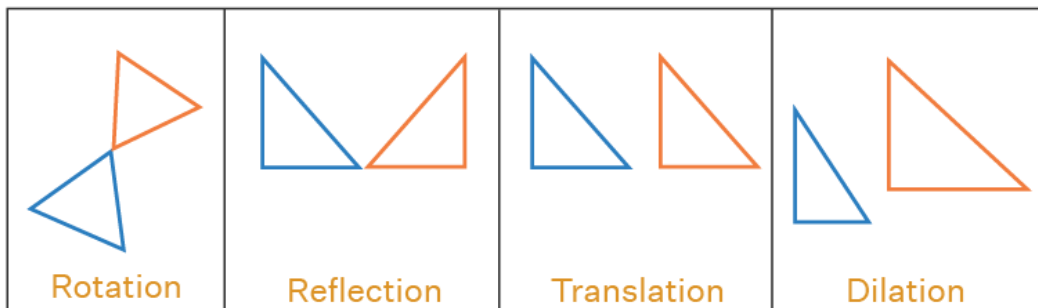


Grade 8 Mathematics Booklet

Module 8: Transformations

Student Name: _____ **Key Answers** _____

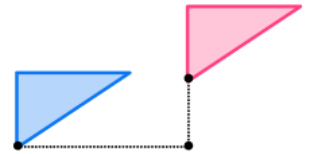
Class: _____



Souha Jaouahdou

Module 8: Transformations**M8L1 – Translation****Essential Question:** What does it mean to perform a transformation on a figure?**Objectives:** I can translate figures on the coordinate plane and use coordinate notation to describe translations.**A TRANSLATION** Is a transformation that **slides a figure without turning or flipping.**✓ The original figure is the **preimage**.✓ The new figure is the **image**.✓ Image vertices use **prime notation**: A', B', C' .

✓ All points move the same distance and direction.

**STEPS TO GRAPH THE TRANSLATION OF A FIGURE**Step 1: Plot the **preimage**.Step 2: Identify the **direction and number of units** of the translation.Step 3: Move **each vertex** the same number of squares in that direction and plot the **new points**.Step 4: **Read and write the coordinates** of the image.**Important:** The **shape and size stay the same**.**TRANSLATION ON THE COORDINATE PLANE:** When translating a figure:✓ **Right** → **add** to the x -coordinate✓ **Left** → **subtract** from the x -coordinate✓ **Up** → **add** to the y -coordinate✓ **Down** → **subtract** from the y -coordinate**COORDINATE RULE FOR TRANSLATION:** $(x, y) \rightarrow (x + a, y + b)$, where:✓ a = horizontal movement (– if left or + if right)✓ b = vertical movement (+ if up or – if down)Example rules: ✓ 3 units right → $(x, y) \rightarrow (x + 3, y)$ ✓ 2 units up → $(x, y) \rightarrow (x, y + 2)$ ✓ 4 units left and 1 down → $(x, y) \rightarrow (x - 4, y - 1)$ **STEPS TO TRANSLATE A FIGURE USING A RULE**Step 1: Identify the **direction and number of units** of the translation.Step 2: Write the **coordinate rule**.Step 3: Apply the rule to **each vertex of the figure**.Step 4: Plot the **image points** and connect them to form the translated figure.**KEY IDEA TO REMEMBER:** In a translation:✓ The **shape does not change**.✓ The **size does not change**.✓ Only the **position changes**.**SOLVED EXAMPLES****Example 1: Translate on the Coordinate Plane**Point $M(2,1)$ is translated **2 units right** and **3 units up**.Plot the point move it **2 units right** and **3 units up**:

$$M(2,1) \rightarrow M'(4,4)$$

Example 2: Translate Using CoordinatesPoint $P(8,5)$ is translated **3 units left** and **2 units down**.Rule: $(x, y) \rightarrow (x - 3, y - 2)$

Apply the rule:

$$P(8,5) \rightarrow P'(5,3)$$

Example 3: Use Coordinate Notation to Describe a TranslationPoint $A(1,2)$ moves to $A'(0,5)$.

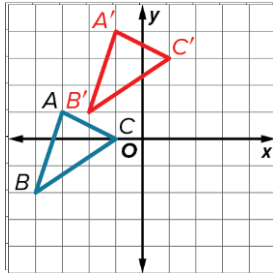
• $x: 1 \rightarrow 0 \rightarrow -1$

• $y: 2 \rightarrow 5 \rightarrow +3$

Rule: $(x, y) \rightarrow (x - 1, y + 3)$ Point $A(1,2)$ is translated **1 unit left** and **3 units up**.

