**APRIL 18, 2018**

# UNIT 7: SIMILARITY AND TRANSFORMATIONS

## 7.5: REFLECTIONS AND LINE SYMMETRY

**K. Sears**
*MATH 9*

## WHAT'S THE POINT OF TODAY'S LESSON?

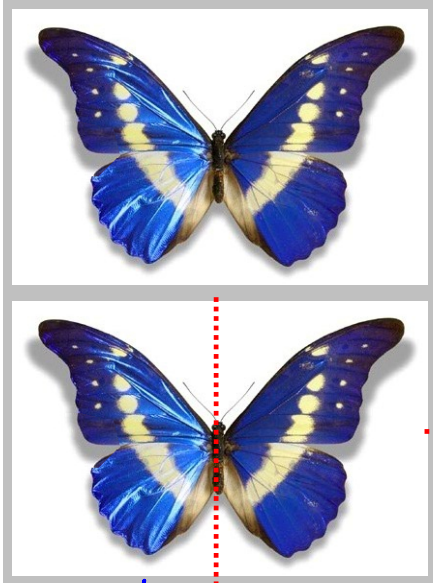
**We will begin working on the Math 9 Specific Curriculum Outcome (SCO) "Shape and Space 5" OR "SS5" which states:**

**"Demonstrate an understanding of line and rotation symmetry."**

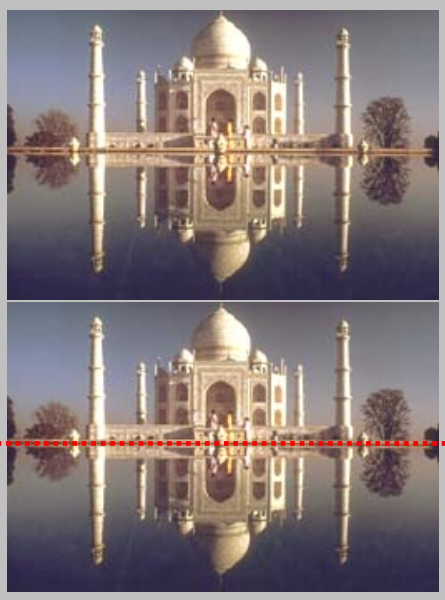
# HOMEWORK QUESTIONS?

## (pg 341-342 4, 5, 9, 13; pg 352 5(a); pg 377-378 6, 8)

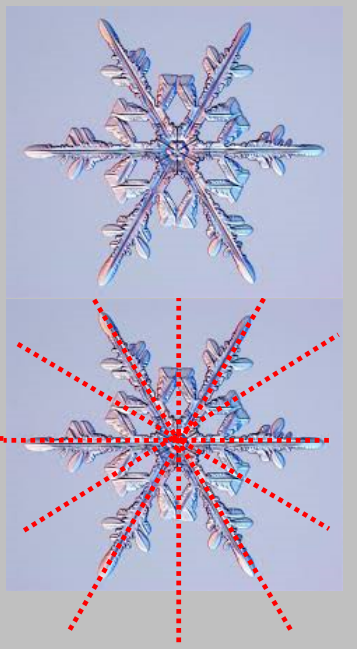
A figure has symmetry when it can be folded so two halves match or are identical.



Vertical Symmetry

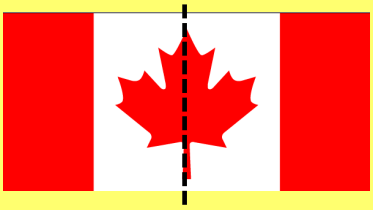


Horizontal Symmetry

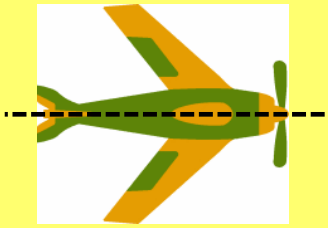


+ Diagonal Symmetry

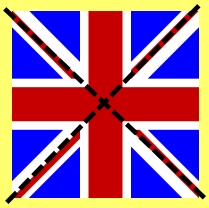
## Shapes may show symmetry when folded:



