2/18/2020

8.1 Ratios & Proportions

ratio: fraction or colon

(ex) $\frac{1}{2}$ or $1:2$

proportion: 2 ratios put together with an equal sign.

(ex) $\frac{1}{2} = \frac{2}{4}$

ie1 $\frac{x}{5} = \frac{12}{7}$

$7x = 5 \cdot 12$

$7x = 60$

$\frac{7x}{7} = \frac{60}{7}$

$x = \frac{60}{7}$ ✓

ie2 $\frac{(x+3)}{8} = \frac{x}{4}$

$4(x+3) = 8x$

$4x + 12 = 8x$

$-4x \quad -4x$

$12 = 4x$

$\frac{12}{4} = \frac{4x}{4}$

$x = 3$ ✓

CWK:
Pgs. 418-419
3-19 odds
35-41 odds

2/19/2020

8.2 Similar Polygons:

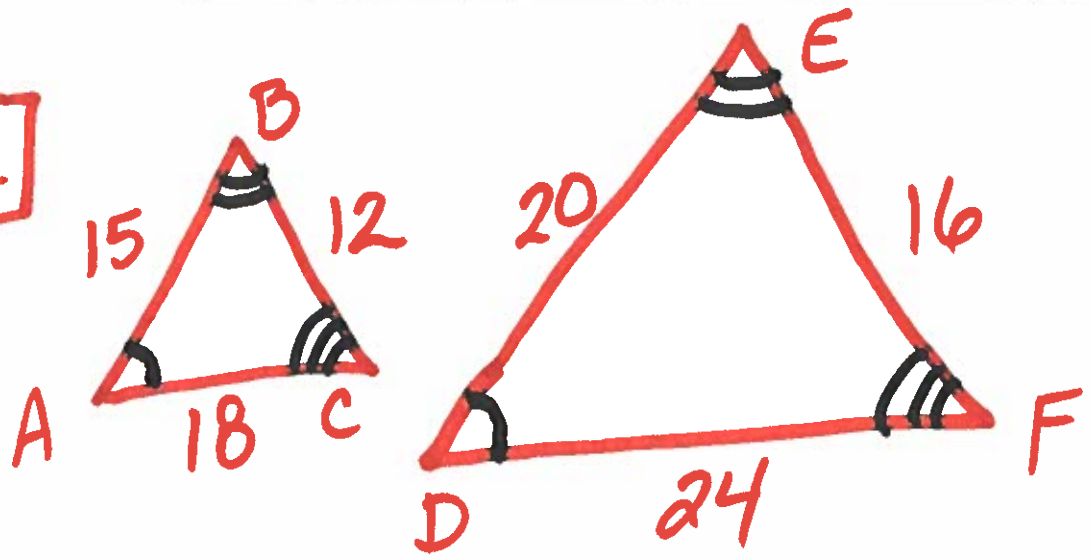
Similar: shape same, size different

(~)

Similarity ratio: $\triangle ABC \sim \triangle DEF$ (same shape, diff size)

Congruent ratio: $\triangle ABC \cong \triangle DEF$ (exactly the same)

ic1



Angles: (corresponding angles $\cong$)

