$\cong$ ASA
SAS
AAS
SSS
Hyp-Leg

$\sim$

4-2 Triangle Similarity Theorems

Notes: Pages 273-284

P. 274 Q. 1

As you recall from yesterday:

In two similar figures all corresponding angles are congruent and corresponding sides are proportional. equal

Identify all of the corresponding congruent angles and all of the corresponding proportional sides using the similar triangles shown.
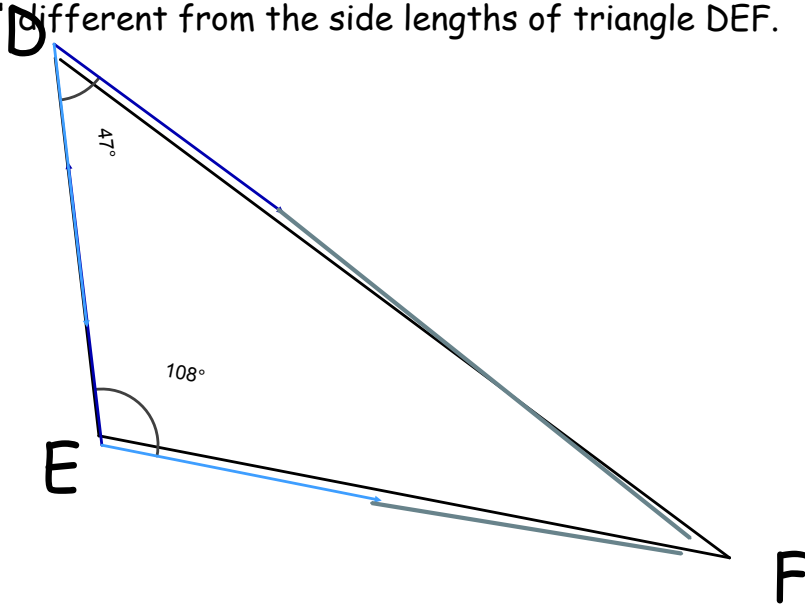
$\Delta RST \sim \Delta WXY$

$<R \cong <W$

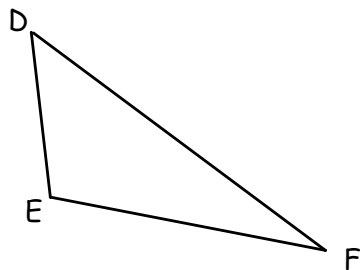$<S \cong <X$

$<T \cong <Y$

$$\frac{RS}{WX} = \frac{ST}{XY} = \frac{RT}{WY}$$

P. 274 Q. 2

Construct triangle D'E'F' using only ∠D and ∠E in triangle DEF as shown. Make all corresponding lengths of triangle D'E'F' different from the side lengths of triangle DEF.

D

47°

108°

E

F

P. 275 Q. 3-4

Measure the angles and sides of triangle D'E'F' and triangle DEF. Are the two triangles similar? Explain your reasoning.

D

E

F

In triangles DEF and D'E'F', two pairs of corresponding angles are congruent. Determine if this is sufficient information to conclude that the triangles are similar.
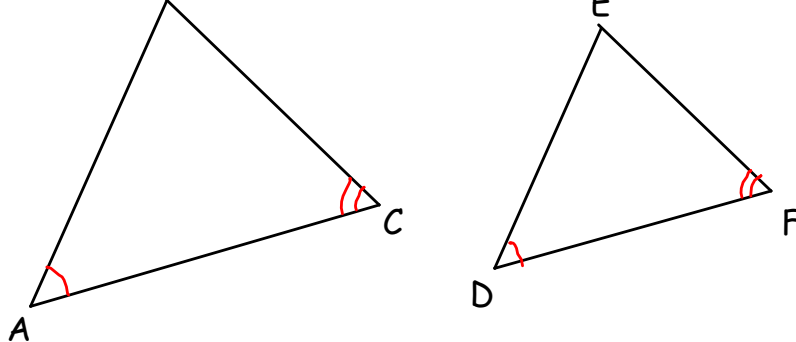
Yes

Angle-Angle Similarity Theorem: AA~T similar

*If two angles of one triangle are congruent to two angles of ≅ another triangle, then the triangles are similar.
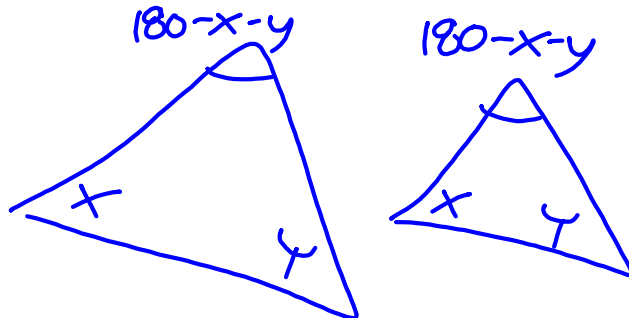
Congruent

