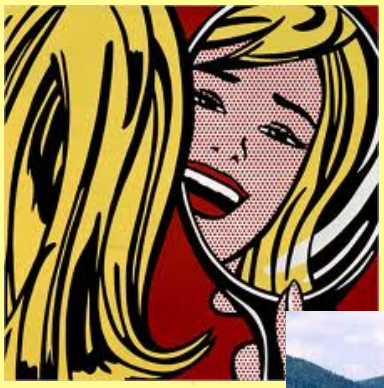
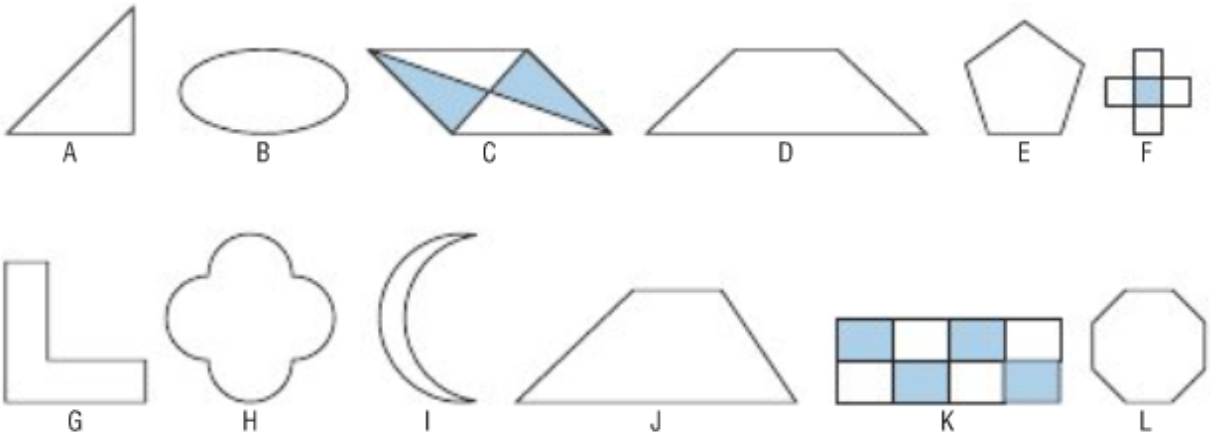


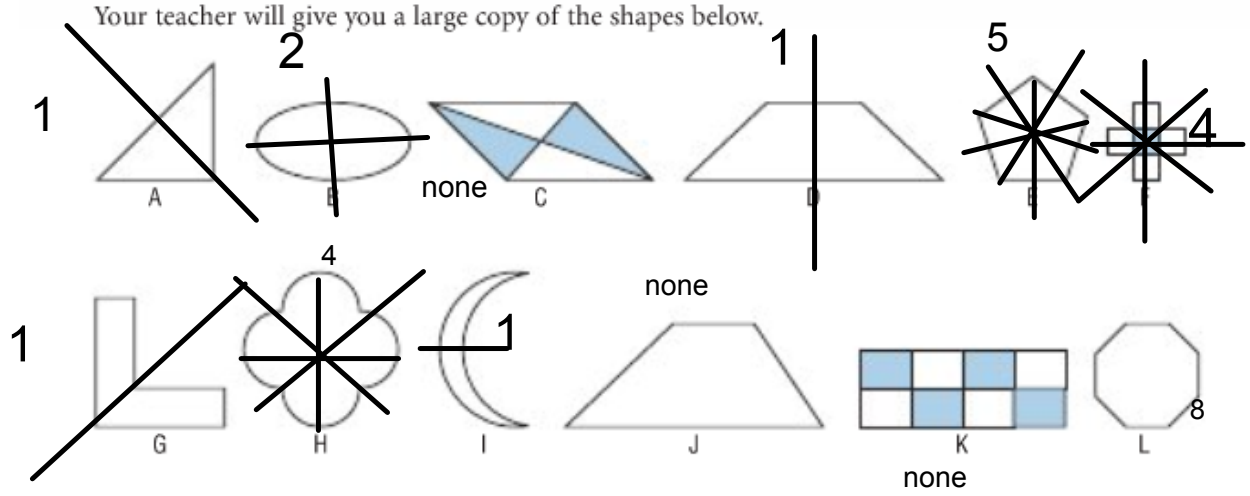
Section 7.5
Reflections and Line Symmetry

Your teacher will give you a large copy of the shapes below.



