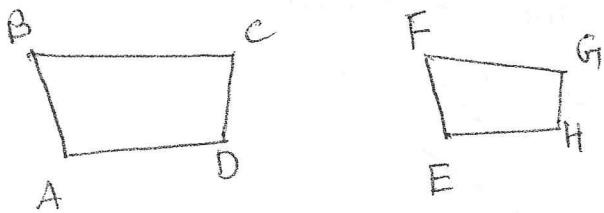


6.3 Similar Polygons Mr.Reddy's Notes Geometry

①

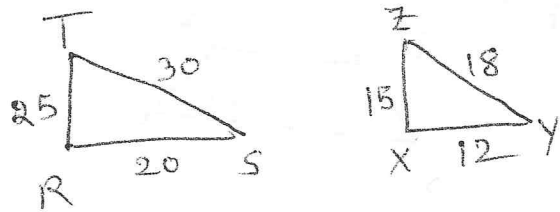


CORRESPONDING ANGLES -
 $\angle A \cong \angle E$; $\angle B \cong \angle F$; $\angle C \cong \angle G$; $\angle D \cong \angle H$

RATIOS OF CORRESPONDING SIDES -
 $\frac{AB}{EF} = \frac{BC}{FG} = \frac{CD}{GH} = \frac{DA}{HE}$

② SCALE FACTOR:- IF TWO POLYGONS ARE SIMILAR, THEN THE RATIO OF THE LENGTHS OF TWO CORRESPONDING SIDES IS CALLED THE Scale Factor.

EX: $\triangle RST \sim \triangle XYZ$



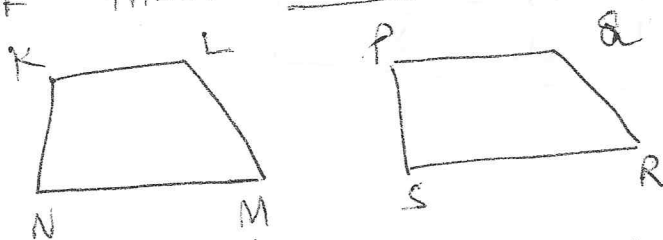
1) $\angle R \cong \angle X$; $\angle S \cong \angle Y$; $\angle T \cong \angle Z$

2) $\frac{RS}{XY} = \frac{20}{12} = \frac{5}{3}$; $\frac{ST}{YZ} = \frac{30}{18} = \frac{5}{3}$

$\frac{TR}{ZX} = \frac{25}{15} = \frac{5}{3}$

$\frac{5}{3}$ IS CALLED THE Scale Factor.

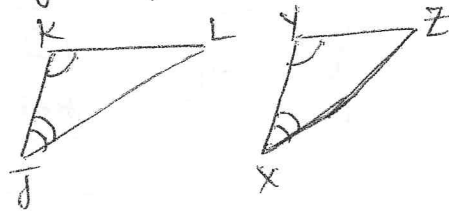
③ PERIMETERS OF SIMILAR POLYGONS:- IF TWO POLYGONS ARE SIMILAR, THEN THE RATIO OF THEIR PERIMETERS IS EQUAL TO THE RATIOS OF THEIR CORRESPONDING SIDE LENGTHS.



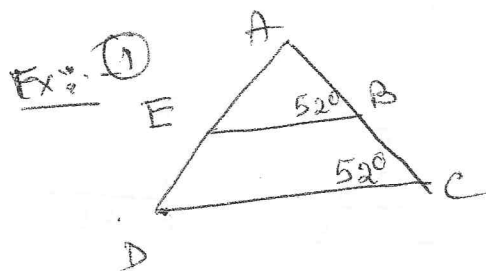
IF $KL MN \sim PQR S$, Then $\frac{KL + LM + MN + NK}{PQ + QR + RS + SP} = \frac{KL}{PQ} = \frac{LM}{QR} = \frac{MN}{RS} = \frac{NK}{SP}$

6.H
PROVE TRIANGLES SIMILAR BY AA

① Angle-Angle (AA) POSTULATE: IF TWO angles of one triangle are congruent to two angles of another triangle, then the two triangles are similar.

