
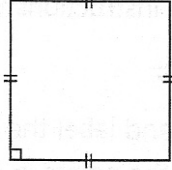

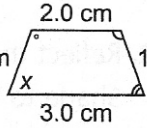
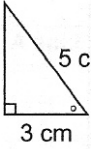
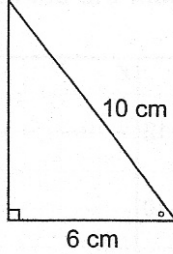
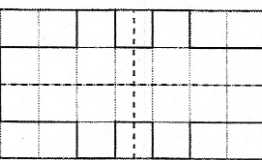
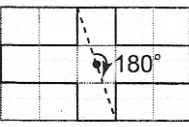
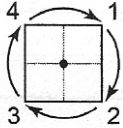


Unit 7 Study Guide

| Skill | Description | Example |
|--|---|---|
| Find the scale factor of a scale diagram. | <p>Scale factor = $\frac{\text{length on scale diagram}}{\text{length on original diagram}}$</p> <p>An enlargement has a scale factor > 1. A reduction has scale a factor < 1.</p> | <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>2 cm Original</p> </div> <div style="text-align: center;">  <p>4 cm Scale diagram</p> </div> </div> <p>Scale factor: $\frac{\text{length on scale diagram}}{\text{length on original diagram}} = \frac{4}{2} = 2$</p> |
| Find out if two polygons are similar. | <p>In two similar polygons:</p> <ul style="list-style-type: none"> - matching angles are equal <i>and</i> - all pairs of matching sides have the same scale factor. | <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>1.0 cm 0.75 cm 1.5 cm Original</p> </div> <div style="text-align: center;">  <p>2.0 cm 1.5 cm 3.0 cm Scale diagram</p> </div> </div> |
| Find out if two triangles are similar. | <p>In two similar triangles:</p> <ul style="list-style-type: none"> - matching angles are equal <i>or</i> - all pairs of matching sides have the same scale factor. | <div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>4 cm 3 cm 5 cm</p> </div> <div style="text-align: center;">  <p>8 cm 6 cm 10 cm</p> </div> </div> |
| 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. | <p>The number of times a shape matches itself in one complete turn is the order of rotation. The angle of rotation symmetry is:</p> $\frac{360^\circ}{\text{the order of rotation}}$ | <p>A square has order of rotation 4.</p>  <p>So, its angle of rotation symmetry is: $\frac{360^\circ}{4} = 90^\circ$</p> |

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: $\frac{7}{2} = \underline{\hspace{2cm}}$

Length of original photo: $\underline{\hspace{2cm}}$

Length of enlargement: $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

Width of original photo: $\underline{\hspace{2cm}}$

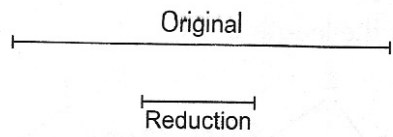
Width of enlargement: $\underline{\hspace{1cm}} \times \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

The enlargement has dimensions $\underline{\hspace{4cm}}$.

7.2 2. Find the scale factor for this reduction.

Length of original line segment: $\underline{\hspace{2cm}}$ cm

Length of reduction: $\underline{\hspace{2cm}}$ cm

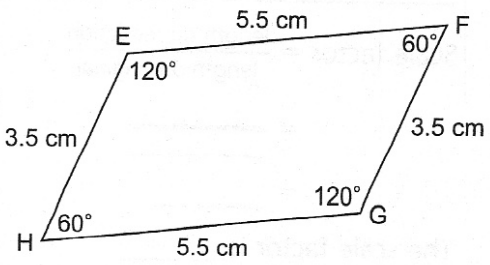
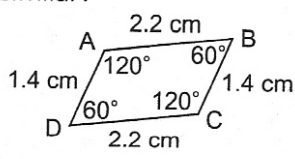


Scale factor = $\frac{\text{length on reduction}}{\text{length on original}}$

= $\frac{\underline{\hspace{2cm}}}{\underline{\hspace{2cm}}}$
= $\underline{\hspace{2cm}}$

The scale factor is $\underline{\hspace{2cm}}$.