Which shapes have the same number of lines of symmetry?
Sort the shapes according to the number of lines of symmetry they have.
Which shapes do not have line symmetry? How can you tell?

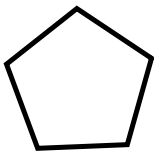
Your teacher will give you a large copy of the shapes below.

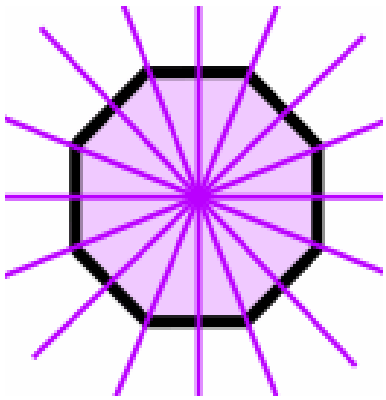


Which shapes have the same number of lines of symmetry?

Sort the shapes according to the number of lines of symmetry they have.

Which shapes do not have line symmetry? How can you tell?





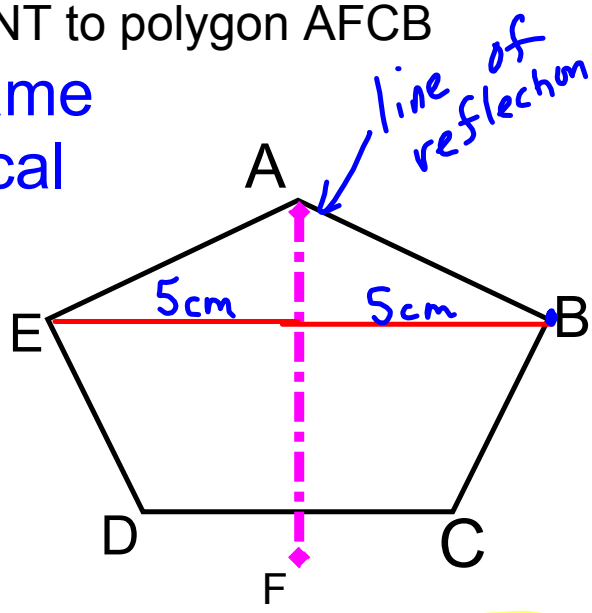
A **Regular Octagon** (8 sides)
has **8** Lines of Symmetry

A ***line of symmetry*** is also known as a ***line of reflection.***

Polygon AFDE is CONGRUENT to polygon AFCB

↳ the same

↳ identical



Each point on one side of the line of symmetry has a corresponding point on the other side. These corresponding points are equal distance, equidistant, from the line of symmetry

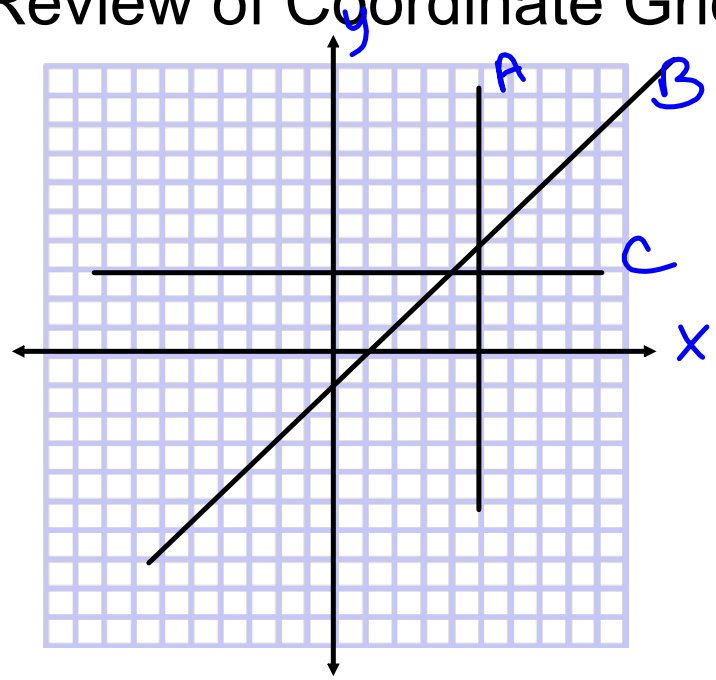
Not a regular pentagon

Quick Review of Coordinate Grid

oblique???

vertical???

horizontal???

