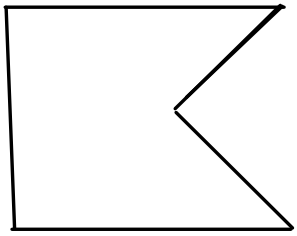
April 12

Model cars are manufactured in various scale sizes, which denotes the reduced measurement of the model cars — based on measurements taken from the actual cars. That means that our models are scaled down in size, in proportions as near exact as possible, from real cars. This in-turn allows for the realistic visual appearance of our models. The higher the ratio, the smaller the model car.

If the above model car is 17.2 cm long what was the length of the original car? (Use the ratio in the top left of the picture)

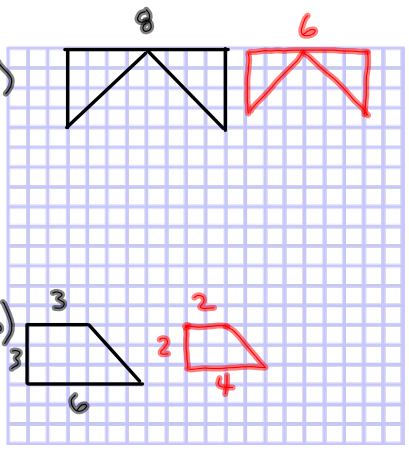
Corrections

pg 324
14.



pg 330
12

9)



$\frac{3}{4} = (0.75)$

$8 \times \frac{3}{4} =$

$\frac{24}{4} = 6$

6)

$\frac{2}{3}$

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

Overview

April 12

Given scale factor as a decimal or as a fraction

- To find the scale:
  - original x scale factor

- To find the original
  scale ÷ scale factor

- To find the scale factor
  divide a common side of the scale and the original

Example:

I am to make a scale drawing of the classroom, it is 30 m long and 15m wide. If I use a scale factor of 1/100, what would be the measurements on my paper?

$30 \times \frac{1}{100} = 0.3_m$

$15 \times \frac{1}{100} = 0.15_m$

Classwork/Homework : pg 331 questions 14, 15, 20
pg 352 question 1

14. $18_m \times \frac{1}{200} = 0.09_m$

$9_m \times \frac{1}{200} = 0.045_m$

15. $99_m \times 0.002 = 0.198_m$

$54_m \times 0.002 = 0.108_m$

20. a) $\frac{28cm}{70m} = \frac{28cm}{7000cm} = 0.004$

b) $24cm \div 0.004 = 6000cm$
$= 60m$

c) $7.6cm \div 0.004 = 1900cm$
$= 19m$

pg 352 1. $15cm \times \frac{7}{5} = 21cm$

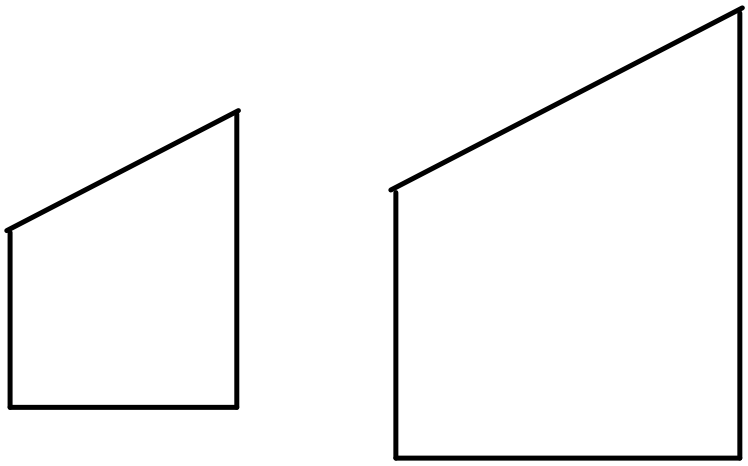
$10cm \times \frac{7}{5} = 14cm$

Name

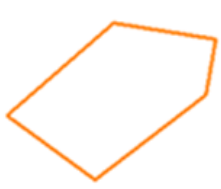
Section 7.3
Similar Polygons

April 13

Similar?



Polygons are 2-dimensional shapes. They are made of straight lines, and the shape is "closed" (all the lines connect up).



