8.1 Line Symmetry

A line of symmetry:

1

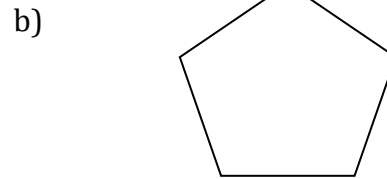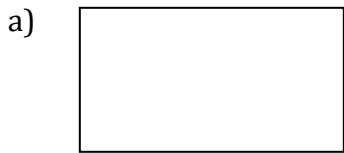A - - - - - - - - → B

2
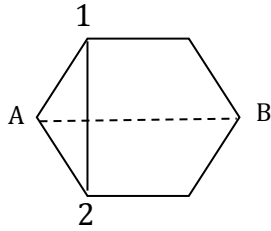
<u>AB </u>is a line of symmetry. Corresponding points 1 and 2 are perpendicular t the line.
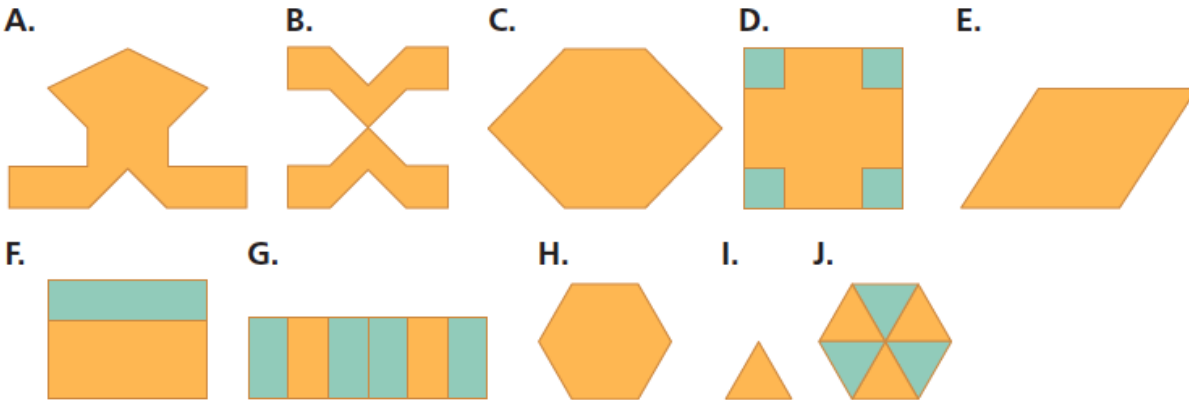
In a design, each corresponding point must be the same colour.

A shape can have more than 1 line of symmetry.

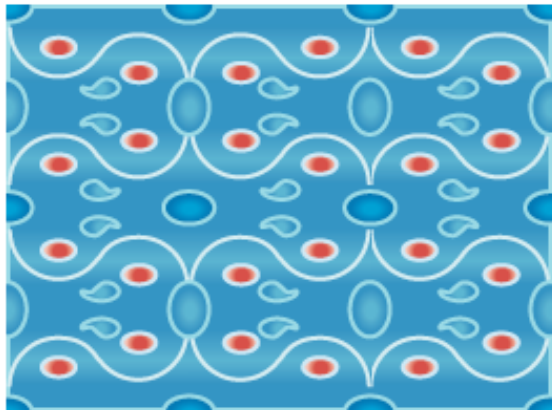Ex: 1) How many lines of symmetry do the shapes below have?

a)

b)

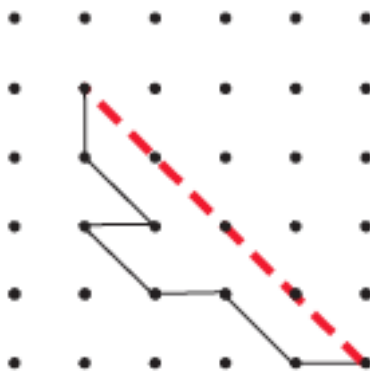Ex: 2) How many lines of symmetry does each shape have?

A.   B.   C.   D.   E.

F.   G.   H.   I.   J.

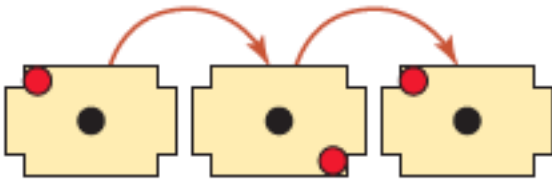Tessellation:

Ex: 3) Identify the lines of symmetry in this tessellation:

Ex: 4) If we know that a shape is symmetrical and its line of symmetry, we can sketch the other half. Complete the object below:

Homework: pg. 370, #1-6, 9, 10, 12a, 17 and worksheet
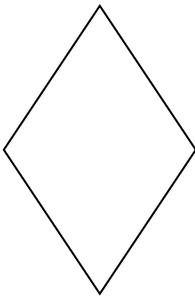
8.2 Rotation Symmetry

Definitions:

- Rotation symmetry –

- Order of rotation symmetry –
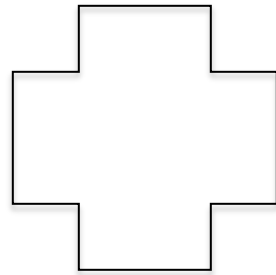
- Angle of rotation symmetry -

This shape has a rotation angle of _____ and a rotation order of 2.