△ABC ~ △DEF

If ∠A ≅ ∠D and ∠C ≅ ∠F, then △ABC ~ △DEF
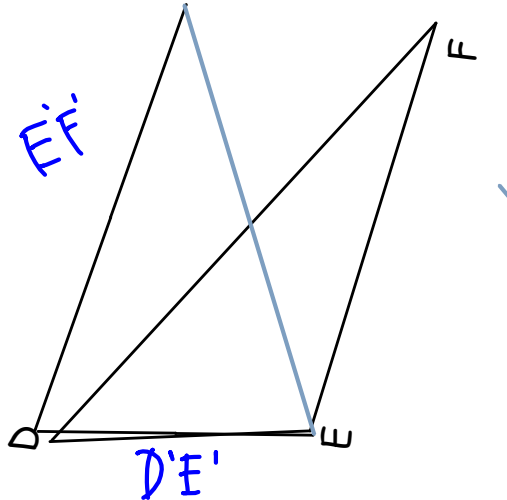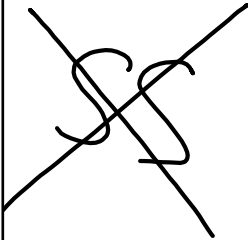
Explain why this similarity theorem is Angle-Angle instead of Angle-Angle-Angle.
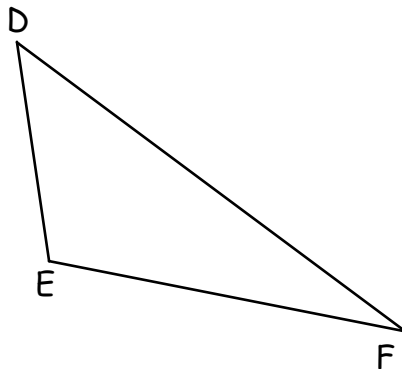
△ Sum = 180

180-x-y   180-x-y

P. 277 Q. 1

Construct triangle D'E'F' by doubling the lengths of sides $\overline{DE}$ and $\overline{EF}$. Construct the new D'E' and E'F' separately and then construct the triangle. This will ensure a ratio of 2:1. Do not duplicate angles.

$\overline{E'F'}$
$\overline{D'E'}$

E'F'

F

E

D'E'

P. 277 Q. 2-3

Measure the angles and sides of triangle D'E'F' and triangle DEF. Are the two triangles similar? Explain your reasoning.
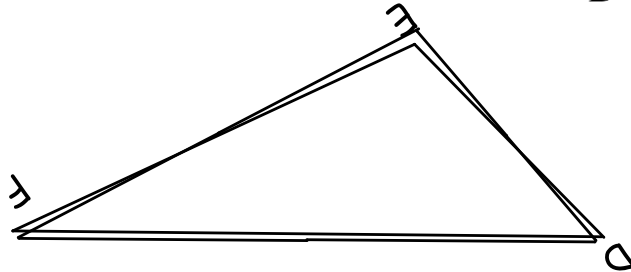
D

E

F

Two pairs of corresponding sides are proportional. Determine if this is sufficient information to conclude that the triangles are similar.
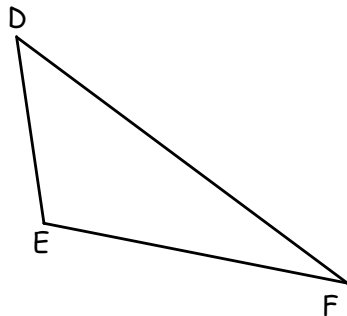
NO!

P. 278 Q. 4

Construct triangle D'E'F' by doubling the lengths of sides $\overline{DE}$, $\overline{EF}$, and $\overline{FD}$. Construct the new side lengths separately, and then construct the triangle. Do not duplicate angles.

$\overline{E'F'}$ $\overline{D'F'}$

$\overline{D'E'}$

P. 278 Q. 5-6

Measure the angles and sides of triangle D'E'F' and triangle DEF. Are the two triangles similar? Explain your reasoning.