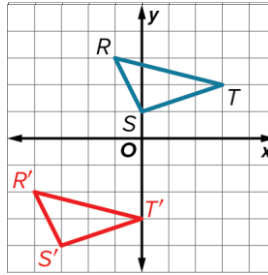
BRONZE

The graph of $\triangle ABC$ is shown. Graph the image of $\triangle ABC$ after a translation of **2 units right** and **3 units up**. Write the coordinates of the image.



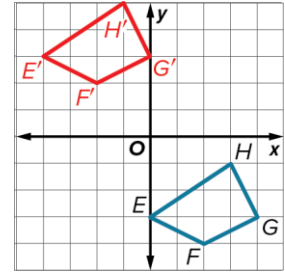
$$A'(-1, 4), B'(-2, 1), C'(1, 3)$$

The graph of $\triangle RST$ is shown. Graph the image of $\triangle RST$ after a translation of **3 units left** and **5 units down**. Write the coordinates of the image.



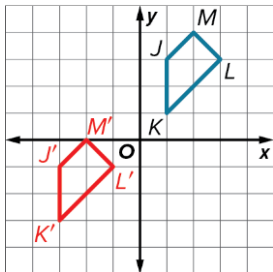
$$R'(-4, -2), S'(-3, -4), T'(0, -3)$$

The graph of $EFGH$ is shown. Graph the image of $EFGH$ after a translation of **4 units left** and **6 units up**. Write the coordinates of the image.



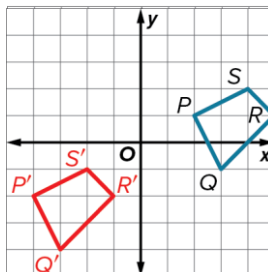
$$E'(-4, 3), F'(-2, 2), G'(0, 3), H'(-1, 5)$$

The graph of $JKLM$ is shown. Graph the image of $JKLM$ after a translation of **4 units left** and **4 units down**. Write the coordinates of the image.



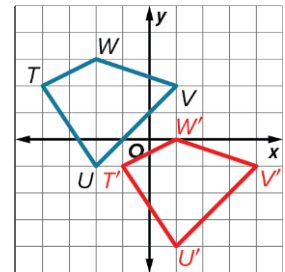
$$J'(-3, -1), K'(-3, -3), L'(-1, -1), \\ M'(-2, 0)$$

The graph of $PQRS$ is shown. Graph the image of $PQRS$ after a translation of **6 units left** and **3 units down**. Write the coordinates of the image.



$$P'(-4, -2), Q'(-3, -4), R'(-1, -2), \\ S'(-2, -1)$$

The graph of $TUVW$ is shown. Graph the image of $TUVW$ after a translation of **3 units right** and **3 units down**. Write the coordinates of the image.



$$T'(-1, -1), U'(1, -4), V'(4, -1), \\ W'(1, 0)$$

SILVER

Triangle EFG has vertices $E(3, -4)$, $F(1, -1)$, and $G(4, 3)$. Write the coordinate notation for each translation given. Then write the coordinates of $\triangle E'F'G'$ after each translation.

3 units left and 5 units up

$$(x, y) \rightarrow (x - 3, y + 5);$$

$$E'(0, 1), F'(-2, 4), G'(1, 8)$$

2 units right and 4 units down

$$(x, y) \rightarrow (x + 2, y - 4);$$

$$E'(5, -8), F'(3, -5), G'(6, -1)$$

Square $MNOP$ has vertices $M(1, 3)$, $N(3, 5)$, $O(5, 3)$, and $P(3, 1)$. Write the coordinate notation for each translation given. Then write the coordinates of square $M'N'O'P'$ after each translation.

2 units right and 3 units up

$$(x, y) \rightarrow (x + 2, y + 3);$$

$$M'(3, 6), N'(5, 8), O'(7, 6), P'(5, 4)$$

6 units left and 7 units down

$$(x, y) \rightarrow (x - 6, y - 7);$$

$$M'(-5, -4), N'(-3, -2), O'(-1, -4), P'(-3, -6)$$

Trapezoid $WXYZ$ has vertices $W(-1, 4)$, $X(2, 3)$, $Y(2, 0)$, and $Z(-4, 2)$. Write the coordinate notation for each translation given. Then write the coordinates of trapezoid $W'X'Y'Z'$ after each translation

4 units left and 1 unit down

$$(x, y) \rightarrow (x - 4, y - 1);$$

$$W'(-5, 3), X'(-2, 2), Y'(-2, -1), Z'(-8, 1)$$

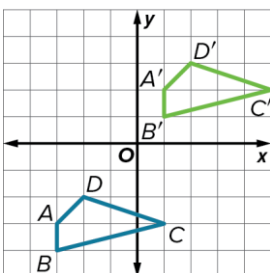
3 units right and 6 units down

$$(x, y) \rightarrow (x + 3, y - 6);$$

$$W'(2, -2), X'(5, -3), Y'(5, -6), Z'(-1, -4)$$

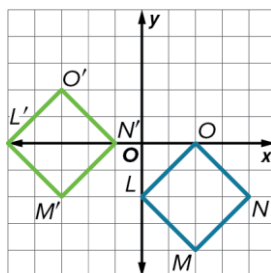
GOLD

The preimage and image of $ABCD$ are shown. Use coordinate notation to describe the translation.