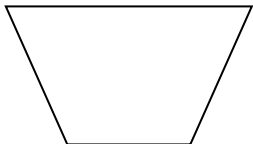Ex: 1) Find the i) order of rotation and ii) the angle of rotation.

a)

b)

Ex: 2) For each shape, determine the number of lines of symmetry, its order of rotation, and the angle of rotation.
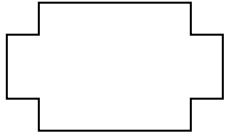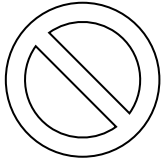
Lines of symmetry:
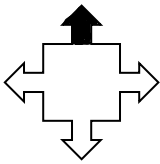Order of rotation:
Angle of rotation:

Lines of symmetry:
Order of rotation:
Angle of rotation:

Lines of symmetry:
Order of rotation:
Angle of rotation:
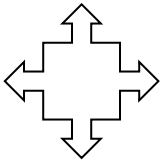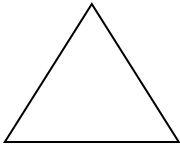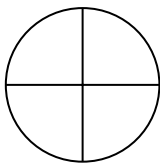
Lines of symmetry:
Order of rotation:
Angle of rotation:

Lines of symmetry:
Order of rotation:
Angle of rotation:

Lines of symmetry:
Order of rotation:
Angle of rotation:

Lines of symmetry:
Order of rotation:
Angle of rotation:

Homework: pg. 377 #1bc, 3, 5, 8

8.4 Symmetry on the Co-ordinate Plane Pt. 1

Translations, Reflections and Rotations

A. Translations:

Translation –

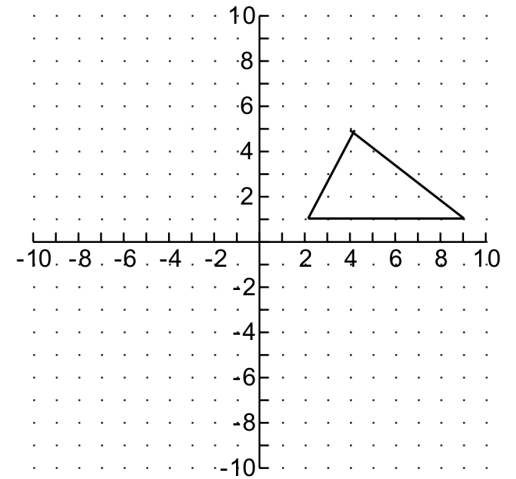Ex: 1) Translate ΔABC, A(2,1), B(4,5), C(9,1), (Left 3, Down 4)

Mapping diagram

A(2,1)→ (2 – 3 ; 1 – 4) → (-1 , -3)

B(4,5)-----

C(9,1)-----
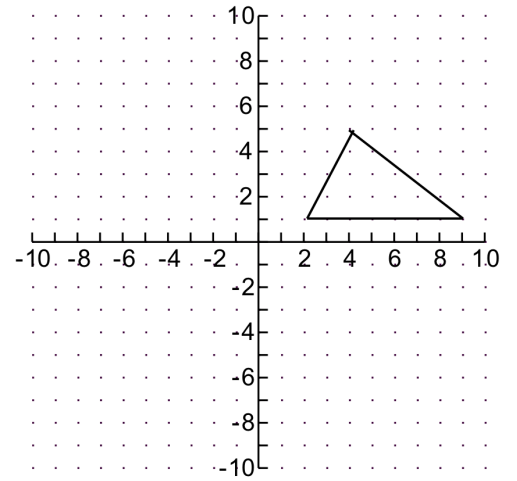
Ex:2) Translate ΔABC (Left 6, Up 3)

B. Reflections:

Reflections –

Math 9 – Chapter 8: Symmetry

Shapes can be reflected over:
-
-
-
-

Ex: 1) Reflect ΔABC, A(2,1), B(4,5), C(9,1) over the x-axis.

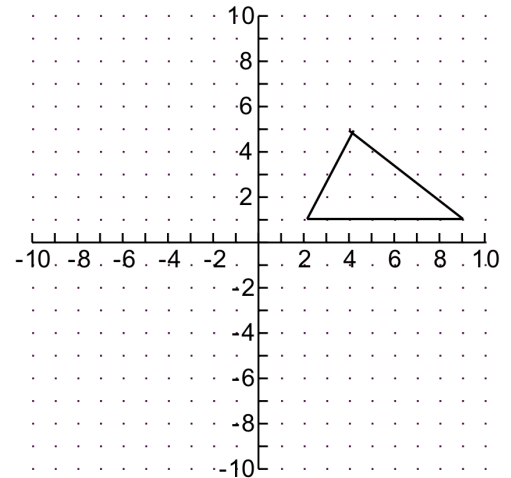When you reflect over the x-axis:
(x , y) → (x , -y)