D

E

F

Three pairs of corresponding sides are proportional. Determine if this is sufficient information to conclude that the triangles are similar. Yes
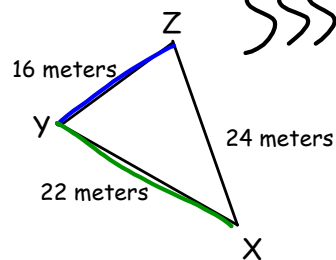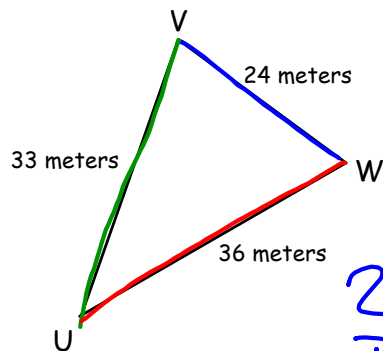
✳Side-Side-Side Similarity Theorem: SSS~T

If all three corresponding sides of two triangles are proportional, then the triangles are similar .
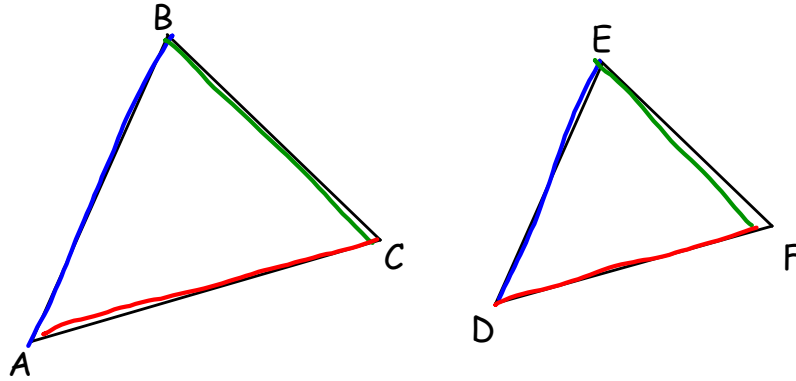
If $\dfrac{AB}{DE} = \dfrac{BC}{EF} = \dfrac{AC}{DF}$, then $\triangle ABC \sim \triangle DEF$

P. 279 Q. 8

Determine whether $\triangle UVW$ is similar to $\triangle XYZ$. If so, use symbols to write a similarity statement .
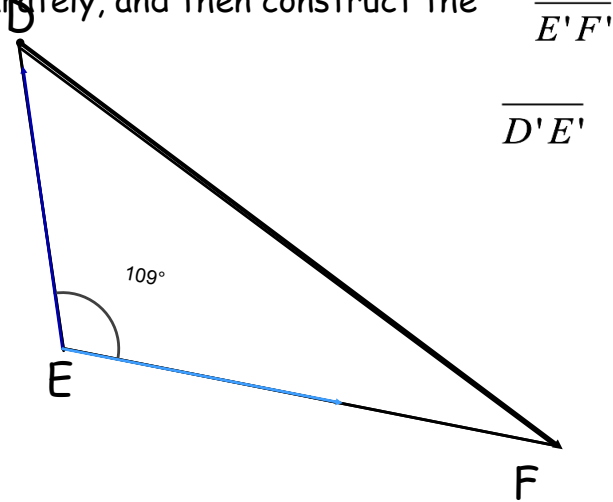
$\triangle UVW \sim \triangle XYZ$
SSS~T

V — 24 meters — W
33 meters
36 meters
U

16 meters
24 meters
22 meters
Z, Y, X

$$\dfrac{24}{16} = \dfrac{33}{22} = \dfrac{36}{24}$$
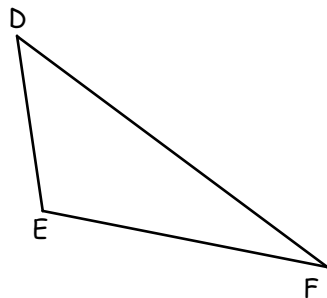
$$\dfrac{3}{2} = \dfrac{3}{2} = \dfrac{3}{2} \checkmark$$

P. 280 Q. 1

Construct triangle D'E'F' by duplicating an angle and doubling the length of the two sides that make up that angle. Construct the new side lengths separately, and then construct the triangle.

$\overline{E'F'}$

$\overline{D'E'}$

D

109°

E

F

P. 280 Q. 2-3

Measure the angles and sides of triangle D'E'F' and triangle DEF. Are the two triangles similar? Explain your reasoning.
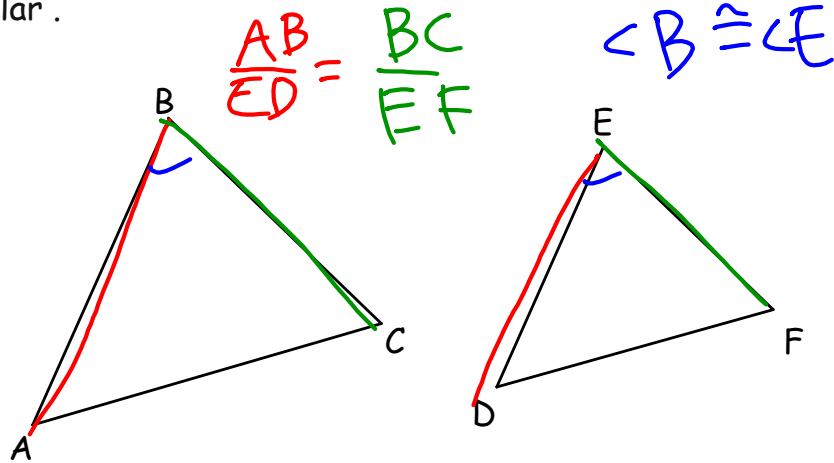
D