Polygon
(straight sides)

Not a Polygon
(has a curve)

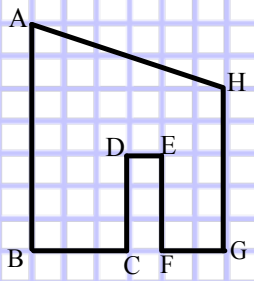
Not a Polygon
(open, not closed)

Label the first polygon
ABCDEFGH

Activity

Label your second polygon
IJKLMNOP
counterclockwise

Original Shape



Doubled

Lets double the size of this shape

Original

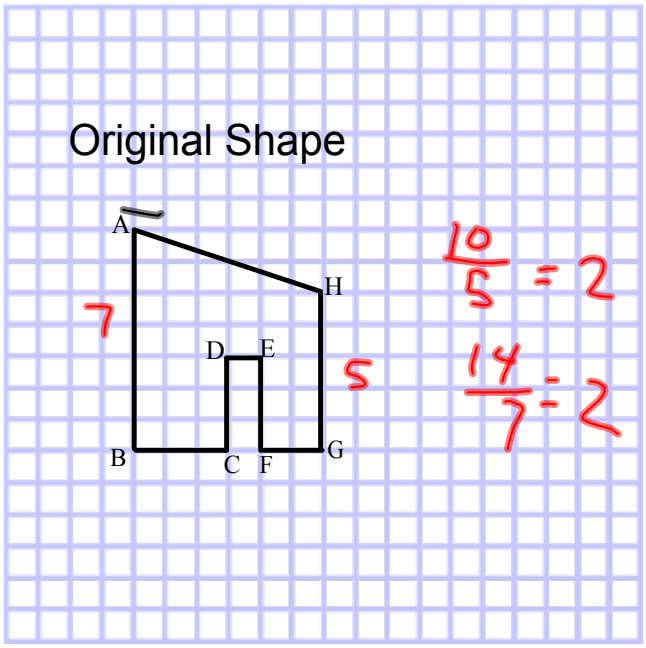
Length of sides (cm)	AB	BC	CD	DE	EF	FG	GH	HA
Measure of Angle (degrees)	<A	<B	<C	<D	<E	<F	<G	<H

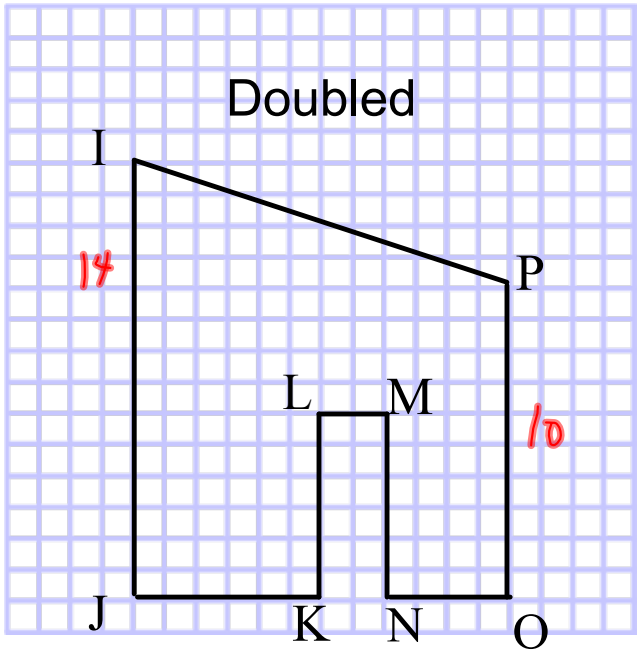
Doubled

Length of sides (cm)	IJ	JK	KL	LM	MN	NO	OP	PI
Measure of Angle (degrees)	<I	<J	<K	<L	<M	<N	<O	<P

What do you notice?

Activity





Lets double the size of this shape

Original

Length of sides (cm)	AB	BC	CD	DE	EF	FG	GH	HA
	7	3	3	1	3	2	5	
Measure of Angle (degrees)	<A	<B	<C	<D	<E	<F	<G	<H
	70°	90°	90°	270°	270°	90°	90°	110°

Doubled

Length of sides (cm)	IJ	JK	KL	LM	MN	NO	OP	PI
	14	6	6	2	6	4	10	
Measure of Angle (degrees)	<I	<J	<K	<L	<M	<N	<O	<P
	70°	90°	90°	270°	270°	90°	90°	110°

Look at side comparison

$\frac{IJ}{AB} = \frac{14}{7} = 2$ $\frac{JK}{BC} = \frac{6}{3} = 2$ and so on....

