APRIL 28, 2016

UNIT 7: SIMILARITY AND TRANSFORMATIONS

7.5: REFLECTIONS AND LINE SYMMETRY

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MATH 9

WHAT'S THE POINT OF TODAY'S LESSON?

We will begin working on the Math 9 Specific Curriculum Outcome (SCO) "Shape and Space 5" OR "SS5" which states:

"Demonstrate an understanding of line and rotation symmetry."

What does THAT mean???

SCO SS5 means that we will:

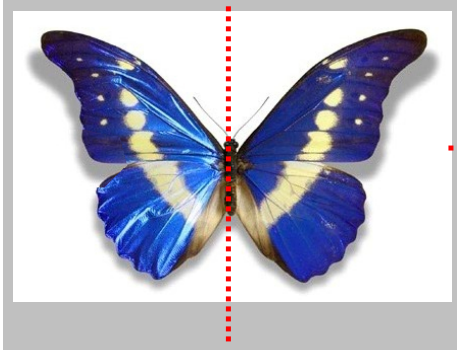
* **classify a given set of 2-D shapes or designs according to the number of lines of symmetry**
* **complete a 2-D shape or design given one half of the shape or design and a line of symmetry**
* **determine if a 2-D shape or design has rotational symmetry about the point at the centre of the shape or design and, if it does, state the order and angle of rotation**
* **rotate a given 2-D shape about a vertex and draw the resulting image**
* **identify a line of symmetry or the order and angle of rotation symmetry in a given tessellation**
* **identify the type of symmetry that arises from a given transformation on the Cartesian plane**
* **complete, concretely or pictorially, a given transformation of a 2-D shape on a Cartesian plane, record the coordinates and describe the type of symmetry that results**
* **identify and describe the types of symmetry created in a given piece of artwork**
* **determine whether or not two given 2-D shapes on the Cartesian plane are related by either rotational or line symmetry**
* **draw, on a Cartesian plane, the translation image of a given shape using a given translation rule, such as R2, U3, label each vertex and its corresponding ordered pair and describe why the translation does not result in line or rotational symmetry**

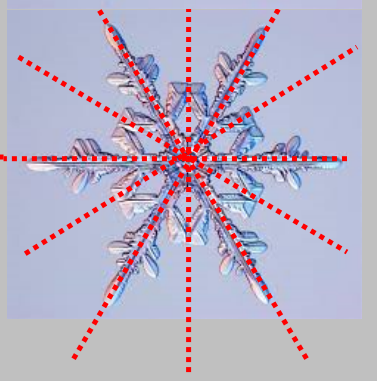
What does THAT mean???

In today's lesson, we will work on the following achievement indicators for SCO SS5:

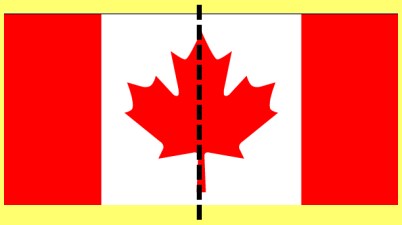
* **classify a given set of 2-D shapes or designs according to the number of lines of symmetry**
* **complete a 2-D shape or design given one half of the shape or design and a line of symmetry**

A figure has symmetry when it can be folded so two halves match or are identical.

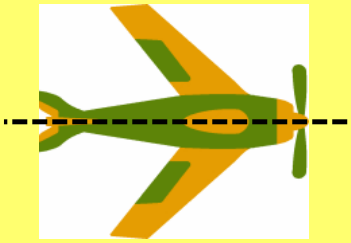




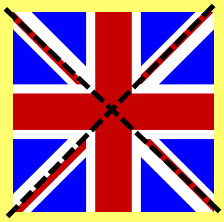
Shapes may show symmetry when folded:



vertically



horizontally



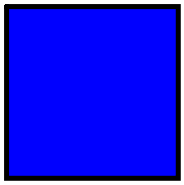
diagonally

How many lines of symmetry are in the following figures?