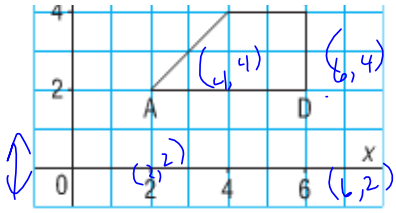


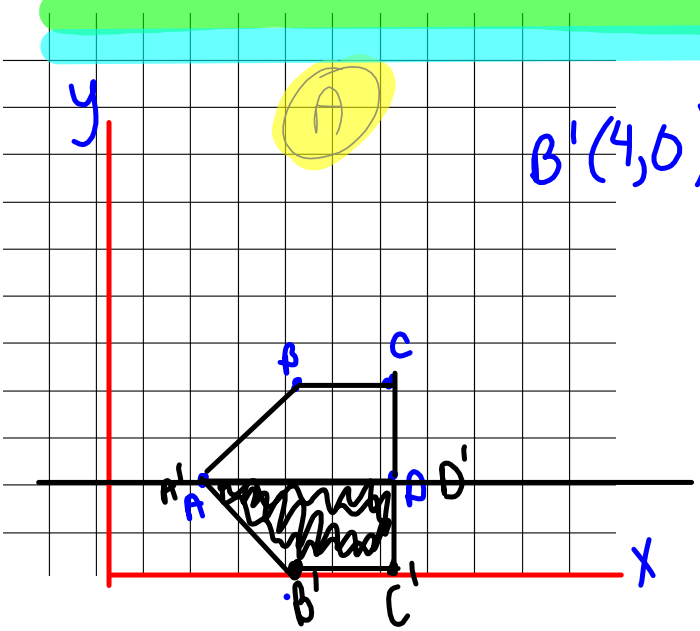
- Write the coordinates of the larger shape formed by ABCD and its image.
- Describe the larger shape and its symmetry.

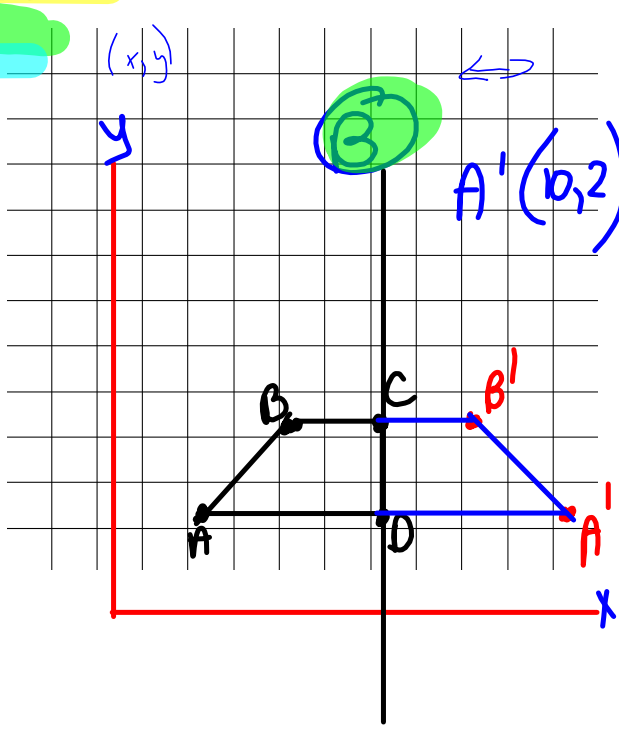
a) a reflection in the horizontal line through 2 on the y-axis