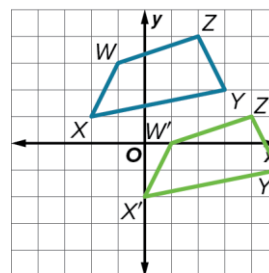
$$(x, y) \rightarrow (x + 4, y + 5)$$

The preimage and image of $LMNO$ are shown. Use coordinate notation to describe the translation.



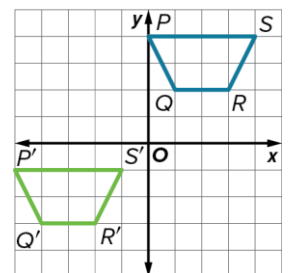
$$(x, y) \rightarrow (x - 5, y + 2)$$

The preimage and image of $WXYZ$ are shown. Use coordinate notation to describe the translation.



$$(x, y) \rightarrow (x + 2, y - 3)$$

The preimage and image of $PQRS$ are shown. Use coordinate notation to describe the translation.



$$(x, y) \rightarrow (x - 5, y - 5)$$

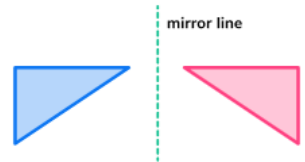
Module 8: Transformations**M8L2 – Reflections**

Essential Question: What does it mean to perform a transformation on a figure?

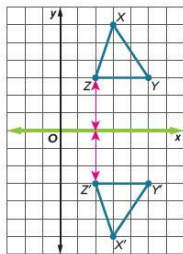
Objectives: I can describe reflections of figures on the coordinate plane using coordinates and coordinate notation.

A **REFLECTION** is a transformation that **flips a figure over a line** to create a **mirror image**.

- The line is called the **line of reflection**.
- The **preimage** (original figure) and the **image** are **congruent** (same size and shape).
- Each point and its image are the **same distance from the line of reflection**.
- The shape **does NOT change size or shape**



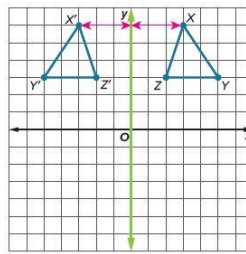
Reflection across the **x-axis**
 → figure flips **up/down**



Coordinate Rules

$$(x, y) \rightarrow (x, -y)$$

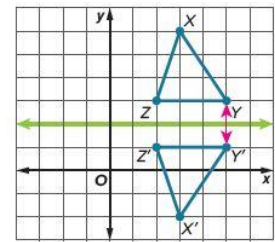
Reflection across the **y-axis**
 → figure flips **left/right**



Coordinate Rules

$$(x, y) \rightarrow (-x, y)$$

Reflection across **a line**
 → figure flips **over the line**
 (mirror image)

**STEPS TO REFLECT A FIGURE (GRAPHICALLY)**

Step 1 - Identify the line of reflection: (*x*-axis, *y*-axis, or another line)

Step 2 - Look at one point at a time: Start with one vertex (*A*, *B*, *C*...)

Step 3 - Count the distance to the line: Count the distance to the line of reflection

Step 4 - Plot the image: Place the new point on the **opposite side**, at the same distance

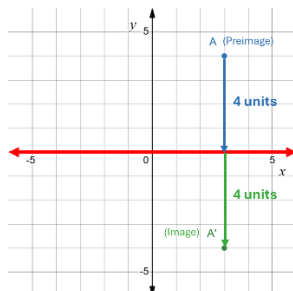
Step 5 - Repeat and connect: Reflect all points, then connect them to form the image

SOLVED EXAMPLES**EXAMPLE 1: Reflection across the *x*-axis**

Point *A*(3,4)

- Distance from *x*-axis = 4 units
- Reflect 4 units below the *x*-axis

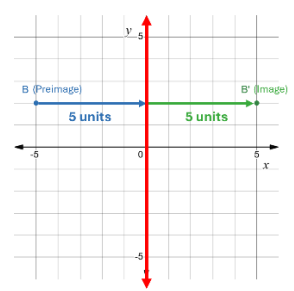
Image: *A'*(3, -4)

**EXAMPLE 2: Reflection across the *y*-axis**

Point *B*(-5,2)

- Distance from *y*-axis = 5 units
- Reflect 5 units to the opposite side

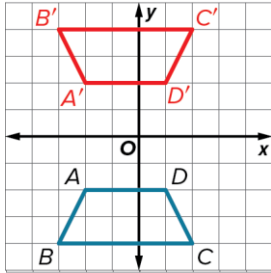
Image: *B'*(5,2)

**Check Yourself**

- Did I flip the figure (not slide or rotate)?
- Are both sides the **same distance** from the line?
- Did the shape stay the **same size**?

