

Translations

You might want to use graph paper to practice the translations in #1-4.

1. Translate the plane containing rectangle ABCD with the given coordinates to the right 4 units.

Pre-image Coordinate	Image Coordinate
A(-4, 5)	A'(,)
B(-1, 5)	B'(,)
C(-4, -2)	C'(,)
D(-1, -2)	D'(,)

2. Translate the plane containing triangle LMN with the given coordinates down 6 units.

Pre-image Coordinate	Image Coordinate
L(-2, 1)	L'(,)
M(1, 6)	M'(,)
N(4, 0)	N'(,)

3. Translate the plane containing rectangle ABCD with the given coordinates to the left 4 units and up 2 units.

Pre-image Coordinate	Image Coordinate
A(-4, 5)	A'(,)
B(-1, 5)	B'(,)
C(-4, -2)	C'(,)
D(-1, -2)	D'(,)

4. Translate the plane containing triangle LMN with the given coordinates right 1 unit and down 5 units.

Pre-image Coordinate	Image Coordinate
L(-2, 1)	L'(,)
M(1, 6)	M'(,)
N(4, 0)	N'(,)

5. **Without graphing**, translate the plane containing square WXYZ with vertices W(-3, 4), X(0, 7), Y(3, 4), and Z(0, 1) left 1 unit and down 6 units.

Reflections

You might want to use graph paper to do the reflections in #1-4.

1. Reflect the plane containing rectangle ABCD with given coordinates across the **x-axis**.

Pre-image Coordinate	Image Coordinate
A(-4, 5)	A'(,)
B(-1, 5)	B'(,)
C(-4, -2)	C'(,)
D(-1, -2)	D'(,)

2. Reflect the plane containing triangle LMN with given coordinates across the **x-axis**.

Pre-image Coordinate	Image Coordinate
L(-2, 1)	L'(,)
M(1, 6)	M'(,)
N(4, 0)	N'(,)

3. Reflect the plane containing rectangle ABCD with given coordinates across the **y-axis**.

Pre-image Coordinate	Image Coordinate
A(-4, 5)	A'(,)
B(-1, 5)	B'(,)
C(-4, -2)	C'(,)
D(-1, -2)	D'(,)

4. Reflect the plane containing triangle LMN with given coordinates across the **y-axis**.

Pre-image Coordinate	Image Coordinate
L(-2, 1)	L'(,)
M(1, 6)	M'(,)
N(4, 0)	N'(,)

5. Without graphing, reflect the plane containing square WXYZ with vertices W(-3, 4), X(0, 7), Y(3, 4), and Z(0, 1) across the **x-axis**.

6. Without graphing, reflect the plane containing square WXYZ with vertices W(-3, 4), X(0, 7), Y(3, 4), and Z(0, 1) across the **y-axis**.

Rotations

Use your own graph paper to complete these rotations.

1. Rotate the plane containing rectangle ABCD with given coordinates 90° clockwise around the origin.

Pre-image Coordinate	Image Coordinate
A(-4, 5)	A'(,)
B(-1, 5)	B'(,)
C(-4, -2)	C'(,)
D(-1, -2)	D'(,)

2. Rotate the plane containing triangle LMN with given coordinates 180° clockwise around the origin.

Pre-image Coordinate	Image Coordinate
L(-2, 1)	L'(,)
M(1, 6)	M'(,)
N(4, 0)	N'(,)

3. Rotate the plane containing rectangle ABCD with given coordinates 90° counter-clockwise around the origin.

Pre-image Coordinate	Image Coordinate
A(-4, 5)	A'(,)
B(-1, 5)	B'(,)
C(-4, -2)	C'(,)
D(-1, -2)	D'(,)

4. Rotate the plane containing triangle LMN with given coordinates 180° counter-clockwise around the origin.

Pre-image Coordinate	Image Coordinate
L(-2, 1)	L'(,)
M(1, 6)	M'(,)
N(4, 0)	N'(,)