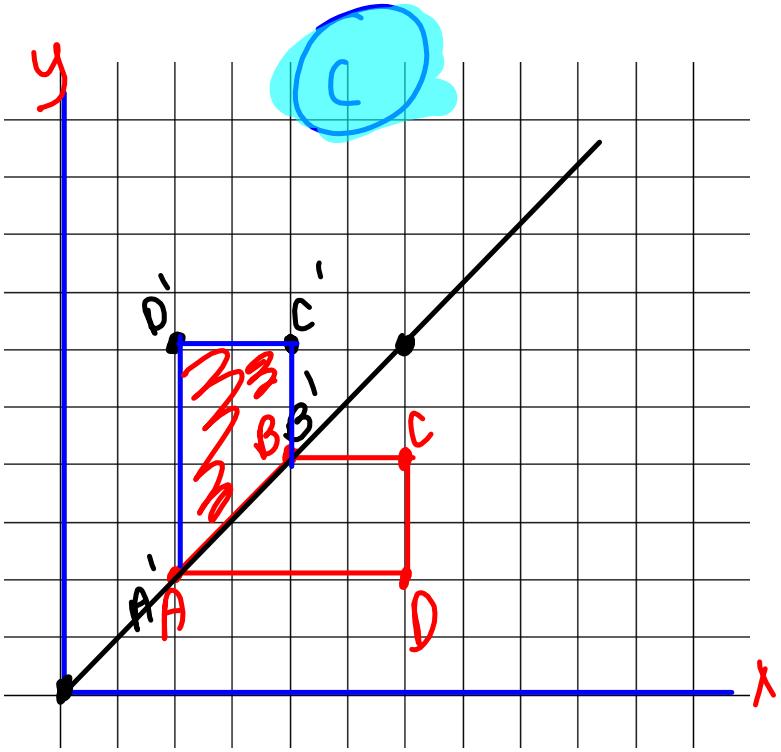
b) a reflection in the vertical line through 6 on the x-axis

c) a reflection in an oblique line through (0, 0) and (6, 6)









oblique line through (0,0) (6,6)

D'(2,6)

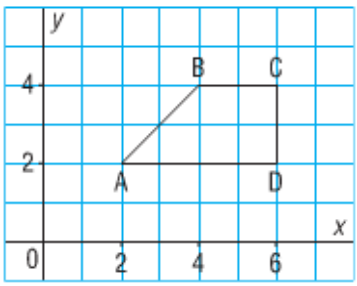
Quadrilateral ABCD is part of a larger shape.

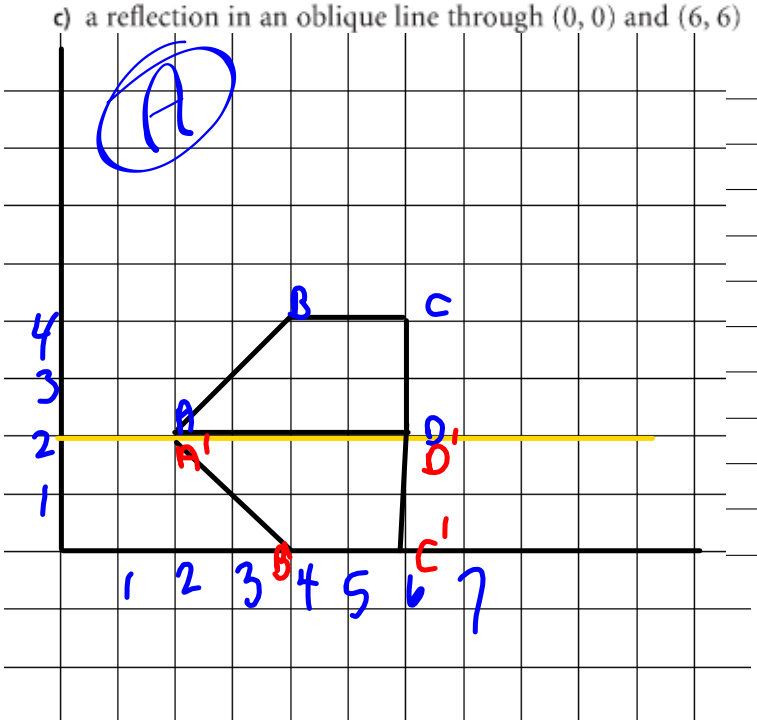
- Draw the image of ABCD after each reflection below.
- Write the coordinates of the larger shape formed by ABCD and its image.
- Describe the larger shape and its symmetry.

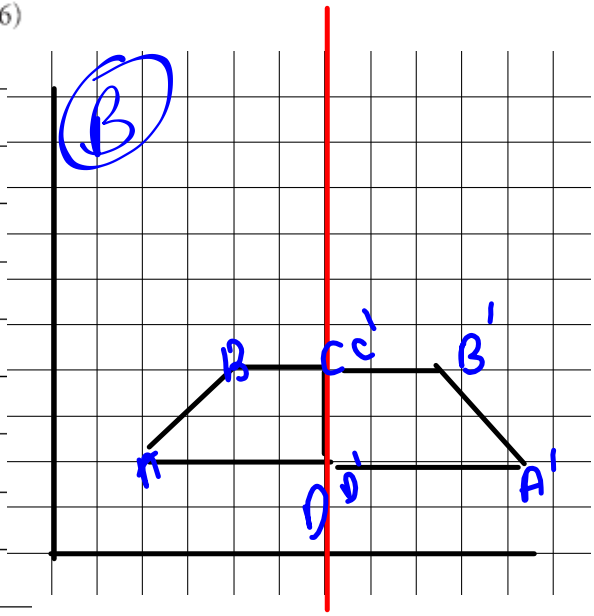
a) a reflection in the horizontal line through 2 on the y-axis

