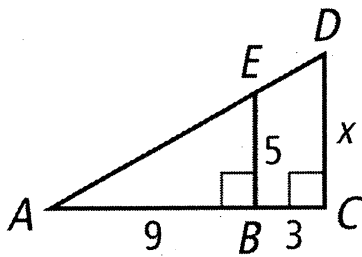
2. Verify that the triangles are similar.
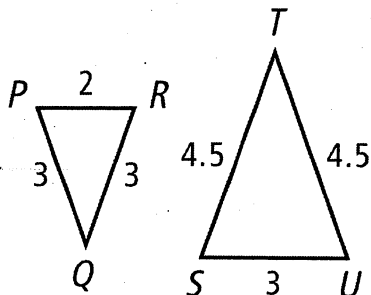
3. Verify that ΔDEF and ΔHJK below are similar.

4. Verify that ΔTXU ~ ΔVXW

5. Explain why ΔABE ~ ΔACD, and then find CD.

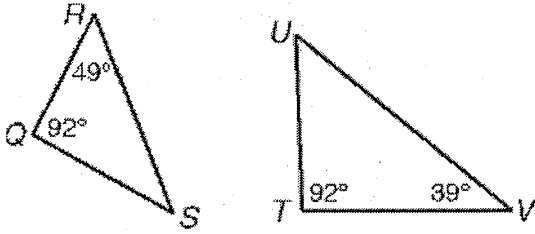**6. Explain why ΔRSV ~ ΔRTU and then find RT.**
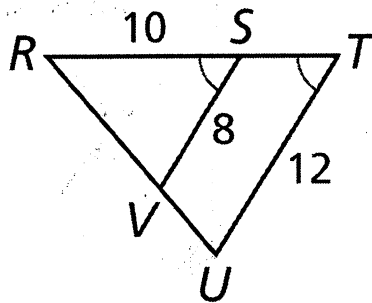
7. Explain why the triangles below are similar and write a similarity statement.
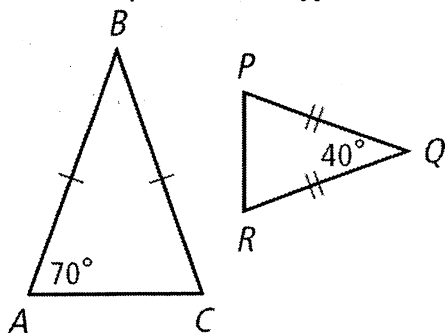
Name: _____

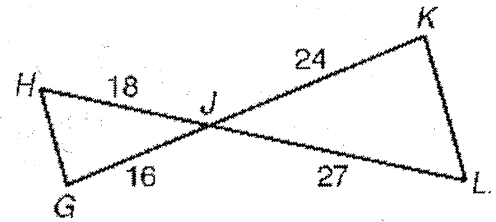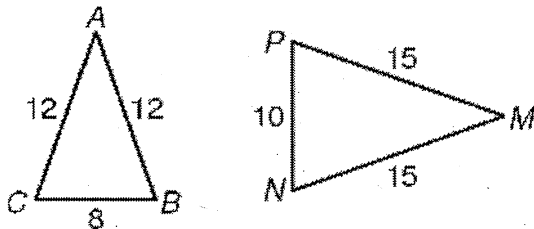**Practice:** Explain why the triangles are similar and write a similarity statement.

1) ΔRQS~_____ by _____

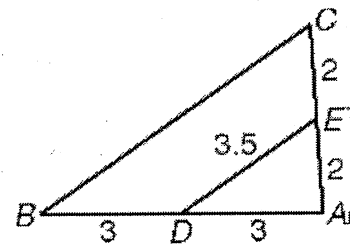2) ΔHGJ~_____ by _____

3) ΔABC~_____ by _____

4) ΔADE~_____ by _____

5) ΔQPR~_____ by _____
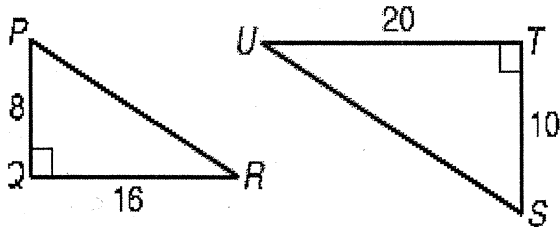
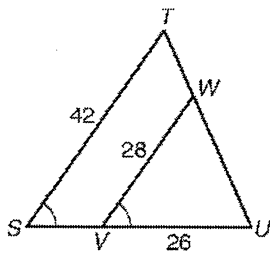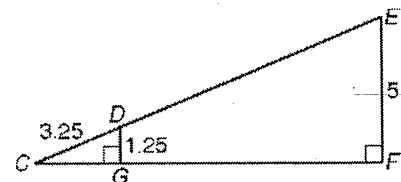6) ΔABC~_____ by _____
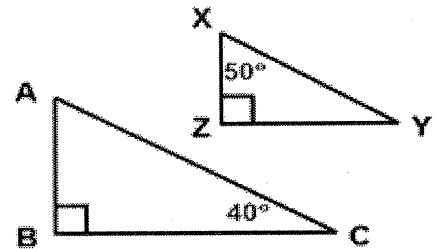
Explain why the triangles are similar and find each length.