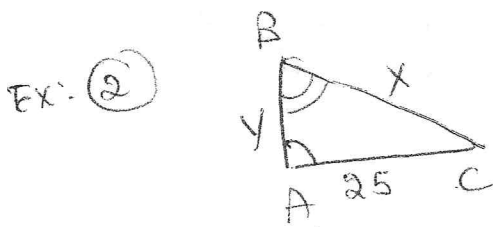


$$\triangle JKL \sim \triangle XYZ$$

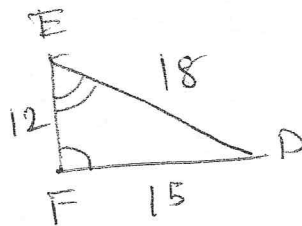


$$\triangle ABC \sim \triangle ADE$$

$$\angle A \cong \angle A; \angle B \cong \angle E; \angle C \cong \angle D$$



$$\triangle ABC \cong \triangle FED$$



Question	$\frac{25}{?} = \frac{?}{12}$	$\frac{?}{25} = \frac{18}{?}$	$X = ?$
Answer	$\frac{25}{15} = \frac{?}{12}$	$\frac{15}{25} = \frac{18}{X}$	$X = 30$

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LESSON
6.3

Practice *continued*
For use with pages 371–379

In the diagram, $WXYZ \sim MNOP$.

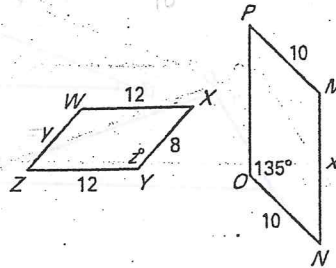
6. Find the scale factor of $WXYZ$ to $MNOP$.

7. Find the values of x , y , and z .

8. Find the perimeter of $WXYZ$.

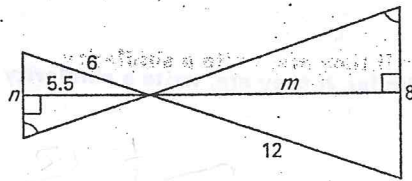
9. Find the perimeter of $MNOP$.

10. Find the ratio of the perimeter of $MNOP$ to the perimeter of $WXYZ$.

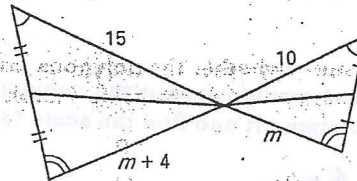


The two triangles are similar. Find the values of the variables.

11.



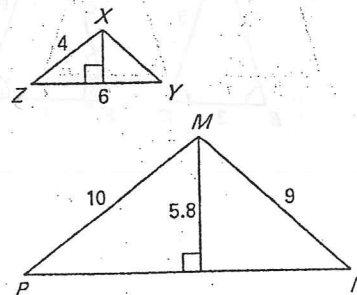
12.



In the diagram, $\triangle XYZ \sim \triangle MNP$.

16. Find the scale factor of $\triangle XYZ$ to $\triangle MNP$.

17. Find the unknown side lengths of both triangles.



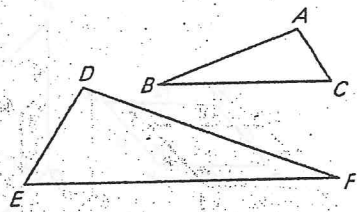
18. Find the length of the altitude shown in $\triangle XYZ$.

19. Find and compare the areas of both triangles.

LESSON 6.3 Practice
For use with pages 371-379

List all pairs of congruent angles for the figures. Then write the ratios of the corresponding sides in a statement of proportionality.

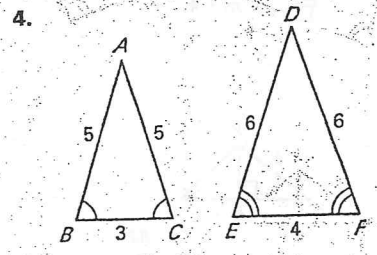
1. $\triangle ABC \sim \triangle DFE$



3. Multiple Choice Triangles ABC and DEF are similar. Which statement is not correct?

- A. $\frac{AB}{DE} = \frac{BC}{EF}$ B. $\frac{CA}{FD} = \frac{AB}{DE}$ C. $\angle A \cong \angle F$

Determine whether the polygons are similar. If they are, write a similarity statement and find the scale factor.