b) a reflection in the vertical line through 6 on the x-axis

c) a reflection in an oblique line through (0, 0) and (6, 6)







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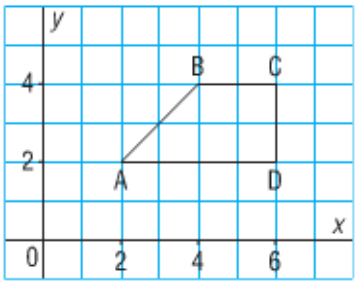
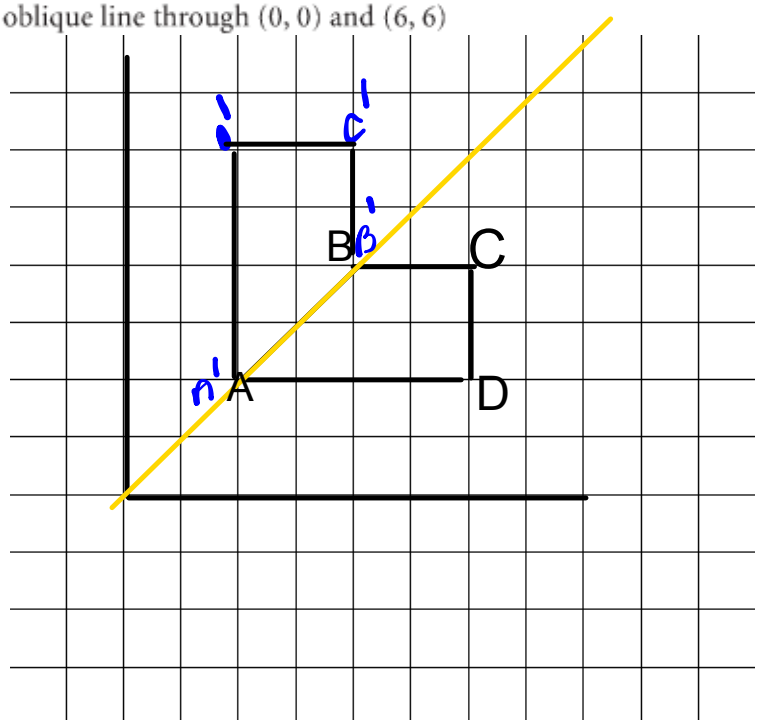
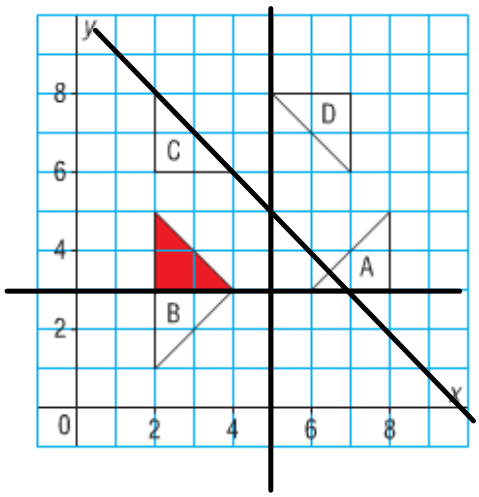
c) a reflection in an oblique line through $(0, 0)$ and $(6, 6)$





Identify the triangles that are related to the red triangle by a line of reflection.
Describe the position of each line of symmetry.