A(2,1)---A' (
B(4,5)---B' (
C(9,1)---C' (

Ex: 2) Now reflect ΔABC over the y-axis:

When you reflect over the y-axis:
(x , y) → (-x , y)

A(2,1)---A''(
B(4,5)---B''(
C(9,1)---C''(
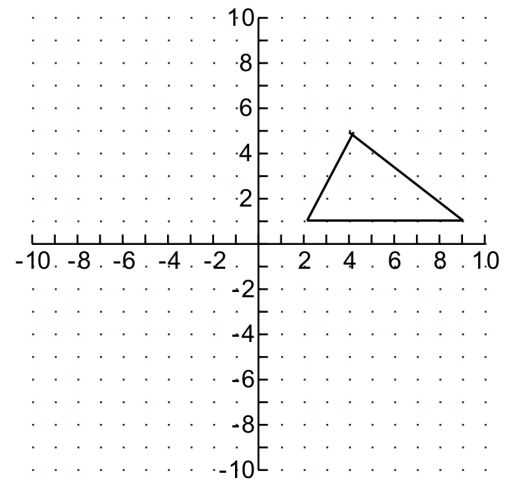
Ex: 3) Now, reflect ΔABC over the line y = x

When you reflect over y = x:
(x , y) → (y , x)

A(2,1)---A'''(
B(4,5)---B'''(
C(9,1)---C'''(

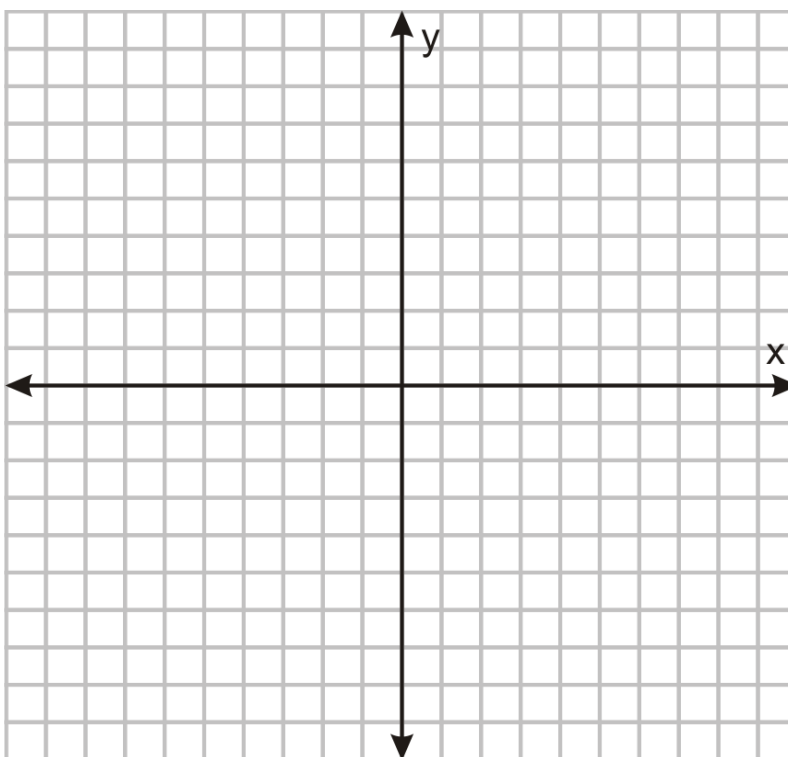*Homework: pg. 392 #1acd, 2ac, 3, 4, 5, 6*
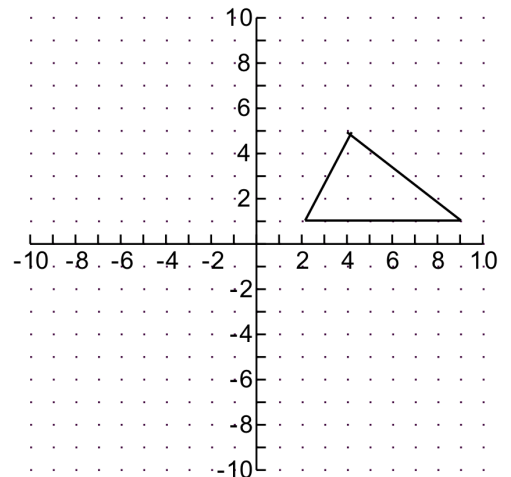
8.4 Symmetry on the Co-ordinate Plane Pt. 2

C. Rotations

Rotations –

Ex:1) Sketch ΔCAT if C (2, 2), A(4, 5) and T(6, 3).

a) Rotate ΔCAT 90° CCW around the origin (0, 0).

b) Rotate ΔCAT 180° CW around the origin.

c) Rotate ΔCAT 90° CW about point C.

Homework: pg 392, #1b, 2b, 3, 7b, 13; pg. 402 #1-3, 7