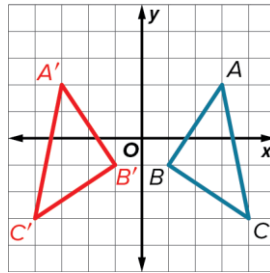
BRONZE

The graph of trapezoid $ABCD$ is shown. Graph the image of $ABCD$ after a reflection across the x -axis. Write the coordinates of the reflected image.



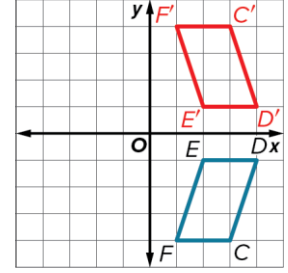
$A'(-2, 2), B'(-3, 4), C'(2, 4), D'(1, 2)$

The graph of $\triangle ABC$ is shown. Graph the image of $\triangle ABC$ after a reflection across the y -axis. Write the coordinates of the reflected image.



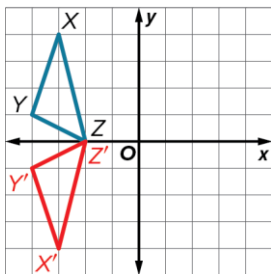
$A'(-3, 2), B'(-1, -1), C'(-4, -3)$

The graph of parallelogram $CDEF$ is shown. Graph the image of $CDEF$ after a reflection across the x -axis. Write the coordinates of the reflected image.



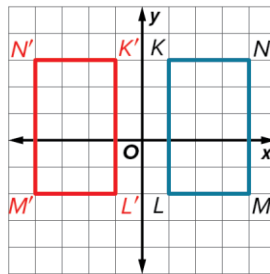
$C'(3, 4), D'(4, 1), E'(2, 1), F'(1, 4)$

The graph of $\triangle XYZ$ is shown. Graph the image of $\triangle XYZ$ after a reflection across the x -axis. Write the coordinates of the reflected image.



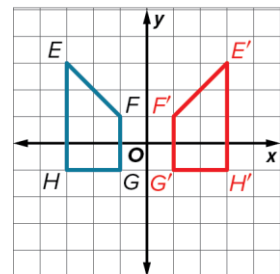
$X'(-3, -4), Y'(-4, -1), Z'(-2, 0)$

The graph of rectangle $KLMN$ is shown. Graph the image of $KLMN$ after a reflection across the y -axis. Write the coordinates of the reflected image.



$K'(-1, 3), L'(-1, -2), M'(-4, -2), N'(-4, 3)$

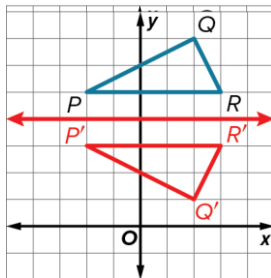
The graph of trapezoid $EFGH$ is shown. Graph the image of $EFGH$ after a reflection across the y -axis. Write the coordinates of the reflected image.



$E'(3, 3), F'(1, 1), G'(1, -1), H'(3, -1)$

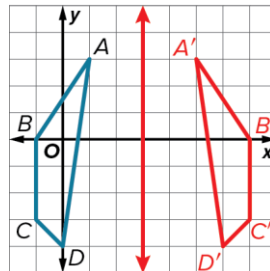
SILVER

The graph of $\triangle PQR$ is shown. Graph the image of $\triangle PQR$ after a reflection across the line $y = 4$. Include the line of reflection. Then write the coordinates of the image.



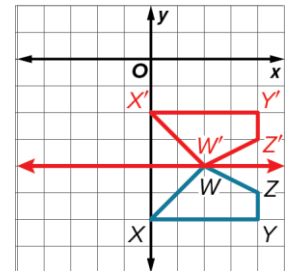
$P'(-2, 3), Q'(2, 1), R'(3, 3)$

The graph of polygon $ABCD$ is shown. Graph the image of $ABCD$ after a reflection across the line $x = 3$. Include the line of reflection. Then write the coordinates of the image.



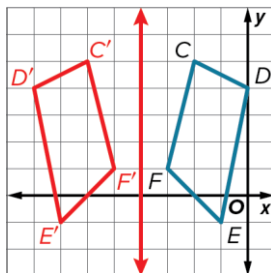
$A'(5, 3), B'(7, 0), C'(7, -3), D'(6, -4)$

The graph of polygon $WXYZ$ is shown. Graph the image of $WXYZ$ after a reflection across the line $y = -4$. Include the line of reflection. Then write the coordinates of the image.