① $\angle A \cong \angle D$ ✓

② $\angle B \cong \angle E$ ✓

③ $\angle C \cong \angle F$ ✓

all angles OK

Sides: (Must be same ratio/fraction

$$\frac{AB}{DE}, \frac{BC}{EF}, \frac{AC}{DF}$$

$\frac{15}{20}, \frac{12}{16}, \frac{18}{24}$

$\frac{3}{4}, \frac{3}{4}, \frac{3}{4}$

yes

$\triangle ABC \sim \triangle DEF$

CWK:
pgs. 425-42
#1-15
odds

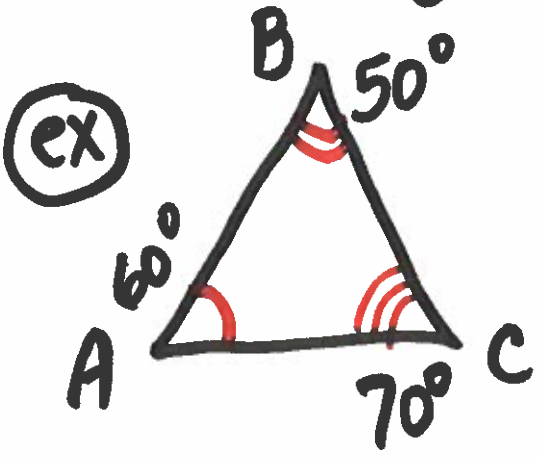
2/21/2020

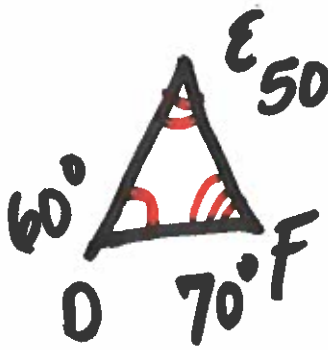
8.3 Proving Triangles ← Similar

A-A = Angle-Angle-Similarity (AASim)

→ Triangles are similar if 2 of the 3 corresponding angles are (≅)

ex





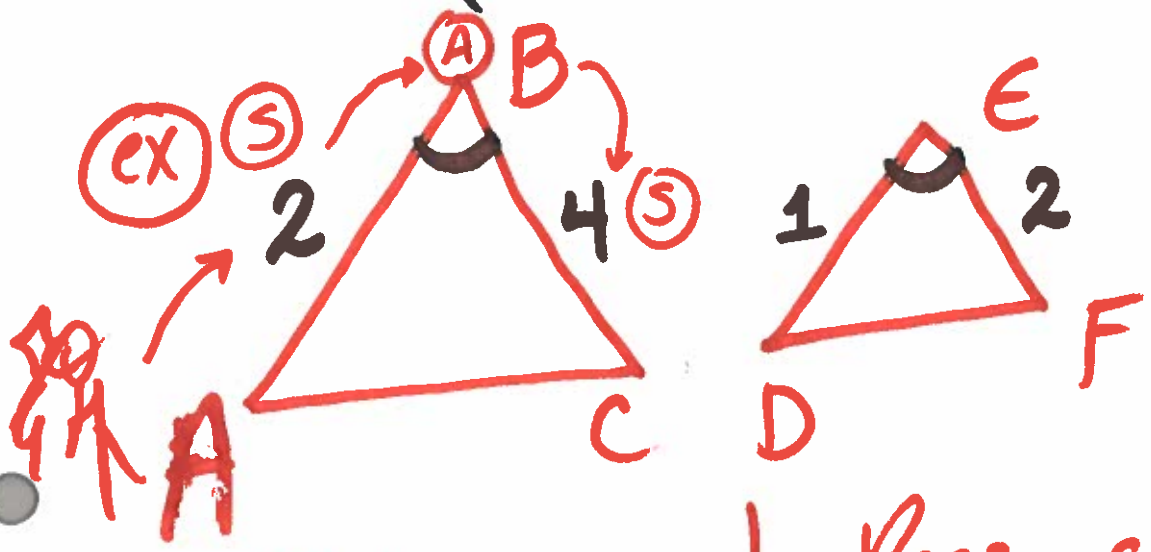
∠A ≅ ∠D (A)

∠B ≅ ∠E (A)

∠C ≅ ∠F (A)

SAS - Side-Angle-Side (~)

* Sides proportional (same fraction)