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$\frac{5}{6} = \frac{3}{4}$
20.778

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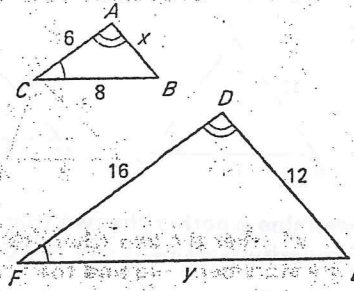
LESSON
6.4

Practice

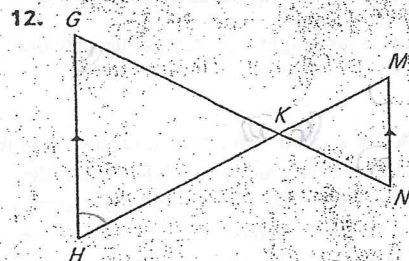
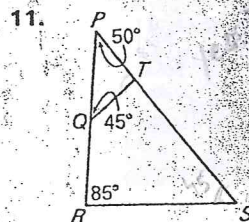
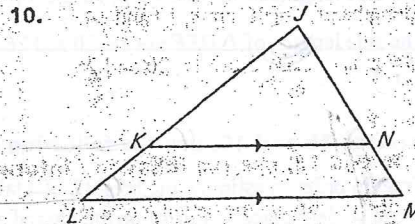
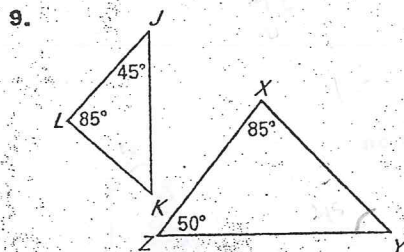
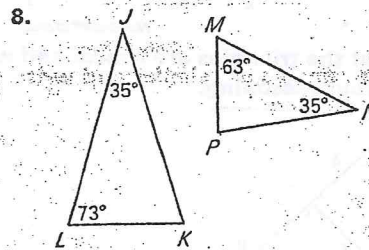
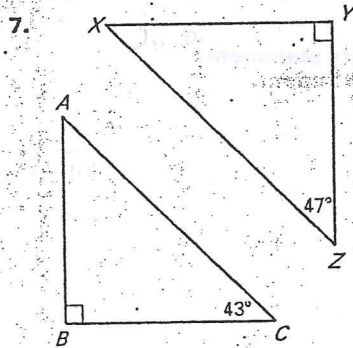
For use with pages 381-387

Use the diagram to complete the statement.

1. $\triangle ABC \sim$?
2. $\frac{AB}{?} = \frac{?}{EF} = \frac{CA}{?}$
3. $\angle B \cong$?
4. $\frac{?}{12} = \frac{8}{?}$
5. $x =$?
6. $y =$?



Determine whether the triangles are similar. If they are, write a similarity statement.



Name _____

Date _____

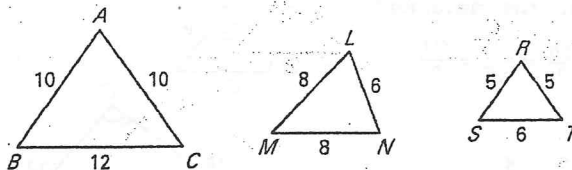
LESSON 6.5

Practice

For use with pages 388–395

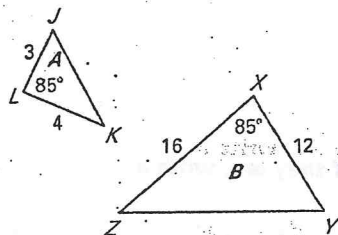
Is either $\triangle LMN$ or $\triangle RST$ similar to $\triangle ABC$?

1.



Determine whether the two triangles are similar. If they are similar, write a similarity statement and find the scale factor of $\triangle A$ to $\triangle B$.

3.

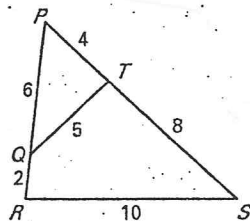


Not drawn to scale

Show that the triangles are similar and write a similarity statement.

Explain your reasoning.

6.



Explain whether the two triangles can be similar.

9. The side lengths of $\triangle ABC$ are 8, 10 and 14.

The side lengths of $\triangle DEF$ are 16, 20 and 26.

In Exercises 15 and 16, use the following information.

Pine Tree In order to estimate the height h of a tall pine tree, a student places a mirror on the ground and stands where she can see the top of the tree, as shown. The student is 6 feet tall and stands 3 feet from the mirror which is 11 feet from the base of the tree.

15. What is the height h (in feet) of the pine tree?

16. Another student also wants to see the top of the tree. The other student is 5.5 feet tall. If the mirror is to remain 3 feet from the student's feet, how far from the base of the tree should the mirror be placed?