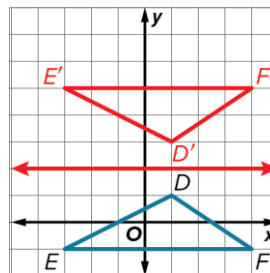
$W'(2, -4), X'(0, -2), Y'(4, -2), Z'(4, -3)$

The graph of polygon $CDEF$ is shown. Graph the image of $CDEF$ after a reflection across the line $x = -4$. Include the line of reflection. Then write the coordinates of the image.



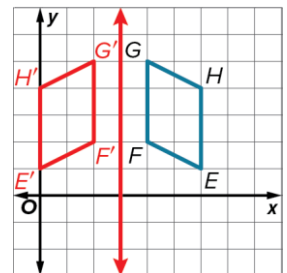
$C'(-6, 5), D'(-8, 4), E'(-7, -1), F'(-5, 1)$

The graph of $\triangle DEF$ is shown. Graph the image of $\triangle DEF$ after a reflection across the line $y = 2$. Include the line of reflection. Then write the coordinates of the image.



$D'(1, 3), E'(-3, 5), F'(4, 5)$

The graph of polygon $EFGH$ is shown. Graph the image of $EFGH$ after a reflection across the line $x = 3$. Include the line of reflection. Then write the coordinates of the image.



$E'(0, 1), F'(2, 2), G'(2, 5), H'(0, 4)$

GOLD

Polygon $ABCD$ has coordinates $A(1,3)$, $B(4,5)$, $C(-2,6)$, and $D(-3,4)$. The polygon is reflected across the x -axis. Write the coordinate notation for a reflection across the x -axis. Then write the coordinates of polygon $A'B'C'D'$.

$$(x, y) \rightarrow (x, -y);$$

$$A'(1, -3), B'(4, -5), C'(-2, -6), D'(-3, -4)$$

Polygon $WXYZ$ has coordinates $W(-3,-2)$, $X(-5,-2)$, $Y(-1,2)$, and $Z(0,2)$. The polygon is reflected across the y -axis. Write the coordinate notation for a reflection across the y -axis. Then write the coordinates of polygon $W'X'Y'Z'$.

$$(x, y) \rightarrow (-x, y);$$

$$W'(3, -2), X'(5, -2), Y'(1, 2), Z'(0, 2)$$

Triangle LMN has coordinates $L(2,1)$, $M(3,1)$ and $N(1,6)$. The triangle is reflected across the x -axis. Write the coordinate notation for a reflection across the x -axis. Then write the coordinates of $\Delta L'M'N'$.

$$(x, y) \rightarrow (x, -y);$$

$$L'(2, -1), M'(3, -1), N'(1, -6)$$

Polygon $DEFG$ has coordinates $D(2,4)$, $E(-3,-2)$, $F(-5,1)$ and $G(3,-1)$. The polygon is reflected across the y -axis. Write the coordinate notation for a reflection across the y -axis. Then write the coordinates of polygon $D'E'F'G'$.

$$(x, y) \rightarrow (-x, y);$$

$$D'(-2, 4), E'(3, -2), F'(5, 1), G'(-3, -1)$$

The coordinates of ΔABC and its image are shown. Describe the transformation.

$$A(1,2) \rightarrow A'(-1,2)$$

$$B(3,3) \rightarrow B'(-3,3)$$

$$C(-1,5) \rightarrow C'(1,5)$$

The triangle is reflected across the y -axis.

The coordinates of ΔXYZ and its image are shown. Describe the transformation.

$$X(0,-3) \rightarrow X'(0,3)$$

$$Y(-2,-4) \rightarrow Y'(-2,4)$$

$$Z(-1,2) \rightarrow Z'(-1,-2)$$

The triangle is reflected across the x -axis.

The coordinates of ΔPQR and its image are shown. Describe the transformation.

$$P(-6,0) \rightarrow P'(-6,0)$$

$$Q(2,-4) \rightarrow Q'(2,4)$$

$$R(-7,5) \rightarrow R'(-7,-5)$$

The triangle is reflected across the x -axis.

The coordinates of ΔEFG and its image are shown. Describe the transformation.

$$E(4,8) \rightarrow E'(-4,8)$$

$$F(2,1) \rightarrow F'(-2,1)$$

$$G(-3,-6) \rightarrow G'(3,-6)$$

The triangle is reflected across the y -axis.

