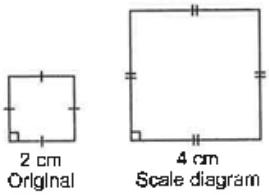
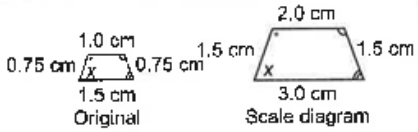
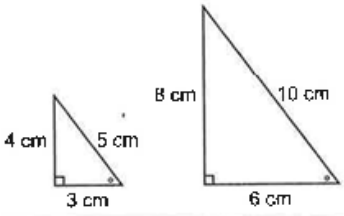
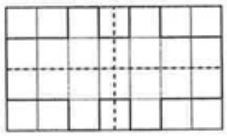
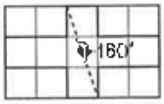
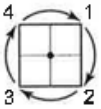
Unit 7 Study Guide

Skill	Description	Example
Find the scale factor of a scale diagram.	Scale factor = $\frac{\text{length on scale diagram}}{\text{length on original diagram}}$ An enlargement has a scale factor > 1. A reduction has scale a factor < 1.	 Scale factor: $\frac{\text{length on scale diagram}}{\text{length on original diagram}} = \frac{4}{2} = 2$
Find out if two polygons are similar.	In two similar polygons: – matching angles are equal *and* – all pairs of matching sides have the same scale factor.	
Find out if two triangles are similar.	In two similar triangles: – matching angles are equal *or* – all pairs of matching sides have the same scale factor.	
Identify lines of symmetry.	A line of symmetry divides a shape into 2 congruent parts. When one part is reflected in the line of symmetry, it matches the other part exactly.	
Find out if a shape has rotational symmetry.	A shape has rotational symmetry when it can be turned less than 360° about its centre to match itself exactly.	
Find the order of rotation and the angle of rotation symmetry for a polygon.	The number of times a shape matches itself in one complete turn is the order of rotation. The angle of rotation symmetry is: $\frac{360°}{\text{the order of rotation}}$	A square has order of rotation 4.  So, its angle of rotation symmetry is: $\frac{360°}{4} = 90°$

 Copyright © 2010 Pearson Canada Inc.

Unit 7 Review

7.1 **1.** A photo of a baby giraffe is to be enlarged for a newspaper.
The actual photo measures 4 cm by 6 cm.

Find the dimensions of the enlargement with a scale factor of $\frac{7}{2}$.

Write the scale factor as a decimal: $\frac{7}{2}$ = _____

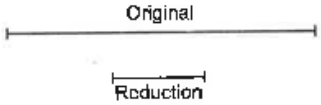
Length of original photo: _____
Length of enlargement: ___ ____ × ___. = _____

Width of original photo: _____
Width of enlargement: _____ × _____ = _____.

The enlargement has dimensions _____.

7.2 **2.** Find the scale factor for this reduction.

Length of original line segment: ___ ____ cm
Length of reduction: ___ ____ cm



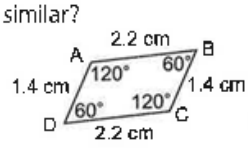
Scale factor = $\frac{\text{length on reduction}}{\text{length on original}}$

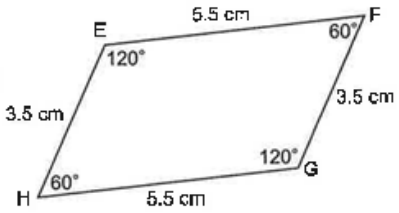
= _____
_____

= _____

The scale factor is _____.

7.3 **3.** Are these parallelograms similar?





Check matching angles.

∠A = __ __ = _____ ∠B = ____ = ____. _____ _____

All matching angles _____ equal.

Check matching sides.
The matching sides are: _____ and _____, and _____ and _____. Find the scale factors.

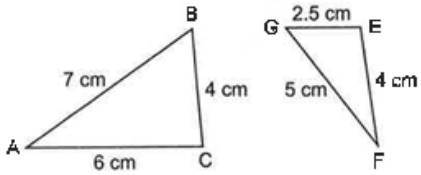
$\frac{\text{length of } ____}{\text{length of } ____} = \frac{____}{____}$ $\frac{\text{length of } ____}{\text{length of } ____} = \frac{____}{____}$

= _____ = _____

The scale factors _____ equal. So, the parallelograms _____ similar.

Copyright © 2010 Pearson Canada Inc.

7.4 **4.** Are these two triangles similar?



In △ABC, order the sides from shortest to longest:

_____

In △EFG, order the sides from shortest to longest:

_____

Find the scale factors of matching sides.

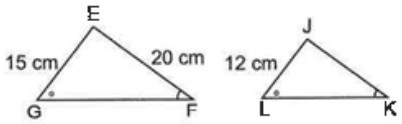
$\frac{\text{length of } ____}{\text{length of } ____} = \frac{____}{____} = ____$

$\frac{\text{length of } ____}{\text{length of } ____} = \frac{____}{____} = ____$

$\frac{\text{length of } ____}{\text{length of } ____} = \frac{____}{____} = ____$

All scale factors are _____. So, the triangles _____.