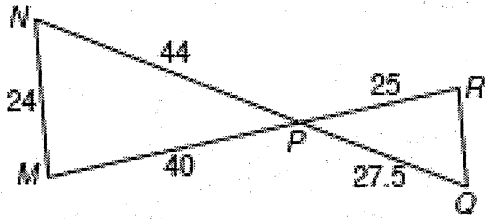7) Similar by _____ and SU = _____
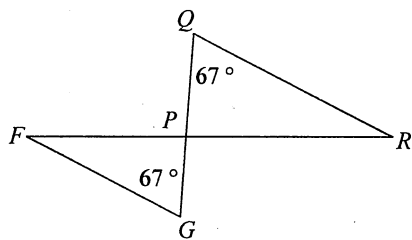

8) Similar by _____ and DE = ____

9) Similar by _____ and RQ = _____
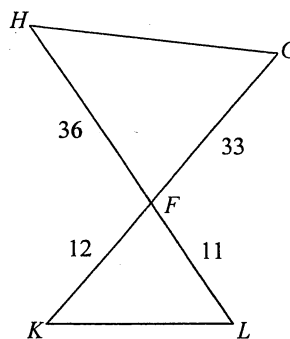
Similar Triangles Practice

State if the triangles in each pair are similar. If so, state how you know they are similar and complete the similarity statement.
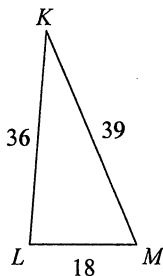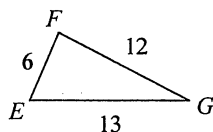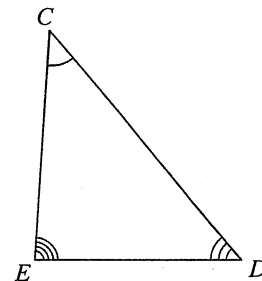
1)

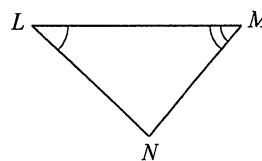
$\triangle PQR \sim$ _____

2)

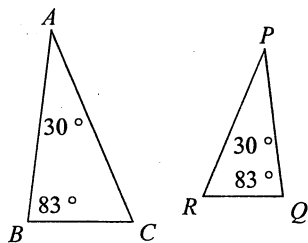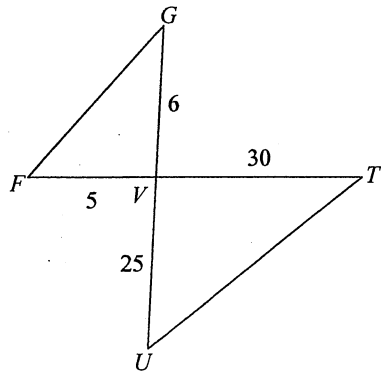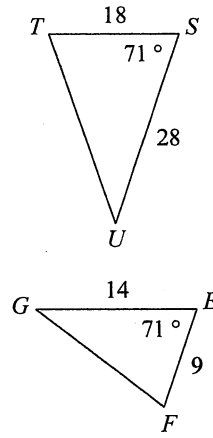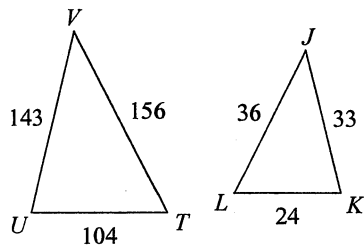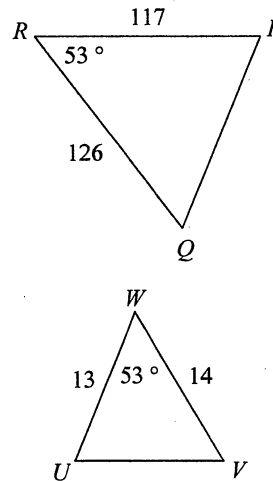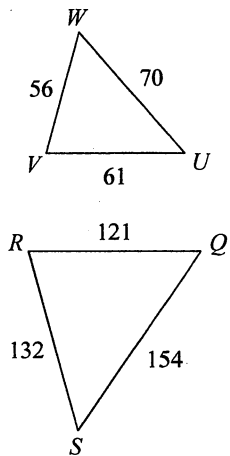$\triangle FGH \sim$ _____

3)

$\triangle MLK \sim$ _____

4)

$\triangle CDE \sim$ _____

5)

$\triangle ABC \sim$ _____

6)

G

6

30

F   5   V   T

25

U

$\triangle VUT \sim$ _____

7)

T   18   S

71°

28

U

G   14   E

71°

9

F

$\triangle STU \sim$ _____

8)

V

143   156

U   104   T

J

36   33

L   24   K

$\triangle VUT \sim$ _____

9)

R   117   P

53°

126

Q

W

13   53°   14

U   V

$\triangle RQP \sim$ _____

10)

W

56   70

V   61   U

R   121   Q

132   154

S

$\triangle SRQ \sim$ _____