Module 8: Transformations

M8L3 – Rotations

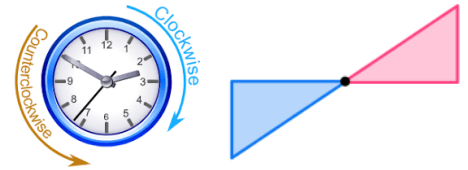
Essential Question: What does it mean to perform a transformation on a figure?

Objectives: I can use coordinate notation to find the coordinates of a figure that has been rotated about the origin, as well as describe the angle of rotation using the given graph and coordinates of the figures

A **ROTATION** is a transformation that **turns a figure around a fixed point** called the **center of rotation** (the origin or a vertex).

Key Ideas

- The figure keeps the **same size and shape** (congruent)
- Rotations can be **Clockwise** (right) or **Counterclockwise** (left).
- Common angles are $90^\circ, 180^\circ, 270^\circ$.



Clockwise Rotations



90° Clockwise
quarter turn right



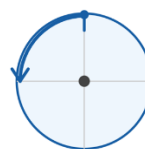
180° Clockwise
half turn



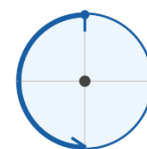
270° Clockwise
three-quarter turn right

• = starting position → = direction of turn

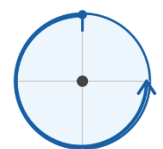
Counterclockwise Rotations



90° Counterclockwise
quarter turn left



180° Counterclockwise
half turn



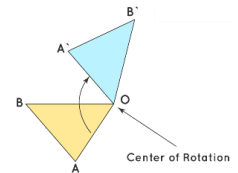
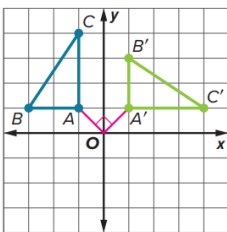
270° Counterclockwise
three-quarter turn left

• = starting position → = direction of turn

- 180° rotation gives the same result in both directions.
✓ 180° counterclockwise = 180° clockwise.
- Some rotations are **equivalent**
✓ 90° counterclockwise = 270° clockwise. ✓ 270° counterclockwise = 90° clockwise.

ROTATION ABOUT A VERTEX: When a shape is rotated **about one of its vertices**, that vertex becomes the **center of rotation**.

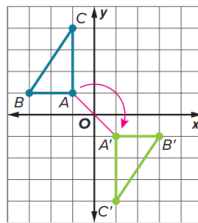
- The chosen **vertex stays fixed** (does not move).
- All other points **turn around that vertex**.
- The shape keeps the **same size and shape**.
- The distance from the vertex to each point **stays the same**.

Rotation 90° Clockwise
About the Origin

Coordinate Rules

$$(x, y) \rightarrow (y, -x)$$

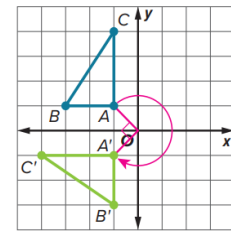
Example: $A(-1, 1) \rightarrow A'(1, 1)$
 $B(-3, 1) \rightarrow B'(1, 3)$
 $C(-1, 4) \rightarrow C'(4, 1)$

Rotation 180°
About the Origin

Coordinate Rules

$$(x, y) \rightarrow (-x, -y)$$

Example: $A(-1, 1) \rightarrow A'(1, -1)$
 $B(-3, 1) \rightarrow B'(3, -1)$
 $C(-1, 4) \rightarrow C'(1, -4)$

Rotation 270° Clockwise
About the Origin

Coordinate Rules

$$(x, y) \rightarrow (-y, x)$$

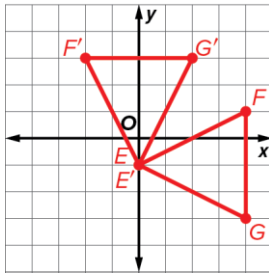
Example: $A(-1, 1) \rightarrow A'(-1, -1)$
 $B(-3, 1) \rightarrow B'(-1, -3)$
 $C(-1, 4) \rightarrow C'(-4, -1)$

Check Yourself

- Did I rotate the figure correctly using the right **center, angle, and direction**?
- Did I apply the correct **rotation rule / movement** for each point?
- Did the shape stay the **same size and shape**?

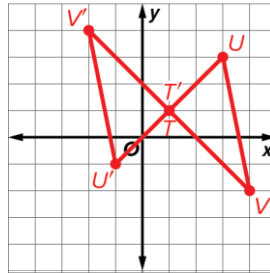
BRONZE

Triangle EFG has vertices $E(0, -1)$, $F(4, 1)$, and $G(4, -3)$. Graph the figure and its image after a clockwise rotation of 270° about vertex E . Then write the coordinates of polygon $E'F'G'$.



