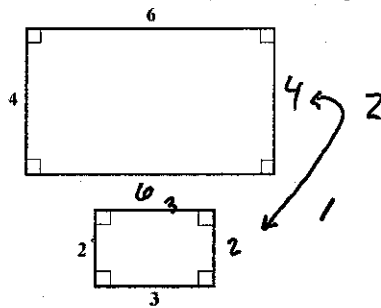


Two polygons are similar if and only if

- Corresponding sides are Proportional
- Corresponding angles are Congruent

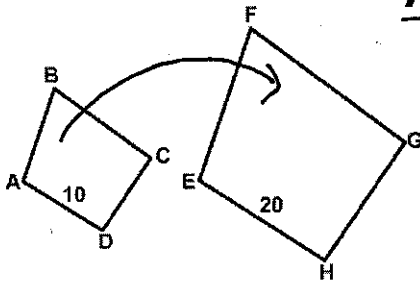
The symbol \sim is read "is similar to".

The two rectangles are similar because all corresponding angles measure 90 degrees. All corresponding sides have a ratio of 2/1.



The common ratio of the sides of the similar polygons is the scale factor

ABCD ~ EFGH



$\angle A \cong \underline{\angle E}$

$\angle B \cong \underline{\angle F}$

$\angle C \cong \underline{\angle G}$

$\angle D \cong \underline{\angle H}$

$\frac{AB}{EF} = \frac{BC}{FG} = \frac{CD}{GH} = \frac{AD}{EH}$
EFGH is 2.

The scale factor of polygon ABCD to polygon

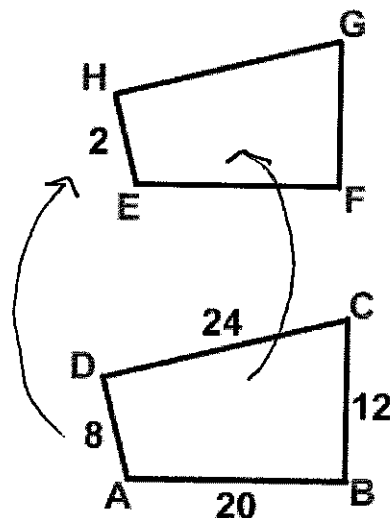
If quadrilateral ABCD ~ quadrilateral EFGH, find each of the following.

1. Scale factor of ABCD to EFGH

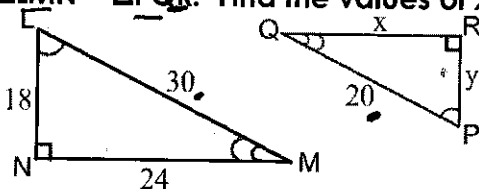
2. EF $20 \cdot \frac{1}{4} = 5$

3. FG $120 \cdot \frac{1}{4} = 30$

4. GH $24 \cdot \frac{1}{4} = 6$



$\triangle LMN \sim \triangle PQR$. Find the values of x and y .



$x = 16$

$y = 12$

$\frac{30}{20} = \frac{24}{x}$ $30x = 480$

$\frac{30}{20} = \frac{18}{y}$

$30y = 360$

PRACTICE

Given $\triangle CAT \sim \triangle DOG$

1. Corresponding angles are congruent.

$\angle C \cong \angle D$ $\angle T \cong \angle G$ $\angle A \cong \angle O$

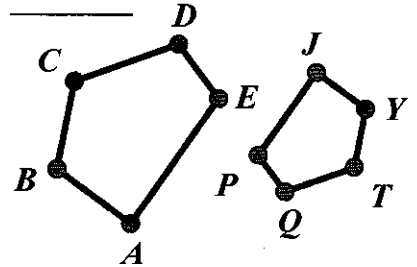
2. Corresponding sides are proportional.