vertically



horizontally



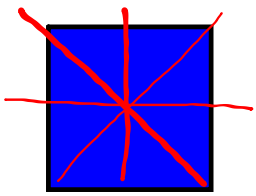
diagonally

## How many lines of symmetry are in the following figures?

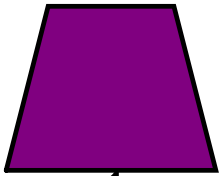
1

5

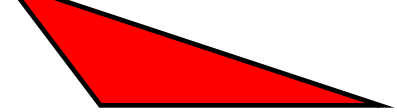
1



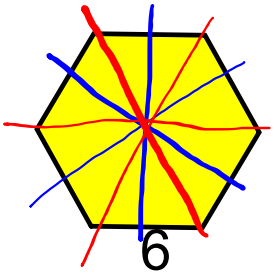
4



1

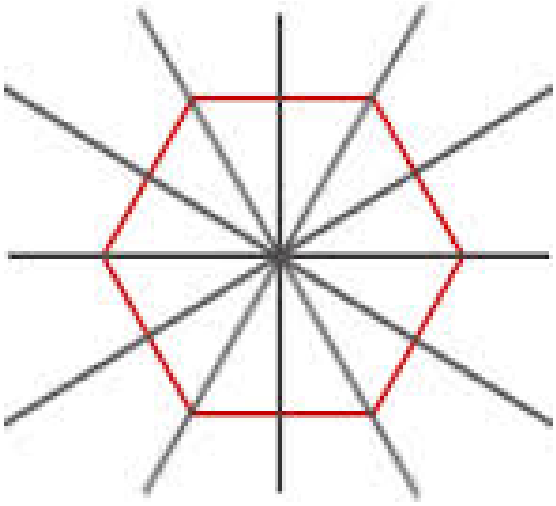


0

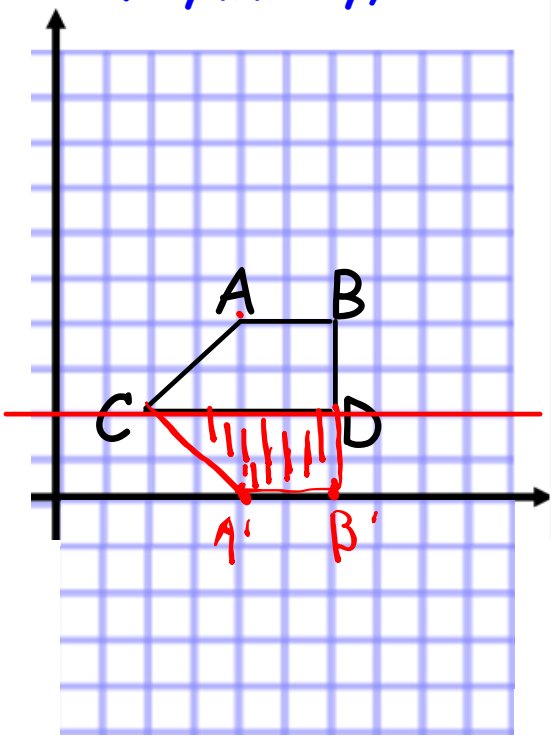


6

## The 6 lines of symmetry in a regular hexagon:



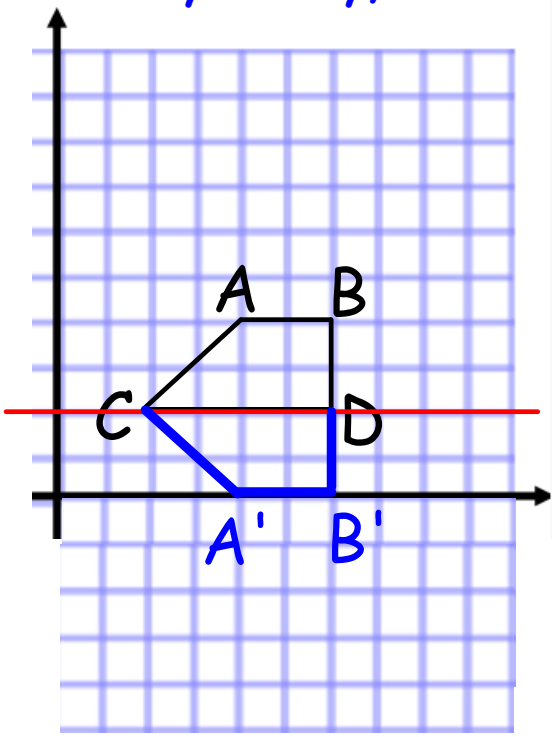
Copy the shape on graph paper. Use the red line as a line of symmetry, and complete the other half.