5. Triangle EFG is similar to △JKL.
Find the length of JK.



_____ is a reduction of _____.

Choose a pair of matching sides whose lengths are both known:

_____

Scale factor $= \frac{\text{length on reduction}}{\text{length on original}}$

$= \frac{____}{____}$

$= ____$

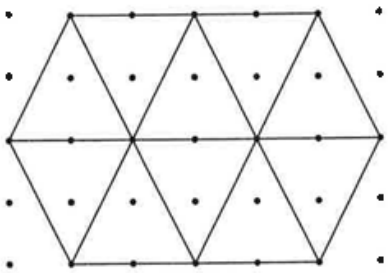
The scale factor is _____.

Use the scale factor to find the length of JK.
JK and EF are matching sides.
Length of EF: _____
Scale factor: _____
Length of JK: _____
So, JK has length _____.

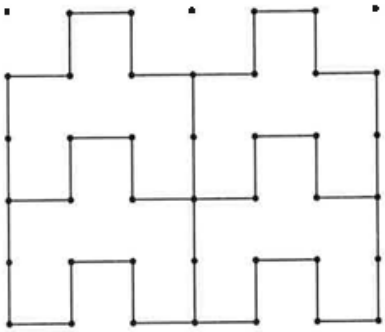
 Copyright © 2010 Pearson Canada Inc.

7.5 **6.** Draw the lines of symmetry in each tessellation.

a)

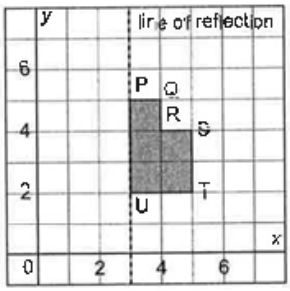


b)

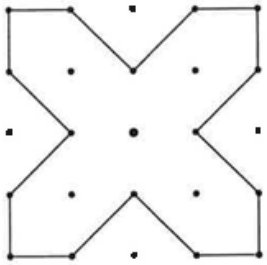


7. Reflect the shape in the line of reflection to make a larger shape.

Point	Image
P(___, ___)	_____
Q(___, ___)	_____
R(___, ___)	_____
S(___, ___)	_____
T(___, ___)	_____
U(___, ___)	_____



7.6 **8.** Find the order of rotational symmetry and the angle of rotation symmetry for this shape.



The shape and its image match ____ times.
So, the shape has rotational symmetry of order ____.
Angle of rotation symmetry is:

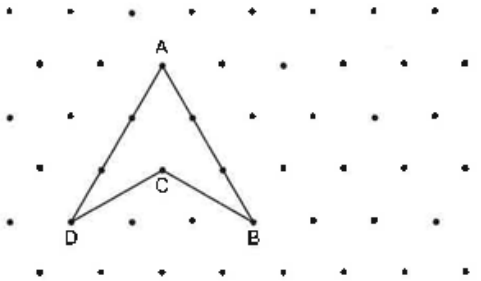
$$\frac{360°}{\text{the order of rotation}} = \frac{360°}{____}$$

$$= ____$$

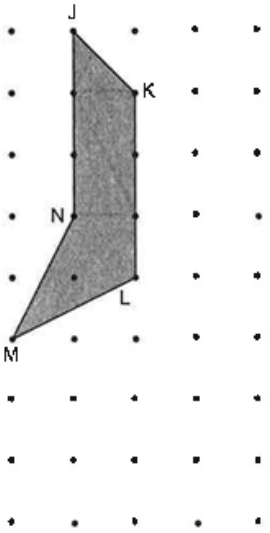
Copyright © 2010 Pearson Canada Inc.

9. Draw the image after each rotation.

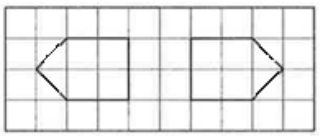
a) 120° clockwise about vertex B



b) 180° about vertex L



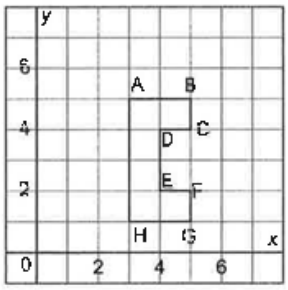
7.7 **10.** Find out if the polygons are related by symmetry.
Use tracing paper and a Mira to help.



Do the polygons face opposite ways? _____
So, are the polygons related by a reflection? _____
Draw and label the line of reflection.

Do the polygons touch? _____
So, try a point of rotation _____ the polygons.
Are the polygons related by a rotation? _____
If they are, label the point of rotation.

11. a) Reflect the polygon in the vertical line through 3 on the *x*-axis.
Draw and label the image.



b) Describe the symmetry in the shape that results.

The shape has _____ lines of symmetry.
Draw and label any lines of symmetry you found.
Does the shape have rotational symmetry? _____
If it does, label the point of rotation.

 Copyright © 2010 Pearson Canada Inc.