$\frac{CA}{DO} = \frac{AT}{OG} = \frac{CT}{DG}$

3. Pentagon ABCDE is similar to Pentagon JYTPQ. Complete the following.

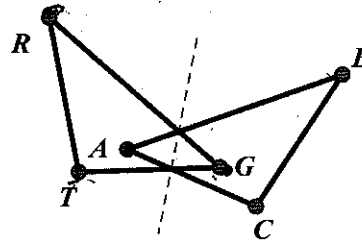
$$\angle E \cong \angle \underline{P} \quad \frac{AB}{JY} = \frac{CD}{\underline{TQ}} \quad \frac{AB}{CD} = \frac{JY}{\underline{TQ}}$$

$$\angle T \cong \angle \underline{C} \quad \frac{TQ}{CD} = \frac{PJ}{\underline{EA}} \quad \frac{CD}{DE} = \frac{TQ}{\underline{QP}}$$

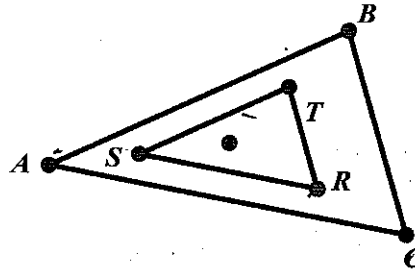


4. The two figures in each question are similar. Create the similarity statement from the diagram.

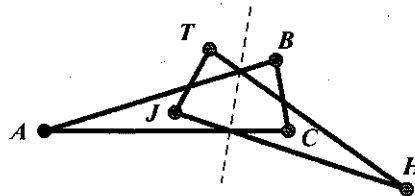
a) $\triangle ABC \sim \triangle \underline{GRT}$



b) $\triangle ABC \sim \triangle \underline{STR}$

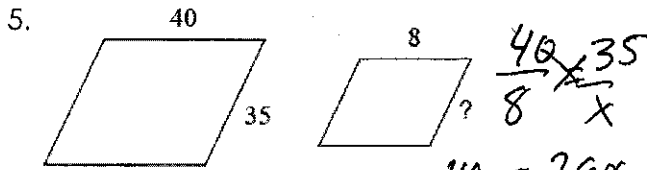


c) $\triangle BAC \sim \triangle \underline{THJ}$



4
35
8
28

The figures below are similar. Find the missing side.



$$\frac{40}{8} = \frac{35}{x}$$

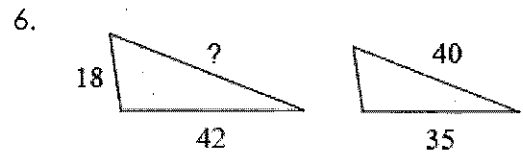
$$40x = 280$$

$$\frac{40x}{40} = \frac{280}{40}$$

$$x = 7$$

Now what about these?