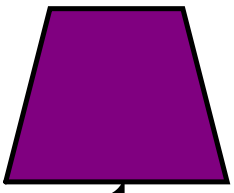
1

5

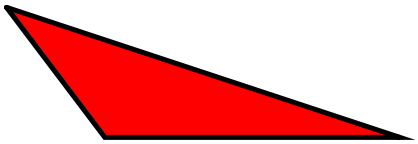
1



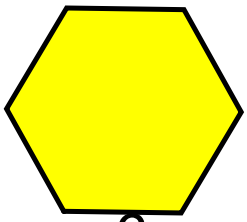
4



1

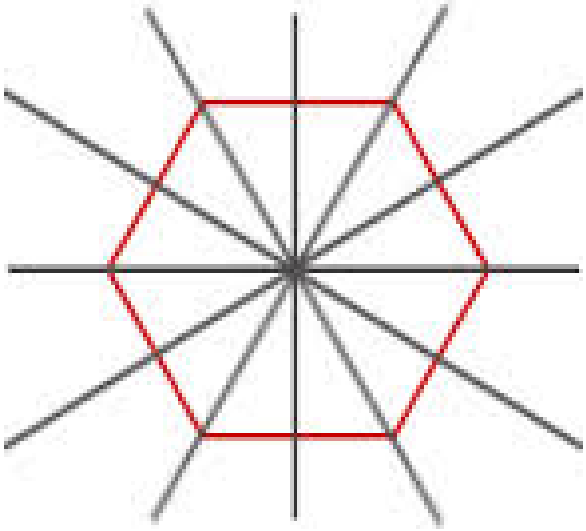


0

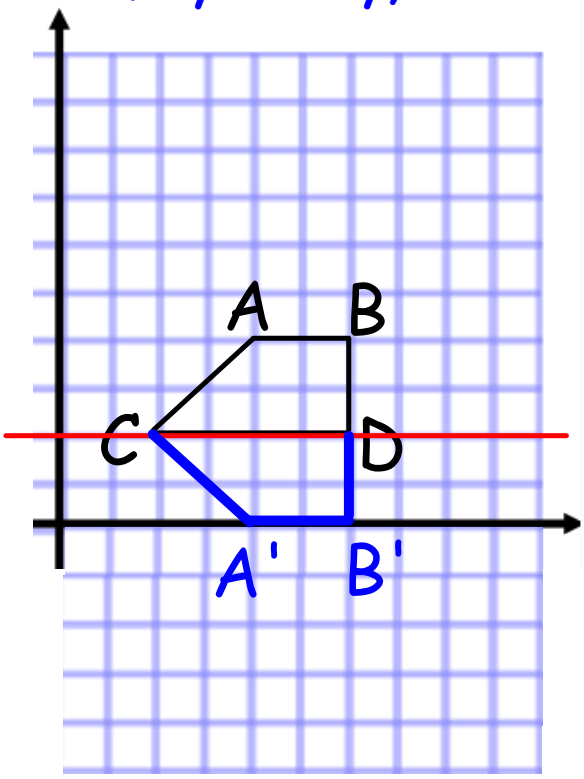


6

The 6 lines of symmetry in a regular hexagon:



Copy the shape on graph paper. Use the red line as a line of symmetry, and complete the other half.



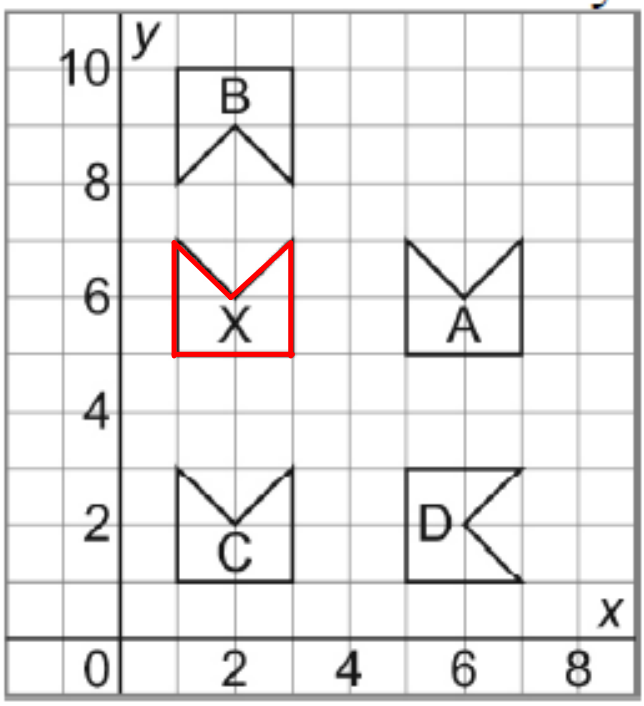
Coordinates:

A	(4 , 4)
B	(6 , 4)
C	(2 , 2)
D	(6 , 2)
A'	(4 , 0)
B'	(6 , 0)

CONCEPT REINFORCEMENT: Complete the following 3 slides (you have the package that accompanies this presentation if you were here today, April 28).