7.3 3. Are these parallelograms similar?



Check matching angles.

$\angle A = \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$ $\angle B = \underline{\hspace{1cm}} = \underline{\hspace{1cm}}$

All matching angles $\underline{\hspace{1cm}}$ equal.

Check matching sides.

The matching sides are: $\underline{\hspace{1cm}}$ and $\underline{\hspace{1cm}}$, and $\underline{\hspace{1cm}}$ and $\underline{\hspace{1cm}}$. Find the scale factors.

$\frac{\text{length of } \underline{\hspace{1cm}}}{\text{length of } \underline{\hspace{1cm}}} = \frac{\underline{\hspace{1cm}}}{\underline{\hspace{1cm}}}$
= $\underline{\hspace{2cm}}$

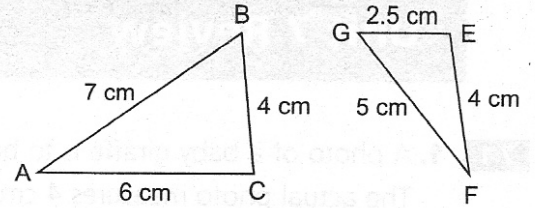
$\frac{\text{length of } \underline{\hspace{1cm}}}{\text{length of } \underline{\hspace{1cm}}} = \frac{\underline{\hspace{1cm}}}{\underline{\hspace{1cm}}}$
= $\underline{\hspace{2cm}}$

The scale factors $\underline{\hspace{1cm}}$ equal. So, the parallelograms $\underline{\hspace{1cm}}$ similar.

7.4 4. Are these two triangles similar?

In $\triangle ABC$, order the sides from shortest to longest:

In $\triangle EFG$, order the sides from shortest to longest:



Find the scale factors of matching sides.

$$\frac{\text{length of } \underline{\hspace{1cm}}}{\text{length of } \underline{\hspace{1cm}}} = \frac{\underline{\hspace{1cm}}}{\underline{\hspace{1cm}}} = \underline{\hspace{1cm}}$$

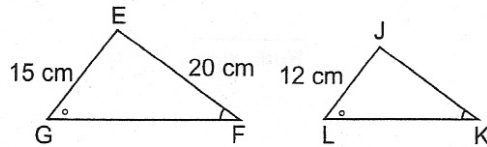
$$\frac{\text{length of } \underline{\hspace{1cm}}}{\text{length of } \underline{\hspace{1cm}}} = \frac{\underline{\hspace{1cm}}}{\underline{\hspace{1cm}}} = \underline{\hspace{1cm}}$$

$$\frac{\text{length of } \underline{\hspace{1cm}}}{\text{length of } \underline{\hspace{1cm}}} = \frac{\underline{\hspace{1cm}}}{\underline{\hspace{1cm}}} = \underline{\hspace{1cm}}$$

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

5. Triangle EFG is similar to $\triangle JKL$.

Find the length of JK.



_____ is a reduction of _____.

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

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

$$= \frac{\underline{\hspace{1cm}}}{\underline{\hspace{1cm}}}$$

$$= \underline{\hspace{1cm}}$$

$$= \underline{\hspace{1cm}}$$

The scale factor is _____.

Use the scale factor to find the length of JK.

JK and EF are matching sides.