A is/is not a reflection of the original triangle through 5 on the x axis

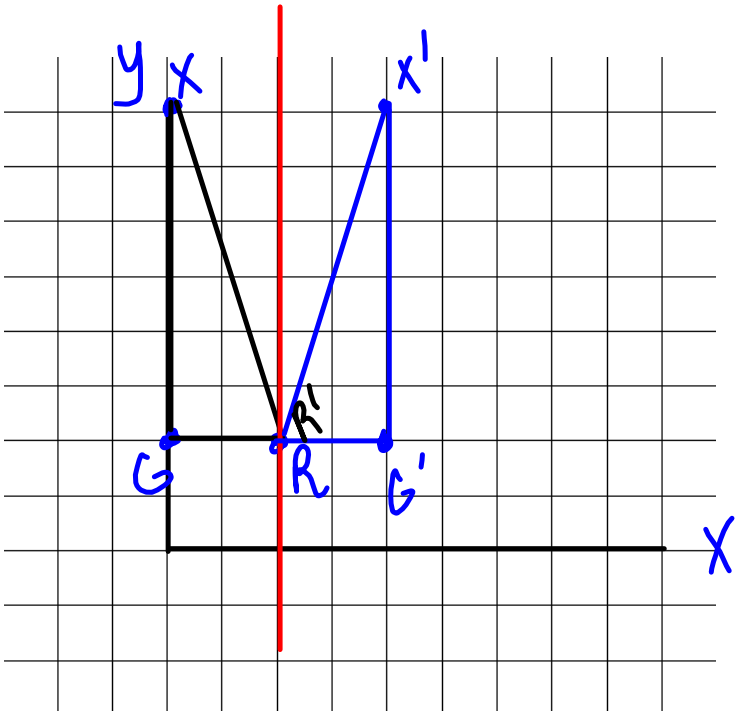
B is/is not a reflection of the original triangle through the 3 on the y axis

C is/is not a reflection....

D is/is not a reflection an oblique line through (5,5) (2,8)

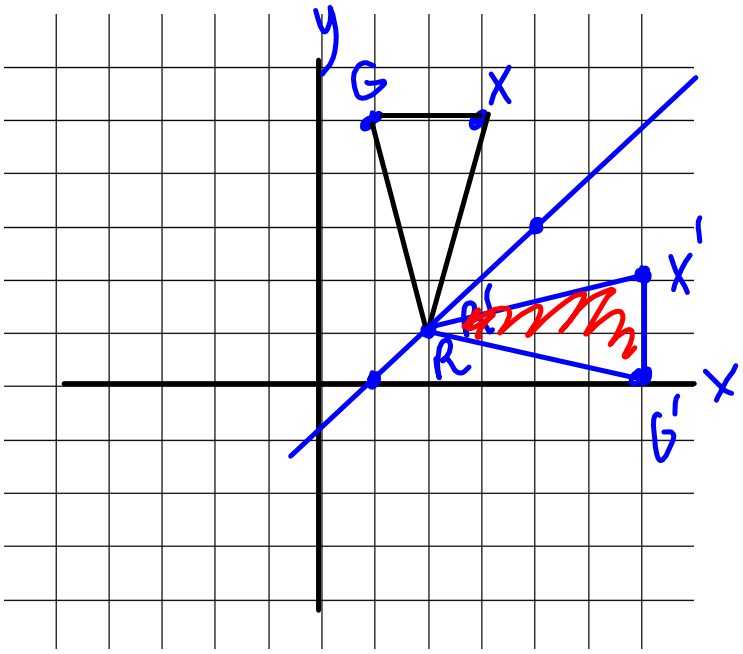
Plot the following points: G **(0,2)** **R** **(2,2)** **X** **(0,8)**

A. Draw a reflection through 2 on x axis



Plot the following points: G **(1,5)** **R (2,1)** **X(3,5)**

B. Draw a reflection through the line passing between (1,0) and (4,3)



Homework

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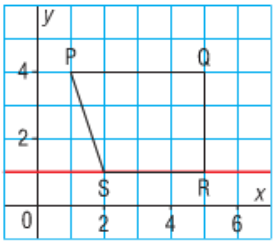
3, 5

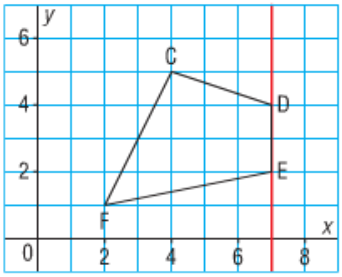
8

9, 10

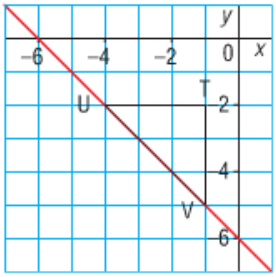
a)