1. $x = \boxed{7}$



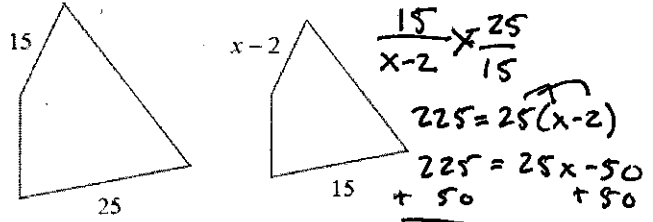
$$\frac{42}{35} = \frac{40}{x}$$

$$42x = 1400$$

$$\frac{42x}{42} = \frac{1400}{42}$$

$$x = 48$$

2. $x = \boxed{48}$



$$\frac{15}{x-2} = \frac{25}{15}$$

$$225 = 25(x-2)$$

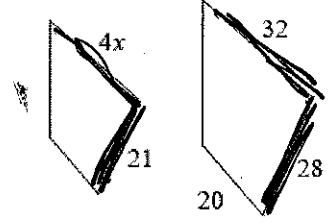
$$225 = 25x - 50$$

$$+ 50 \quad + 50$$

$$\frac{275}{25} = \frac{25x}{25}$$

$$11 = x$$

3. $x = \underline{11}$



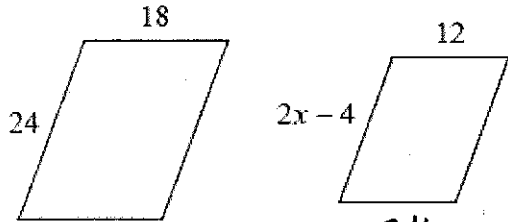
$$\frac{4x}{32} = \frac{21}{28}$$

$$112x = 672$$

$$\frac{112x}{112} = \frac{672}{112}$$

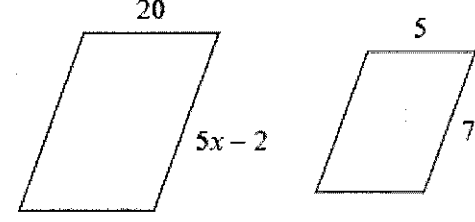
$$x = 6$$

4. $x = \underline{6}$



5. $x = \underline{10}$

$$\frac{24}{2x-4} = \frac{18}{12}$$



6. $x = \underline{6}$

$$\frac{20}{5} = \frac{5x-2}{7}$$

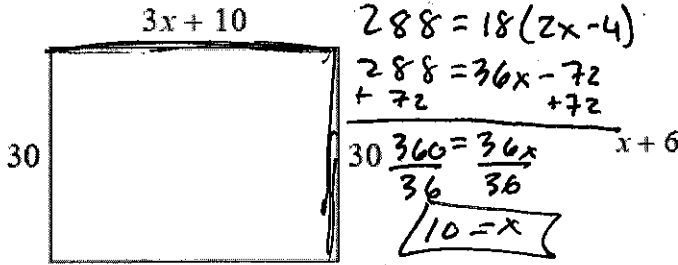
$$140 = 5(5x-2)$$

$$140 = 25x - 10$$

$$+ 10 \quad + 10$$

$$\frac{150}{25} = \frac{25x}{25}$$

$$x = 6$$



$$\frac{3x+10}{30} = \frac{x+6}{30}$$

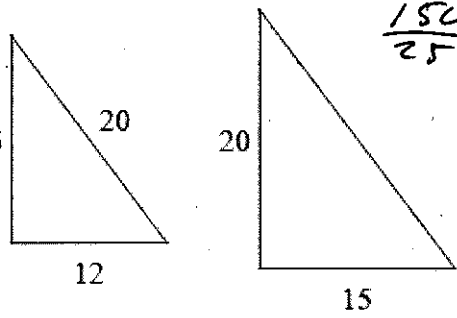
$$288 = 30(x+6)$$

$$288 = 30x + 180$$

$$+ 180 \quad + 180$$

$$\frac{468}{30} = \frac{30x}{30}$$

$$15.6 = x$$



$$\frac{20}{12} = \frac{20}{15}$$

$$150 = 240$$

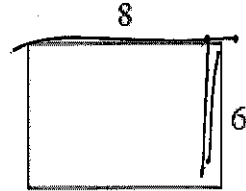
$$- 240 \quad - 240$$

$$-90 = -90$$

$$15x = 150$$

$$\frac{15x}{15} = \frac{150}{15}$$

$$x = 10$$



$$\frac{3x+10}{8} = \frac{30}{6}$$

$$6(3x+10) = 240$$

$$18x + 60 = 240$$

$$- 60 \quad - 60$$

$$18x = 180$$

$$\frac{18x}{18} = \frac{180}{18}$$

$$x = 10$$

$$\frac{x+6}{20} = \frac{12}{15}$$

$$15(x+6) = 240$$

$$15x + 90 = 240$$

$$- 90 \quad - 90$$

$$15x = 150$$

$$\frac{15x}{15} = \frac{150}{15}$$

$$x = 10$$