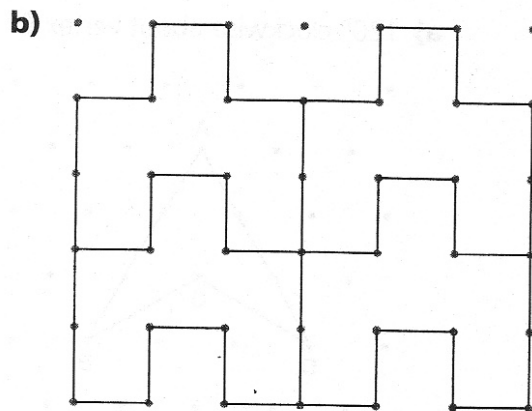
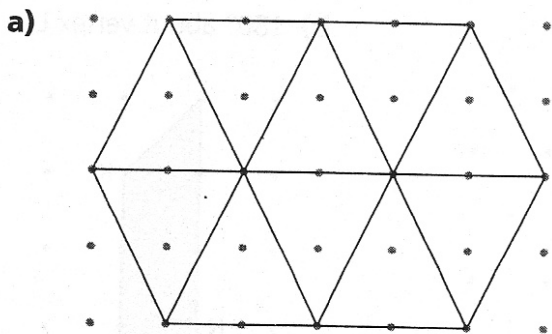
Length of EF: _____

Scale factor: _____

Length of JK: _____

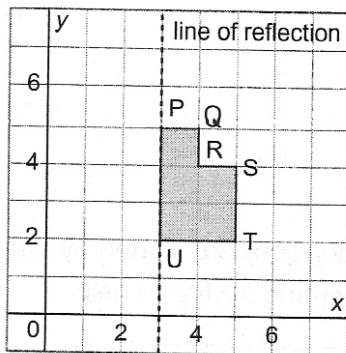
So, JK has length _____.

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

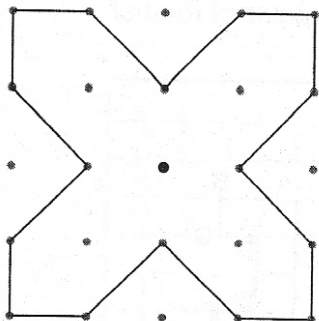


7. Reflect the shape in the line of reflection to make a larger shape.

| 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 _____.

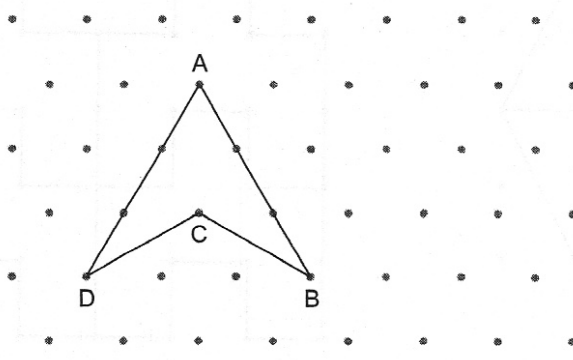
Angle of rotation symmetry is:

$$\frac{360^\circ}{\text{the order of rotation}} = \frac{360^\circ}{\underline{\hspace{2cm}}}$$

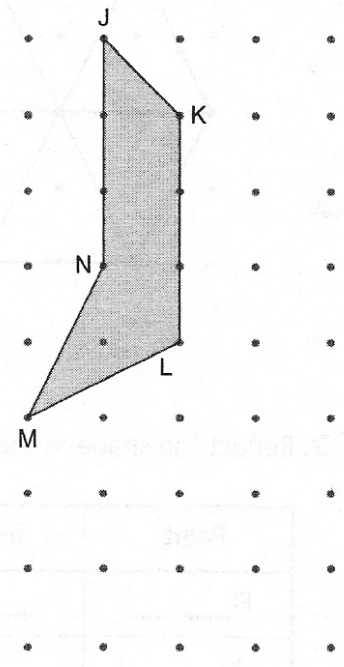
$$= \underline{\hspace{2cm}}$$

9. Draw the image after each rotation.

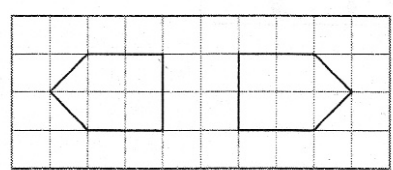
a) 120° clockwise about vertex B



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.