Also, be sure to have your Linear Relations test signed and corrected for Mon., May 2 for you bonus points.

Identify the images that are related to the shape "X" by a line of reflection. Describe the symmetry in each case.



A: the reflection image in the vertical line through 4 on the *x*-axis

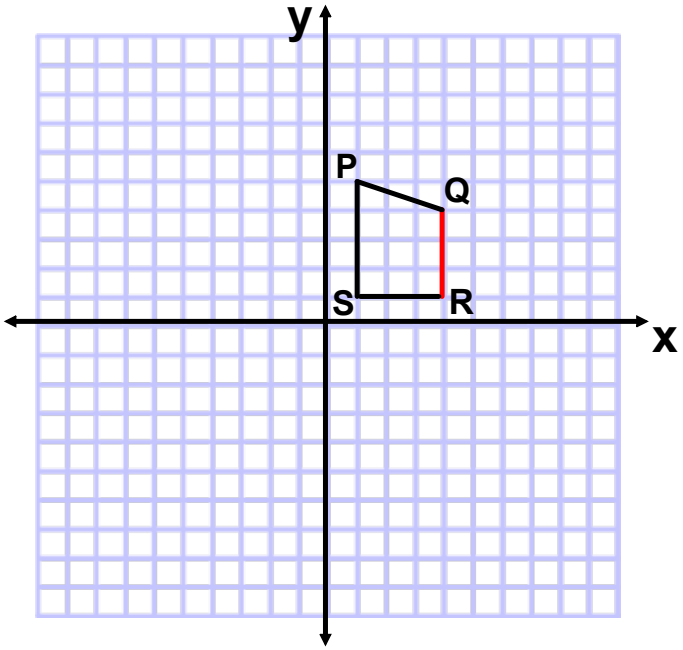
B: the reflection image in the horizontal line through 7.5 on the *y*-axis

C: not related to "X" by line symmetry

D: the reflection image in the oblique line through (0, 0) and (8, 8)

Quadrilateral PQRS is part of a larger shape.

a) Draw its reflection in the vertical line through 4 on the x-axis.



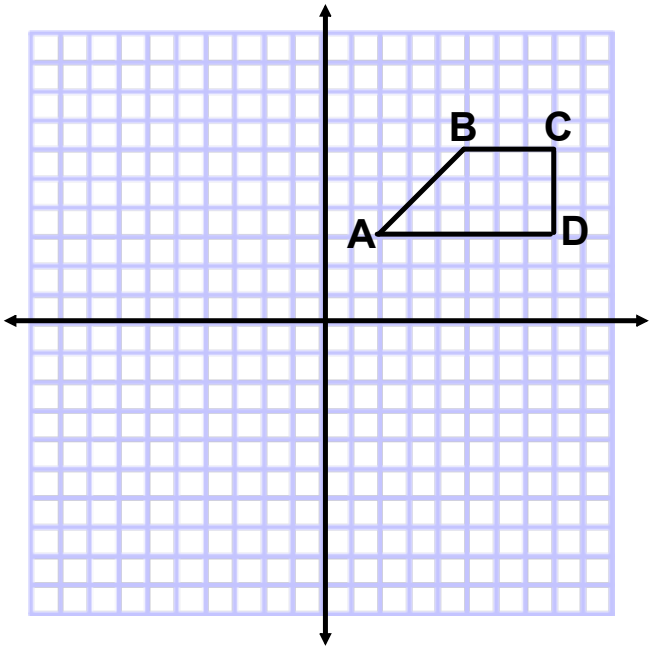
Coordinates:

P	(1 , 5)
Q	(4 , 4)
R	(4 , 1)
S	(1 , 1)

b) Write the coordinates of the vertices of the larger shape.

c) Describe the larger shape and its symmetry.

a) Draw a reflection of quadrilateral ABCD in the horizontal line through 2 on the y-axis.



Coordinates:

A	(2 , 3)
B	(5 , 6)
C	(8 , 6)
D	(8 , 3)

b) Write the coordinates of the image of ABCD.

c) Describe the image of ABCD.