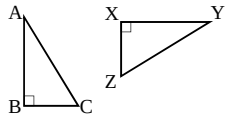
Lesson 7-2

Objective - To compare and contrast congruence and similarity.

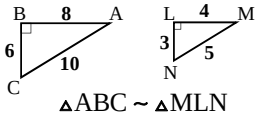
Congruent - ≅ - Same size and same shape.



△ABC ≅ △YXZ

≅ Angles	≅ Sides
∠A ≅ ∠Y	$\overline{AB} \cong \overline{XY}$
∠B ≅ ∠X	$\overline{BC} \cong \overline{XZ}$
∠C ≅ ∠Z	$\overline{AC} \cong \overline{YZ}$

Similar - ~ - Same shape.



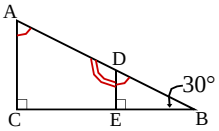
△ABC ~ △MLN

≅ Angles	Proportional Sides
∠A ≅ ∠M	$\frac{\overline{AB}}{\overline{ML}} = \frac{\overline{BC}}{\overline{LN}} = \frac{\overline{AC}}{\overline{MN}}$
∠B ≅ ∠L	$\frac{8}{4} = \frac{6}{3} = \frac{10}{5}$
∠C ≅ ∠N	2:1 ratio

Scale factor = 2

Find the missing angles.

1)



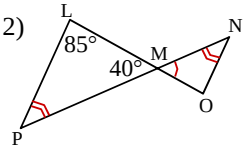
△ABC ~ △DBE

m∠BDE = 60°

m∠BAC = 60°

m∠ADE = 120°

2)



△LMP ~ △OMN

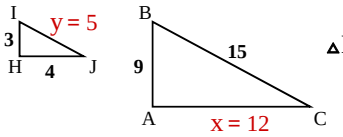
m∠NMO = 40°

m∠P = 55°

m∠N = 55°

Find the missing sides.

1)



△HIJ ~ △ABC

AC = 12 un.

$\frac{3}{9} = \frac{4}{x}$

$\frac{3x}{3} = \frac{36}{3}$

x = 12

IJ = 5 un.

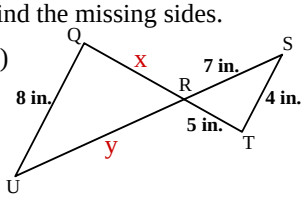
$\frac{3}{9} = \frac{y}{15}$

$\frac{45}{9} = \frac{9y}{9}$

5 = y

Find the missing sides.

2)



△QRU ~ △TRS

QR = 10 in.

$\frac{4}{8} = \frac{5}{x}$

$\frac{4x}{4} = \frac{40}{4}$

x = 10

RU = 14 in.

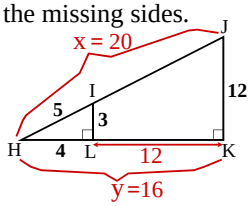
$\frac{4}{8} = \frac{7}{y}$

$\frac{4y}{4} = \frac{56}{4}$

y = 14

Find the missing sides.

1)



△HIL ~ △HJK

HJ = 20 un.

$\frac{3}{12} = \frac{5}{x}$

$\frac{3x}{3} = \frac{60}{3}$

x = 20

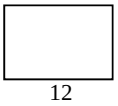
LK = 12 un.

$\frac{3}{12} = \frac{4}{y}$

$\frac{3y}{3} = \frac{48}{3}$

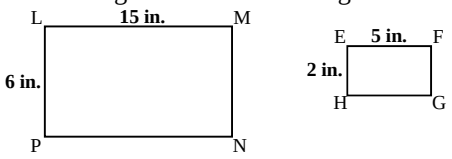
y = 16

If a new rectangle has three times the length and width of the original rectangle, how would the perimeters and areas compare?

Dimension	Original	New
		
1-D Width	w = 3	w = 9
1-D Length	l = 4	l = 12
1-D Perimeter	P = 2(3)+2(4) P = 6+8 = 14 un.	P = 2(9)+2(12) P = 18+24 = 42 un.
		x 3
2-D Area	A = l • w A = 4 • 3 = 12 un^2	A = l • w A = 12 • 9 = 108 un^2
		x 9

Lesson 7-2

Rectangle EFGH ~ Rectangle LMNP



Sides are 3 times as long. Scale factor = 3.

Perimeter		Area	
$P_{LMNP} = 42$ in.	ratio 3:1	$A_{LMNP} = 90$ in^2	ratio 9:1
$P_{EFGH} = 14$ in.		$A_{EFGH} = 10$ in^2	

Ratio of Perimeters = Scale Factor

Ratio of Areas = Square of Scale Factor

Scale Drawings

The scale on a blueprint reads 1in:12ft. If the length of the building in the blueprint is 13 inches, what is the actual length of the building?

Let x = actual length of building

$\frac{\text{map}}{\text{actual}}$

$$\frac{1 \text{ in.}}{12 \text{ ft.}} = \frac{13 \text{ in.}}{x}$$

$$1x = 12(13)$$

$$x = 156 \text{ feet}$$