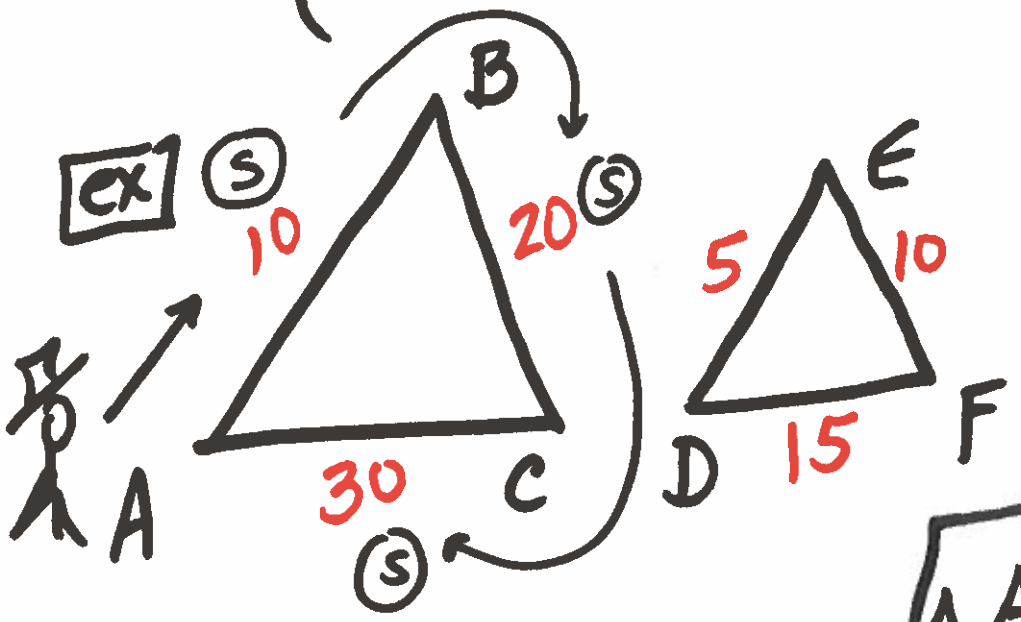


Statements	Reasons
① in visual	① Given
② $\frac{AB}{DE} = \frac{2}{1} = 2$	② corr. sides
③ $\angle B \cong \angle E$	③ corr. $\angle$'s ($\cong$)
④ $\frac{BC}{EF} = \frac{4}{2} = 2$	④ corr. side pro.
⑤ $\triangle ABC \sim \triangle DEF$	⑤ SAS

must be same

Propor. const. ratio fraction

SSS - Side-Side-Side (~)
(sides same fraction)