E

F

Two pairs of corresponding sides are proportional and the corresponding included angles are congruent. Determine if this is sufficient information to conclude that the triangles are similar. Yes

*Side-Angle-Side Similarity Theorem: SAS~T

If two of the corresponding sides of two triangles are proportional and
are similar .

$$\frac{AB}{ED} = \frac{BC}{EF}$$

$\angle B \cong \angle E$

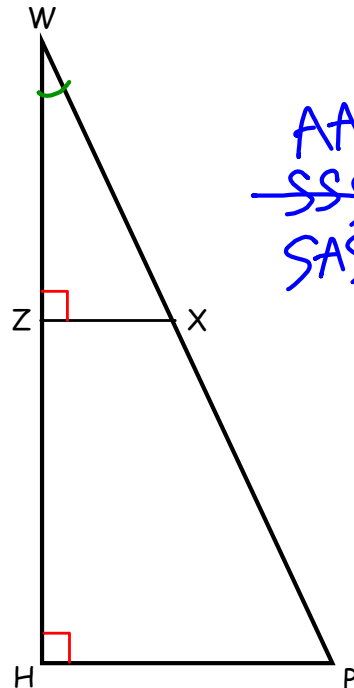If $\dfrac{AB}{DE} = \dfrac{AC}{DF}$ and $\angle A \cong \angle D$, then $\triangle ABC \sim \triangle DEF$

P. 284

Is $\triangle WZX \sim \triangle WHP$?

Explain

If yes write a similarity statement

$\angle W \cong \angle W$ reflexive

AA~T

AA
~~SSS~~
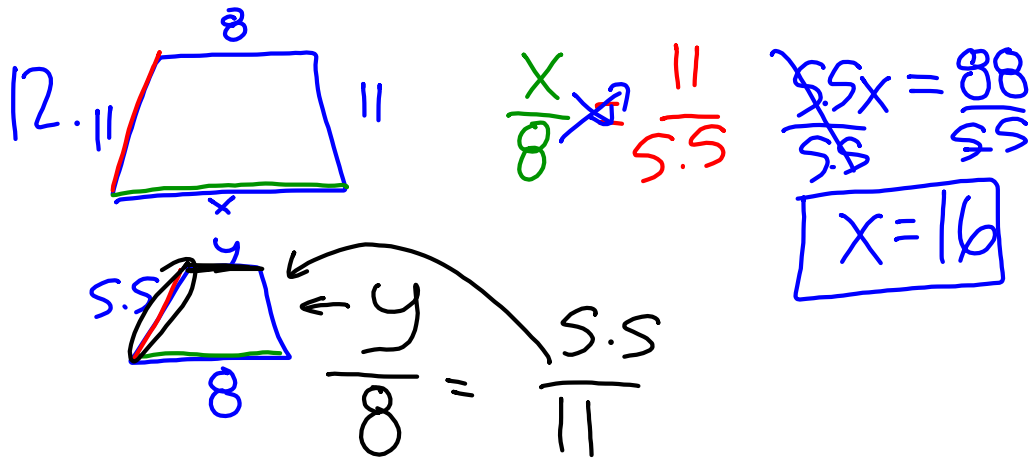SAS

Given: $\overline{DE} \parallel \overline{AB}$

Prove: $\triangle ABC \sim \triangle DEC$

Statement	Reason
DE//AB	given
$\angle C \cong \angle C$	reflexive
$\angle CDE \cong \angle CAB$	corr $\angle$'s
$\triangle ABC \sim \triangle DEC$	AA~T

AA
SAS
SSS

HW

$\triangle$ Sum = 180°

80

50°   50°

HW 4-1

12 . 11   8   11

$\frac{x}{8}$ ✗² $\frac{11}{5.5}$ $\frac{5.5x}{5.5} = \frac{88}{5.5}$

$\boxed{x = 16}$

5.5   y   8

$\frac{y}{8} = \frac{S.S}{11}$

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4. A : (1,2)   A' : (4,8)

1·4=4
2·4=8
s.f. mult

B : (3,6)   B' : (12,24)

3·4=12
6·4=24
s.f. multi.

5. G (0,20)   G' : (0,15)

$0 \cdot \frac{3}{4} = 0$

$\frac{20}{1} \cdot \frac{3}{4} = \frac{60}{4} = 15$

s.f.