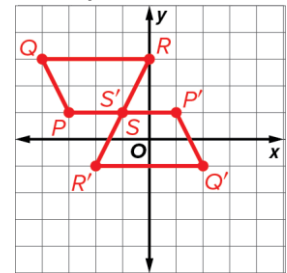
$E'(0, -1)$, $F'(-2, 3)$, $G'(2, 3)$

Triangle TUV has vertices $T(1, 1)$, $U(3, 3)$, and $V(4, -2)$. Graph the figure and its image after a clockwise rotation of 180° about vertex T . Then write the coordinates of polygon $T'U'V'$.



$T'(1, 1)$, $U'(-1, -1)$, $V'(-2, 4)$

Polygon $PQRS$ has vertices $P(-3, 1)$, $Q(-4, 3)$, $R(0, 3)$, and $S(-1, 1)$. Graph the figure and its image after a counterclockwise rotation of 180° about vertex S . Then write the coordinates of polygon $P'Q'R'S'$.



$P'(1, 1)$, $Q'(2, -1)$,
 $R'(-2, -1)$, $S'(-1, 1)$

SILVER

Triangle JKL has vertices $J(3, 1)$, $K(2, -1)$, and $L(1, 2)$. Write the coordinate notation for each rotation given. Then write the coordinates of $\triangle J'K'L'$ after each rotation.

Clockwise rotation of 180° about the origin

$$(x, y) \rightarrow (-x, -y);$$

$$J'(-3, -1), K'(-2, 1), L'(-1, -2)$$

Counterclockwise rotation of 90° about the origin

$$(x, y) \rightarrow (-y, x);$$

$$J'(-1, 3), K'(1, 2), L'(-2, 1)$$

Polygon $EFGH$ has vertices $E(4, -3)$, $F(2, -4)$, $G(1, -1)$, and $H(5, 0)$. Write the coordinate notation for each rotation given. Then write the coordinates of polygon $E'F'G'H'$ after each rotation.

Clockwise rotation of 270° about the origin

$$(x, y) \rightarrow (-y, x);$$

$$E'(3, 4), F'(4, 2), G'(1, 1), H'(0, 5)$$

Clockwise rotation of 90° about the origin

$$(x, y) \rightarrow (y, -x);$$

$$E'(-3, -4), F'(-4, -2), G'(-1, -1), H'(0, -5)$$

Polygon $QRST$ has vertices $Q(-5, -1)$, $R(-3, 1)$, $S(-2, -2)$, and $T(-4, -5)$. Write the coordinate notation for each rotation given. Then write the coordinates of polygon $Q'R'S'T'$ after each rotation.

Counterclockwise rotation of 270° about the origin

$$(x, y) \rightarrow (y, -x);$$

$$Q'(-1, 5), R'(1, 3), S'(-2, 2), T'(-5, 4)$$

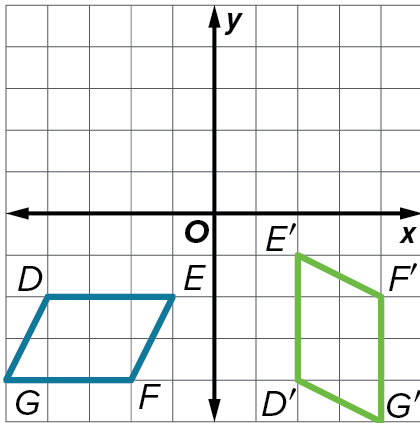
counterclockwise rotation of 180° about the origin

$$(x, y) \rightarrow (-x, -y);$$

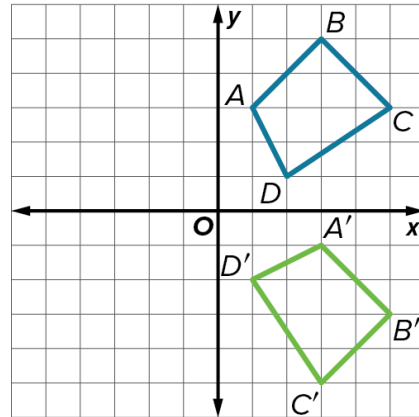
$$Q'(5, 1), R'(3, -1), S'(2, 2), T'(4, 5)$$

GOLD

Use coordinate notation to describe each rotation. Then determine the angle of rotation. Assume the rotation is **clockwise** about the origin.