$$\frac{AB}{DE} \cong \frac{BC}{EF} \cong \frac{AC}{DF}$$

$\triangle ABC \sim \triangle DEF$ by SSS

$$\frac{10}{5} \cong \frac{20}{10} \cong \frac{30}{15}$$

$$2 \cong 2 \cong 2$$

CWK:
pgs. 435-436
#1-19 odds

2/25/2020

8.4 Similarity in Right Δ's

Altitude (height): creates 90° <'s

- **Geometric Mean:** formula: $\frac{1ST\ \#}{x} = \frac{x}{2ND\ \#}$

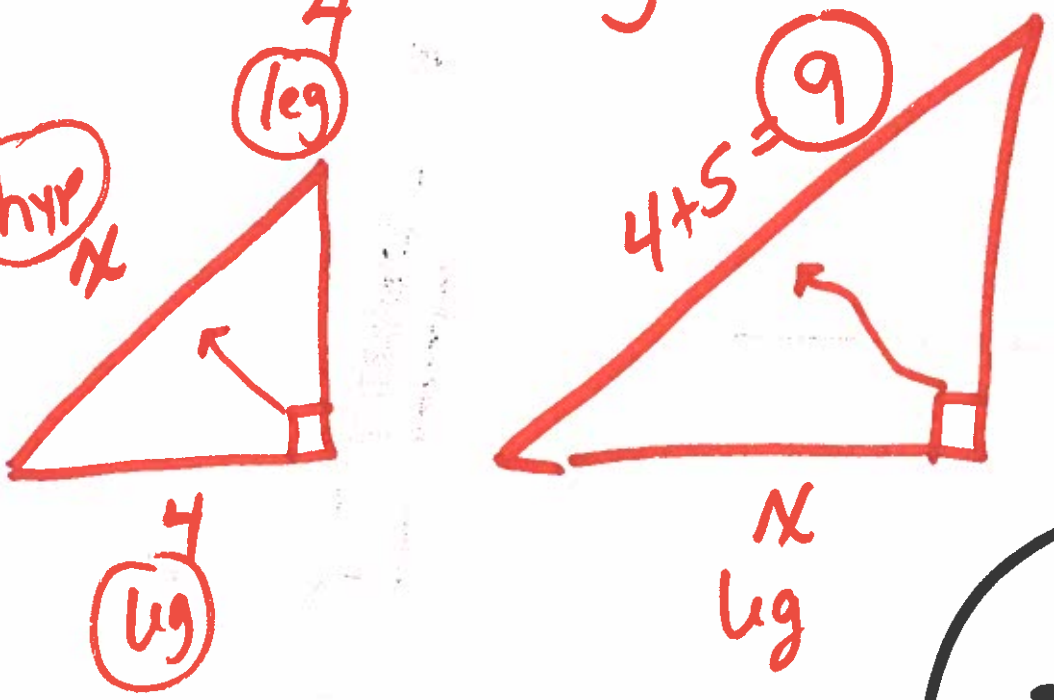
ex) 15, 20
1ST 2ND

$$\frac{15}{x} = \frac{x}{20}$$

$$300 = x^2$$

$$17.32 = x$$

ie 1



leg / hyp = leg / hyp

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

$36 = x^2$

$6 = x$

CWK:
pgs. 442-443
#1-19 odds

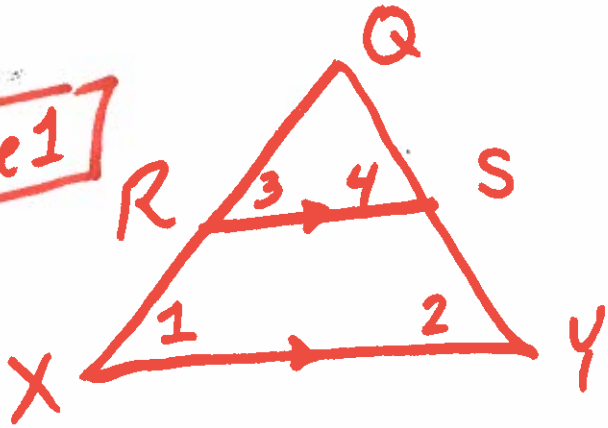
2/27/2020

8.5 Proportions in Triangles

(P1) Side-Splitter Theorem:

- if a line is parallel to one side of a triangle and intersects the other 2 sides, then it divides those sides proportionally.