**Coordinates:**

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

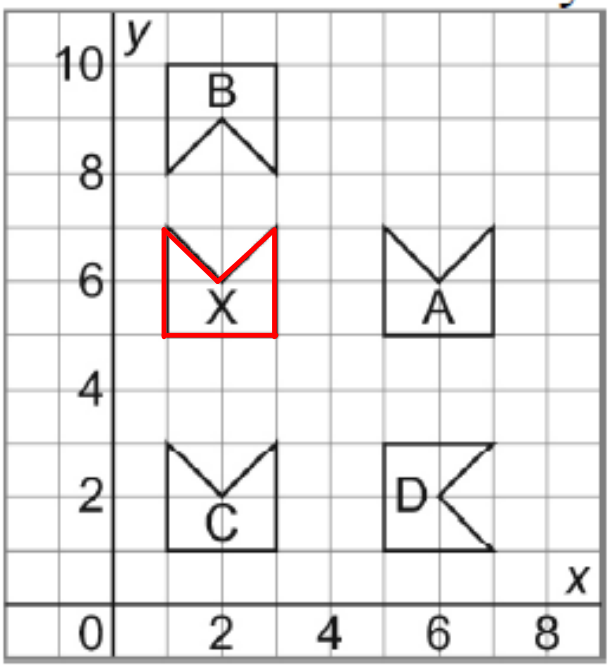
Copy the shape on graph paper. Use the red line as a line of symmetry, and complete the other half.




**Coordinates:**

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

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



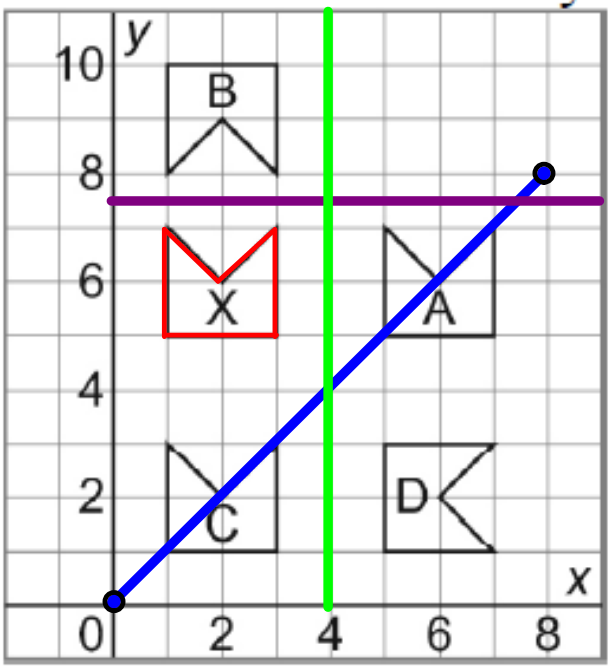

**A**: the reflection image in the vertical line through 4 on the *x*-axis

**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)

**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

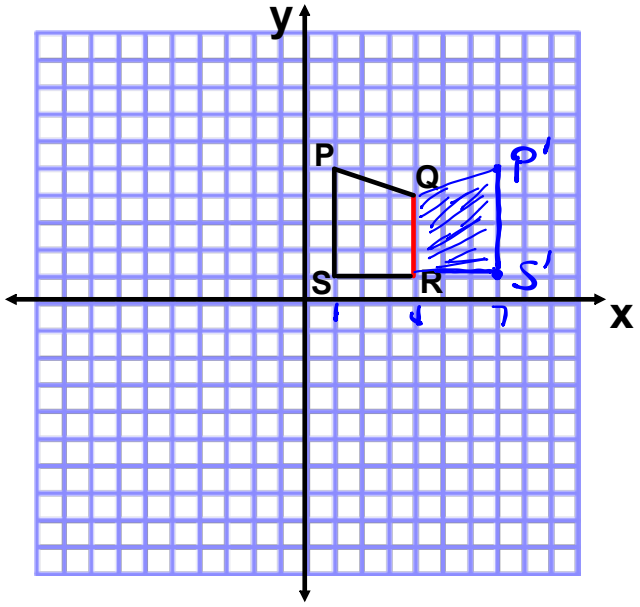
**B**: the reflection image in the horizontal line through 7.5 on the *y*-axis