y
P
Q
4
2
S
R
x
0
2
4
6

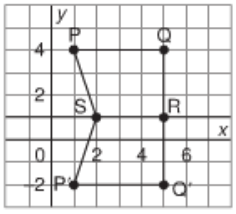
b)


y
6
C
4
D
2
E
F
x
0
2
4
6
8

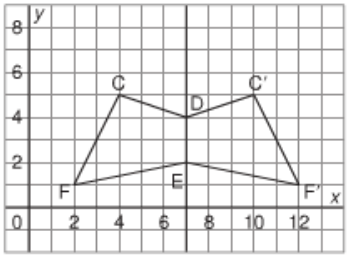
c)


y
−6
−4
−2
0
x
T
U
−2
−4
V
−6

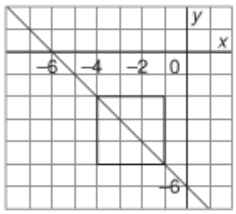
5. a)


y
P
Q
4
2
S
R
x
0
2
4
6
−2
P'
Q'

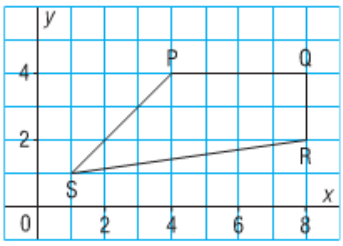
b)


y
8
6
C
C'
4
D
2
E
F
F'
x
0
2
4
6
8
10
12

c)


y
x
−6
−4
−2
0
−6

8. Quadrilateral PQRS is part of a larger shaj



After each reflection below:

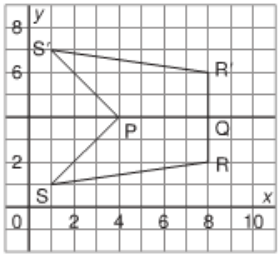
- Draw the image of PQRS.
- Write the coordinates of the larger shap formed by PQRS and its image.
- Describe the larger shape and its symmetry.

a) a reflection in the horizontal line throu 4 on the y-axis

b) a reflection in the vertical line through 8 on the x-axis

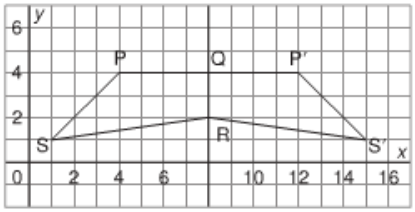
c) a reflection in the oblique line through (1, 1) and (4, 4)

8. a)



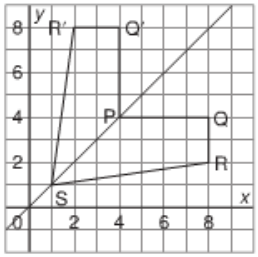
The larger shape has coordinates:
R(8, 2), S(1, 1), P(4, 4), S′(1, 7), R′(8, 6)
It is a pentagon with a line of symmetry through side PQ.

b)



The larger shape has coordinates:
R(8, 2), S(1, 1), P(4, 4), P′(12, 4), S′(15, 1)
It is a pentagon with a line of symmetry through side QR.

c)



The larger shape has coordinates:
P(4, 4), Q(8, 4), R(8, 2), S(1, 1), R′(2, 8), Q′(4, 8)
It is a hexagon with a line of symmetry through side PS.

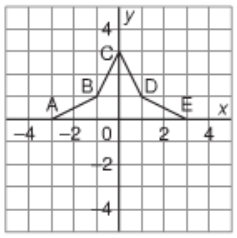
9. a) Graph these points on grid paper:
A(−3, 0), B(−1, 1), C(0, 3),
D(1, 1), E(3, 0).
Join the points to form polygon ABCDE.

b) Reflect the polygon in the x-axis. Draw and label its image.

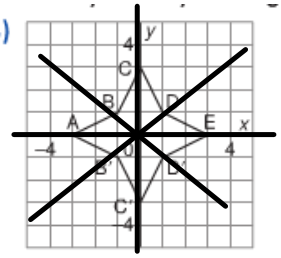
c) Write the coordinates of the shape formed by the polygon and its image.

d) How many lines of symmetry does this shape have? How do you know?

9. a)



b)



c) A(−3, 0), B(−1, 1), C(0, 3), D(1, 1), E(3, 0), D′(1, −1), C′(0, −3), B′(−1, −1)

d) The shape has 4 lines of symmetry: x-axis, y-axis, the line through points B′ and D, the line through points B and D′