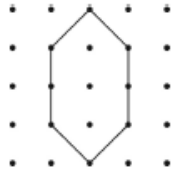
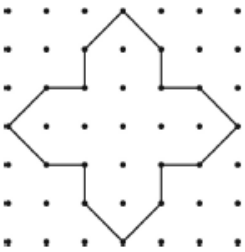
Warm-Up

1. Which polygons have rotational symmetry? State the order of rotation and the angle of rotation symmetry for each.

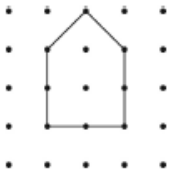
a)



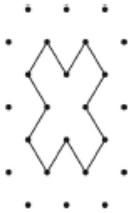
b)



c)



d)



order of rotation: a) 2 b) 4 c) no rotational symmetry d) 2

angle of rotation: a) 180° b) 90° d) 180°

4. What is the angle of rotation symmetry for a shape with each order of rotational symmetry?

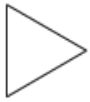
a) 3 **b)** 5 **c)** 9 **d)** 12

5. What is the order of rotational symmetry for each angle of rotation symmetry?

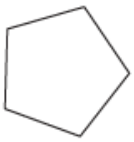
a) 60° **b)** 20° **c)** 45° **d)** 36°

6. What is the order of rotational symmetry and angle of rotation symmetry for each regular polygon?

a) an equilateral triangle



b) a regular pentagon



4. What is the angle of rotation symmetry for a shape with each order of rotational symmetry?

a) 3 120° **b)** 5 72° **c)** 9 40° **d)** 12 30°

5. What is the order of rotational symmetry for each angle of rotation symmetry?

a) 60° 6 **b)** 20° 18 **c)** 45° 8 **d)** 36° 10

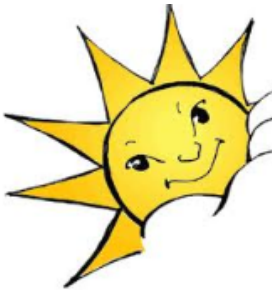
6. What is the order of rotational symmetry and angle of rotation symmetry for each regular polygon?

a) an equilateral triangle

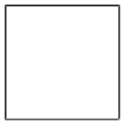
3; 120°

b) a regular pentagon

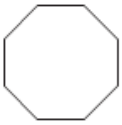
5; 72°



c) a square



d) a regular octagon

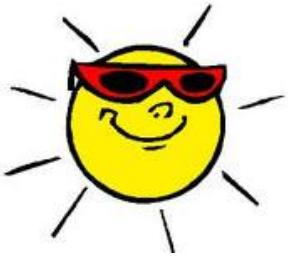


c) a square

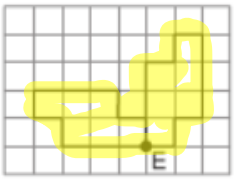
4; 90°

d) a regular octagon

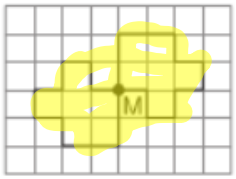
8; 45°



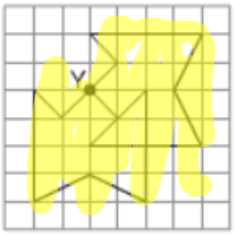
9. a)



b)



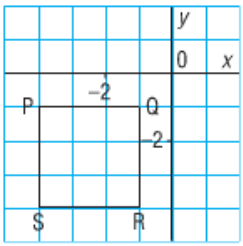
c)

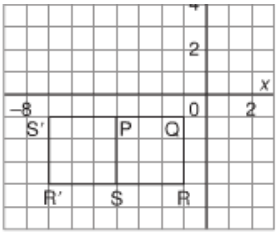


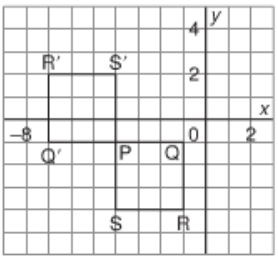
a) Rotate square PQRS clockwise about vertex P through:

i) 90° ii) 180° iii) 270°

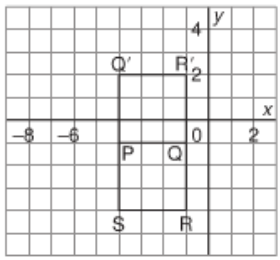
Draw and label each rotation image.



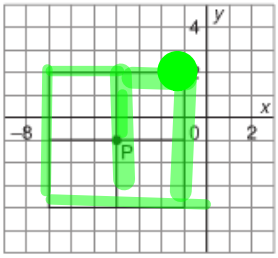




iii)



b) The shape formed has rotational symmetry of order 4 about P. The shape and its 3 images are all squares that combine to form a larger square.