**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) |

P' (7, 5)

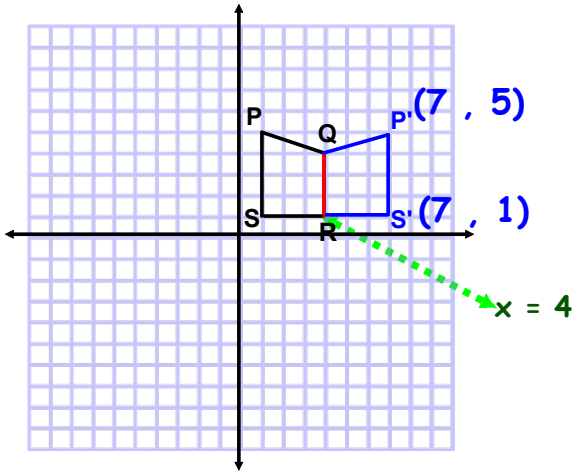
S' (7, 1)

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

c) Describe the larger shape and its symmetry.

Quadrilateral PQRS is part of a larger shape.

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



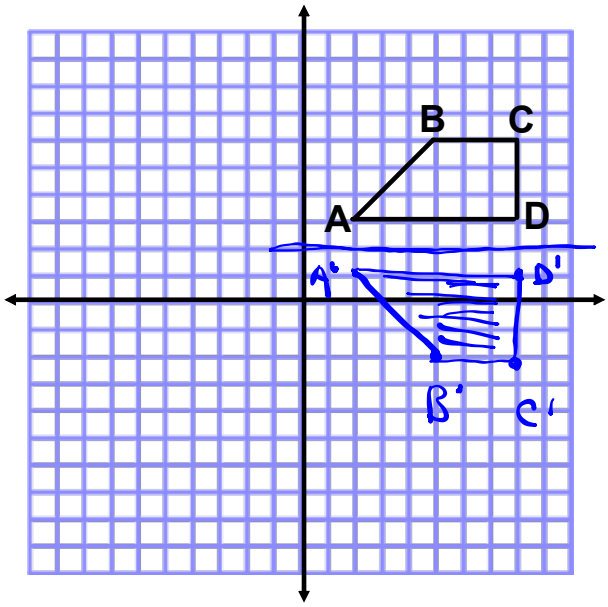

b) Write the coordinates of the vertices of the larger shape.

**P (1 , 5) ; Q (4 , 4) ; P' (7 , 5) ; S (1 ,1) ; and S' (7 , 1)**

c) Describe the larger shape and its symmetry.

**It is a pentagon (P Q P' S' S) with a line of symmetry through QR.**

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




**Coordinates:**

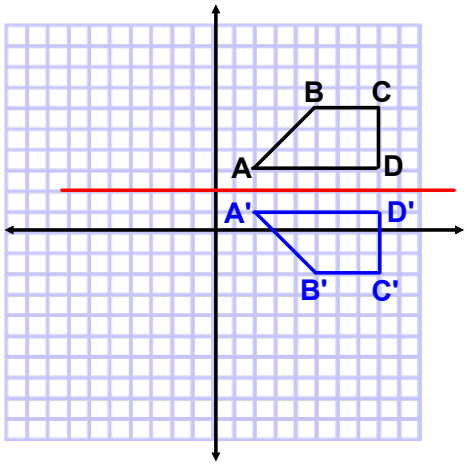
| | |
|---|---|
| A | (2 , 3) |
| B | (5 , 6) |
| C | (8 , 6) |
| D | (8 , 3) |

A' (2, 1)
D' (8, 1)
B' (5, -2)
C' (8, -2)

b) Write the coordinates of the image of ABCD.

c) Describe the image of ABCD.

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) |
| A' | (2 , 1) |
| B' | (5 , -2) |
| C' | (8 , -2) |
| D' | (8 , 1) |

b) Write the coordinates of the image of ABCD.
(See above.)

c) Describe the image of ABCD.
The image of ABCD is a still a quadrilateral (A'B'C'D').

## CONCEPT REINFORCEMENT:

MMS9:

PAGE 357: #3

PAGE 358: #5

PAGE 359: #8, #9 & #10