BUT THE ANGLES BETWEEN SCALED SIDES ARE THE SAME

Similar Polygons: are enlargements or reductions of each other
: Same shape, but not necessarily the same size

Corresponding: similar in position or purpose
: the same size; reduced or enlarged
- between same scaled sides

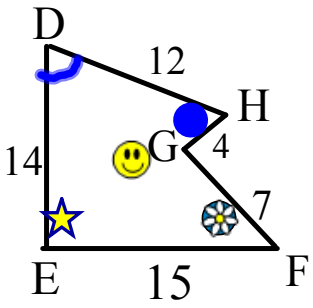
Properties of Similar Polygons
Their corresponding angles are equal Their corresponding sides are proportional

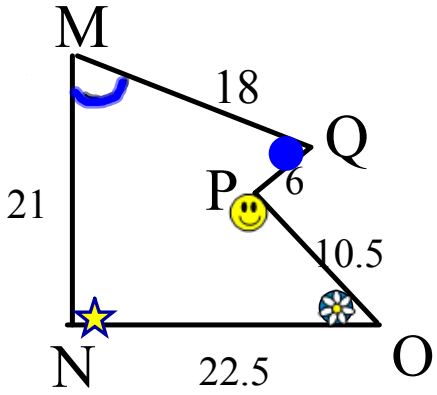
BOTH MUST BE TRUE

Symbol for similar is $\sim$

Review - Cross-multiplication

Are the following Similar Polygons?





Step1) Match up the Angles

Polygon 1

Polygon 2

Step 2) Match up sides and compare their ratio

$$\frac{MN}{DE} = \frac{NO}{EF} = \frac{OP}{FG} = \frac{PQ}{GH} = \frac{QM}{HD}$$

Put in the Values

$$\frac{21}{14} = \frac{22.5}{15} = \frac{10}{7} = \frac{6}{4} = \frac{18}{12}$$

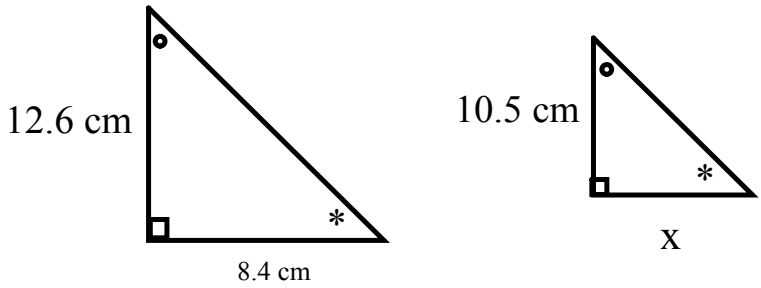
$$1.5 = 1.5 = 1.5 = 1.5 = 1.5$$

Bigger polygon is 1.5 times larger

Solving Problems Using the Properties of Similar Polygons

Example 1)

Find the length of the side labled "x"



Class/Homework

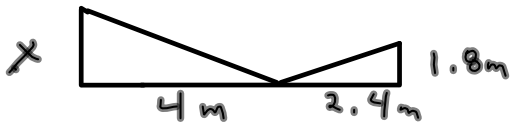
Page 341 - 342

4
5
6

Math 10
Similar Triangles: Word Problems

Name:

1. A statue, honoring Ray Hnatyshyn (1934–2002), can be found on Spadina Crescent East, near th University Bridge in Saskatoon. Use the information below to determine the unknown height of the statue.

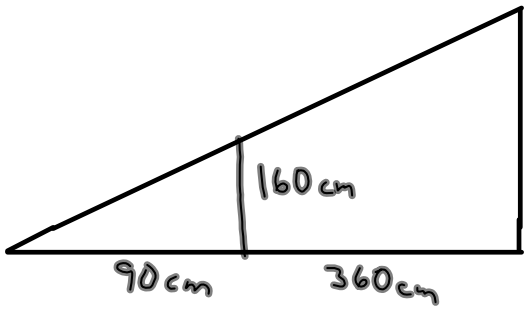


2. A tree 24 feet tall casts a shadow 12 feet long. Brad is 6 feet tall. How long is Brad's shadow? (draw a diagram and solve)

3. Triangles EFG and QRS are similar. The length of the sides of EFG are 144, 128, and 112. The length of the smallest side of QRS is 280, what is the length of the longest side of QRS? (draw a diagram and solve)

4. A 40-foot flagpole casts a 25-foot shadow. Find the shadow cast by a nearby building 200 feet tal (draw a diagram and solve)

5. A girl 160 cm tall, stands 360 cm from a lamp post at night. Her shadow from the light is 90 cm long. How high is the lamp post?



6. A tower casts a shadow 7 m long. A vertical stick casts a shadow 0.6 m long. If the stick is 1.2 m high, how high is the tower? (draw a diagram and solve)

7. Triangles IJK and TUV are similar. The length of the sides of IJK are 40, 50, and 24. The length c the longest side of TUV is 275, what is the perimeter of TUV? (draw a diagram and solve)

8. A tree with a height of 4m casts a shadow 15 m long on the ground. How high is another tree that casts a shadow which is 20 m long? (draw a diagram and solve)

9. Triangles CDE and NOP are similar. The perimeter of smaller triangle CDE is 133. The lengths o two corresponding sides on the triangles are 53 and 212. What is the perimeter of NOP?