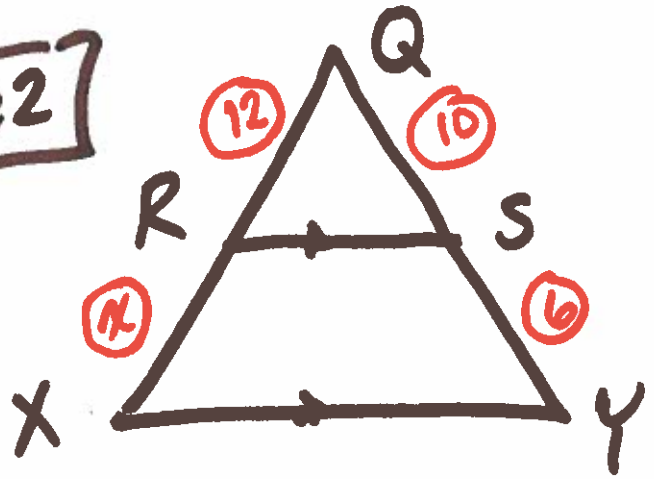
ie 1



$\angle 1 \cong \angle 3$

$\angle 2 \cong \angle 4$

ie2



$$\frac{x}{12} = \frac{6}{10}$$

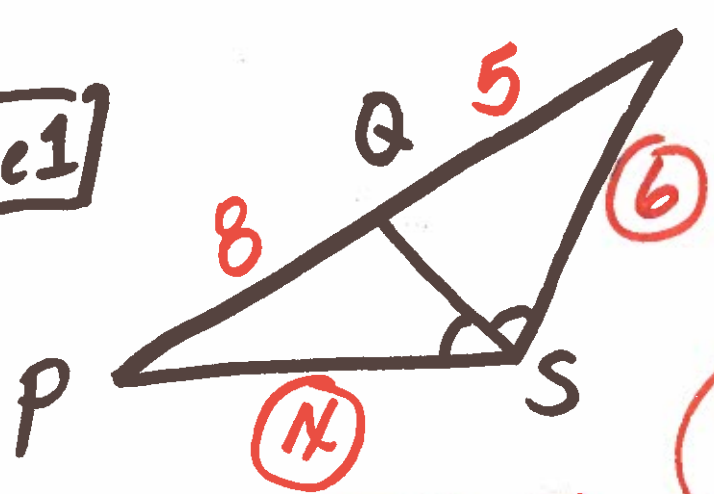
$$\frac{10x}{10} = \frac{72}{10}$$

$$x = 7.2$$

P2 Triangle Bisector Theorem (make 2 things)

Bisects Angles ≅

ie1



$$\frac{x}{8} = \frac{6}{5}$$

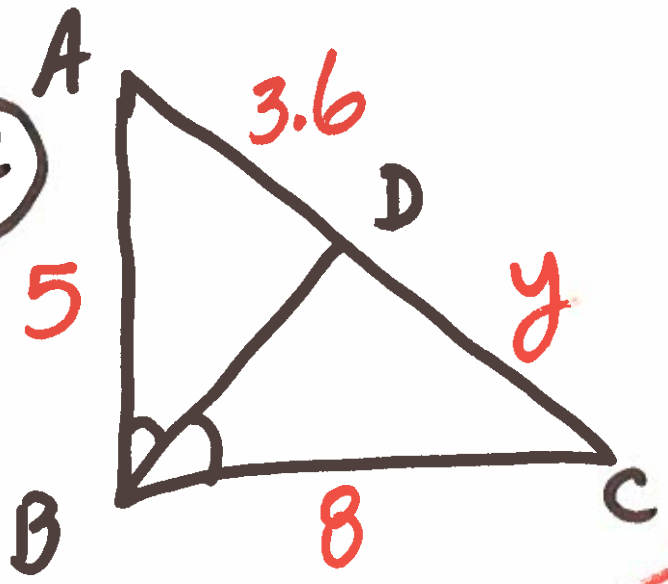
$$5x = 48$$

$$x = 5.76$$

$$\frac{x}{6} = \frac{8}{5}$$

$$5x = 48$$

ie2



CW: pgs. 448-449 #1-15 odds

$\triangle BDC = \triangle ADB$

$\frac{y}{8} = \frac{3.6}{5}$

$\frac{5y}{5} = \frac{28.5}{5}$

$y = 5.76$

or mix

$\frac{y}{3.6} = \frac{8}{5}$

$\frac{5y}{5} = \frac{28.5}{5}$

$y = 5.76$

3/4/2020

8.6 Perimeter & Areas of Similar Figures

Ratio of perimeter: (2 shapes)
(ratio of the sides)

A → B

$\frac{6}{11}$

Ratio of (Areas)^2 (2 shapes)

$\left(\text{ratio of sides}\right)^2$

$\left(\frac{6}{11}\right)^2 = \frac{36}{121}$

CWK: pgs 456-457 #1-8