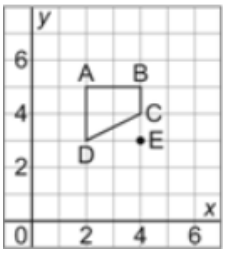


Draw the rotation image for each transformation of quadrilateral ABCD.

a) 180° about vertex B

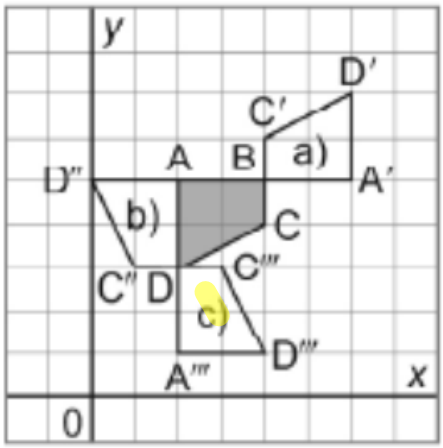
b) 90° clockwise about vertex A

c) 90° counterclockwise about point E



A (2,5)
B (4,5)
C (4,4)
D (2,3)

Point E (4,3)



There are three types of transformations:

1. reflections [line of reflection]
   - Reflect x-axis
   - Reflect through y-axis
   - Oblique Line
2. rotations
   - order of rotation
   - angle of rotation
3. translations [slide]

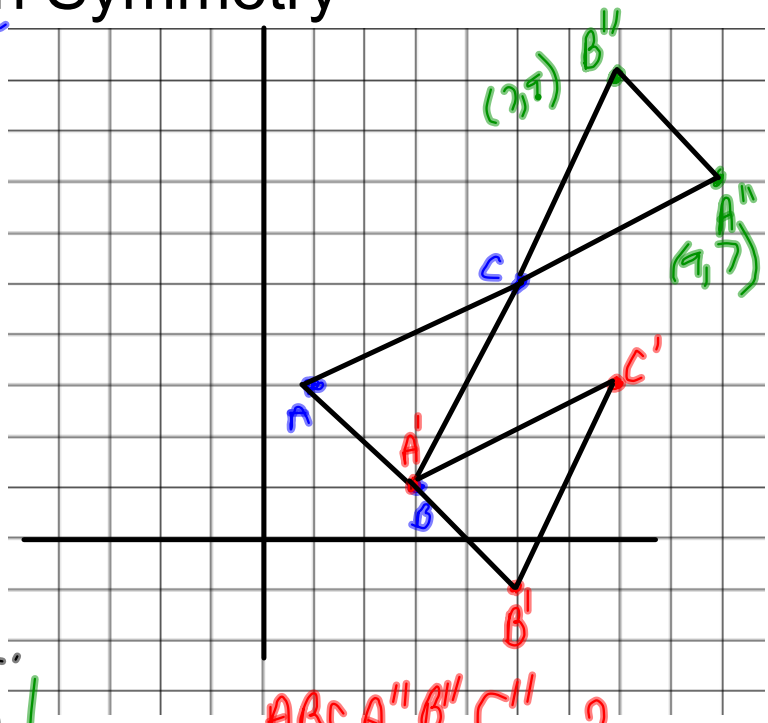
Left 3 up 2 [L3 U2]
right 4 down 2 [R4 D2]

Section 7.7
Cartesian Symmetry

On grid paper plot the following points:
A (1, 3) B (3,1) and C (5,5)

Do the following Transformations:

1. A translation [slide] 2 units right and 2 units down.
   2R 2D
2. A rotation of 180 about vertex C

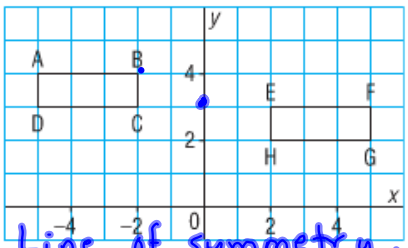


Use the larger image
Does ABCA'B'C' have.
1) Line of Symmetry 1
2) Rotational Symmetry None

ABCA''B''C'' 2
1) Line symmetry
2) Rotational symmetry
order of rotation 2

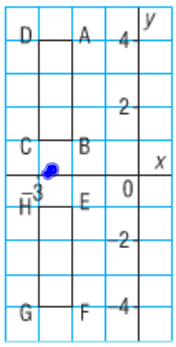
For each pair of rectangles ABCD and EFGH, determine whether they are related by symmetry.

a)



Line of symmetry 0
Rotational symmetry 2

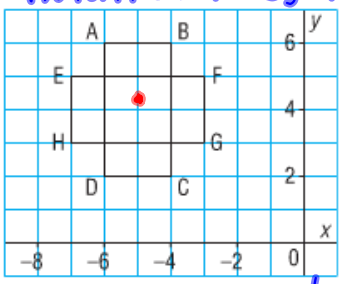
b)



Line of symmetry 1

Rotational symmetry
order of rotation 2

c)



Line of symmetry

Rotational symmetry
order of rotation 4

An object can have:

- no symmetry
- line symmetry
- rotational symmetry
- both rotational and line symmetry

Page 373 -375

3,6, 7,8,13

↑ Grid