Name **Key**   Date _____ Pd ___
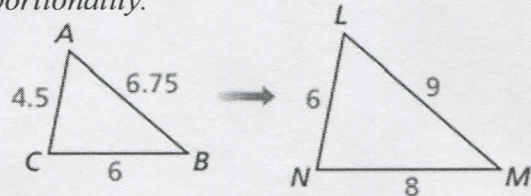
8.1 Similar *Polygons* CYU

☑ *Use when you get it right all by yourself*

S *Use when you did it all by yourself, but made a silly mistake*

H *Use when you could do it alone with a little help from teacher or peer*

G *Use when you completed the problem in a group*

X *Use when a question was attempted but wrong (get help)*

N *Use when a question was not even attempted*

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Finding scale factor	1, 2	3, 4	5
Identifying congruent angles	1, 2	3, 4	5
Writing ratios of proportionality	1, 2	3, 4	5
Using similar polygons to solve for x	2, 6	3, 4, 7	5, 7
Identifying segments	6	7	7
Perimeter ratios	8	9	
Modeling with Mathematics	10	11	
Area ratios	12	13	
Error Analysis			13

Find the scale factor. Then list all pairs of congruent angles and write the ratios of the corresponding side lengths in a statement of proportionality.
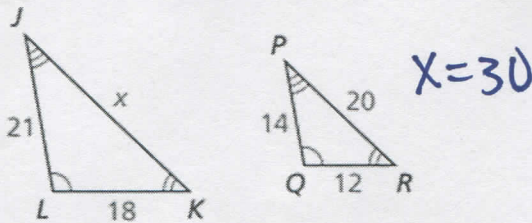
1. $\triangle ABC \sim \triangle LMN$

$\dfrac{4}{3}; \angle A \cong \angle L; \angle B \cong \angle M; \angle C \cong \angle N$

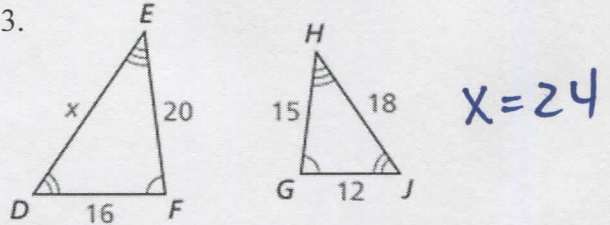$\dfrac{LM}{AB} = \dfrac{MN}{BC} = \dfrac{NL}{CA}$

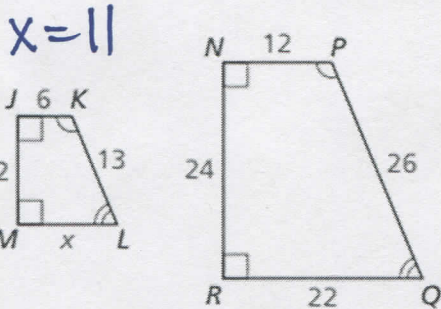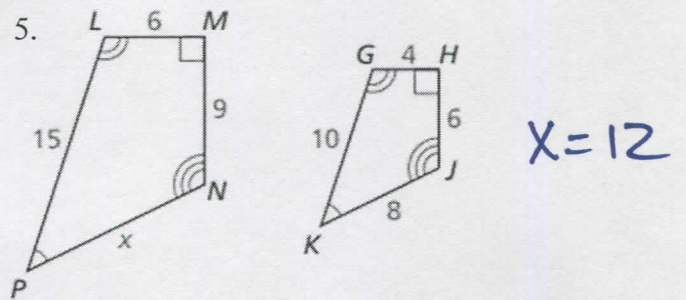*The polygons are similar. Find the value of x.*
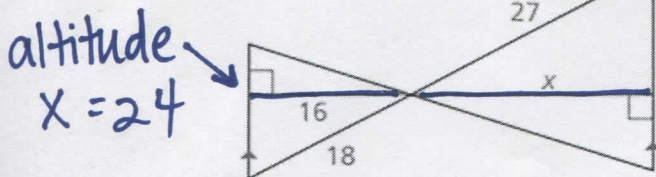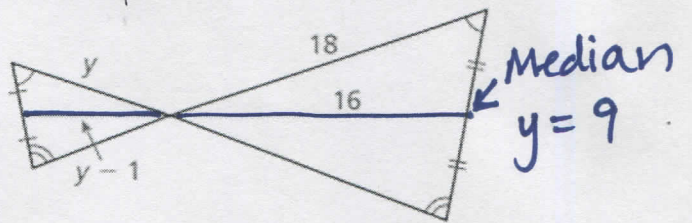
2. $x = 30$

3. $x = 24$

4. $x = 11$

5. $x = 12$

The black triangles are similar. Identify the type of segment shown in blue (lighter black in print) and find the value of the variable.

6. altitude $x = 24$

7. Median $y = 9$

Two polygons are similar. The perimeter of one polygon and the ratio of the corresponding side lengths are given. Find the perimeter of the other polygon.

8. perimeter of smaller polygon: 66 ft; ratio: $\frac{3}{4}$

88 ft

9. perimeter of larger polygon: 120 yd; ratio: $\frac{1}{6}$

20 yd

10. **MODELING WITH MATHEMATICS** A school gymnasium is being remodeled. The basketball court will be similar to an NCAA basketball court, which has a length of 94 feet and a width of 50 feet. The school plans to make the width of the new court 45 feet. Find the perimeters of an NCAA court and of the new court in the school.
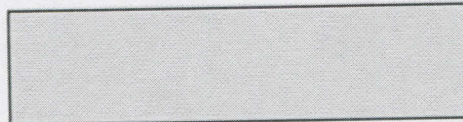
288 ft & 259.2 ft

11. **MODELING WITH MATHEMATICS** Your family has decided to put a rectangular patio in your backyard, similar to the shape of your backyard. Your backyard has a length of 45 feet and a width of 20 feet. The length of your new patio is 18 feet. Find the perimeters of your backyard and of the patio.

130 ft & 52 ft

The polygons are similar. The area of one polygon is given. Find the area of the other polygon.

12.

4 in.

20 in.

$A = 100$ in.^{2}

4 in^2
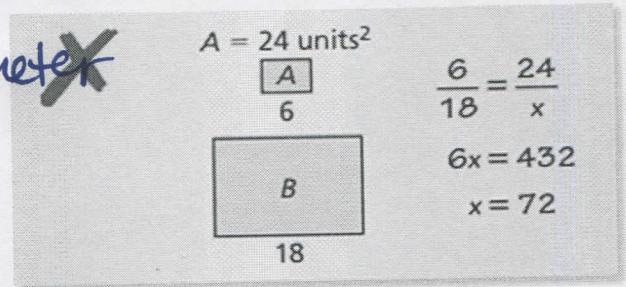
13. **ERROR ANALYSIS** Describe and correct the error in finding the area of rectangle B. The rectangles are similar.

either square perimeter
or √ area.

$\left(\frac{6}{18}\right)^2 = \frac{24}{X}$

$X = 216$

$A = 24$ units^2

A

6

B

18

$\frac{6}{18} = \frac{24}{x}$

$6x = 432$

$x = 72$