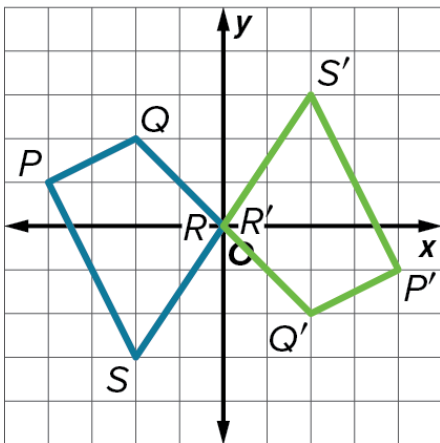


$$(x, y) \rightarrow (-y, x); 270^\circ$$

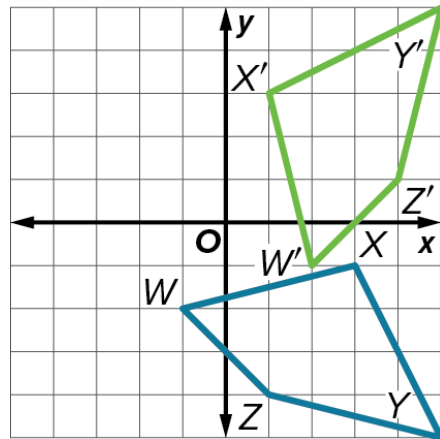


$$(x, y) \rightarrow (y, -x); 90^\circ$$

Use coordinate notation to describe each rotation. Then determine the angle of rotation. Assume the rotation is **counterclockwise** about the origin.



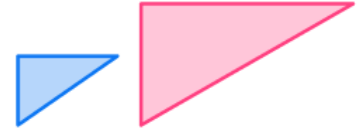
$$(x, y) \rightarrow (-x, -y); 180^\circ$$



$$(x, y) \rightarrow (-y, x); 90^\circ$$

Module 8: Transformations**M8L4 – Dilations****Essential Question:** What does it mean to perform a transformation on a figure?**Objectives:** I can describe dilations using coordinate notation as well as graph dilations on the coordinate plane using coordinate notation

A **DILATION** is a transformation that **changes the size of a figure** using a **scale factor**, making the figure **larger** or **smaller** from a fixed point called the **center of dilation**.

**KEY IDEAS**

- The figure keeps the **same shape** but **changes size** (similar figures).
- A **scale factor (k)** determines how much the figure **grows** or **shrinks**.
 - If $k > 1 \rightarrow$ **enlargement**
 - If $0 < k < 1 \rightarrow$ **reduction**
- The **center of dilation** is the fixed point from which the figure expands or contracts.
- Dilations can **stretch** or **shrink** a figure **without changing its angles**.

COORDINATE RULE:

When the center of dilation is **the origin $O(0,0)$** and the **scale factor is k** : $(x, y) \rightarrow (kx, ky)$

STEPS TO DILATE A FIGURE

1. Identify the **center of dilation**.
2. Identify the **scale factor k** .
3. **Multiply** each coordinate by the scale factor.
4. Plot the new points to draw the image.
5. Check if the figure is enlarged or reduced.

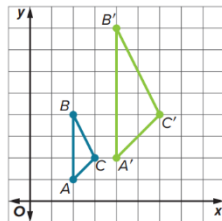
Example 1: Enlargement $k = 2$

Dilate the triangle $A(-2,1)$, $B(-4,5)$, $C(3,2)$ by a scale factor of **2** from the origin.

Solution:

Apply the rule
 $(x, y) \rightarrow (2x, 2y)$

$$\begin{aligned} A(2,1) &\rightarrow A'(4,2) \\ B(2,4) &\rightarrow B'(4,8) \\ C(3,2) &\rightarrow C'(6,4) \end{aligned}$$



✓ The figure becomes **twice as large**.

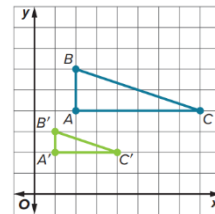
Example 2: Reduction $k = \frac{1}{2}$

Dilate the triangle $A(-4,2)$, $B(-2,4)$, $C(2,6)$ by a scale factor of $\frac{1}{2}$ from the origin.

Solution:

Apply the rule
 $(x, y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$

$$\begin{aligned} A(2,4) &\rightarrow A'(1,2) \\ B(2,6) &\rightarrow B'(1,3) \\ C(8,4) &\rightarrow C'(4,2) \end{aligned}$$



✓ The figure becomes **smaller (half the size)**.

Important Notes

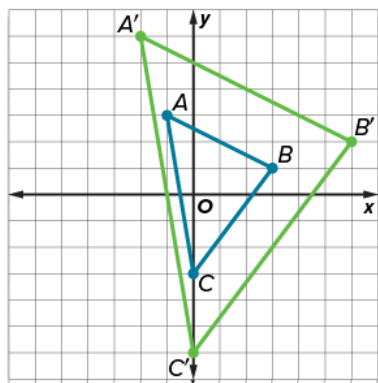
- If the scale factor is **greater than 1**, the image moves **away from the center**.
- If the scale factor is **between 0 and 1**, the image moves **toward the center**.
- Distances are multiplied by the scale factor, but the shape remains the same.

Check Yourself

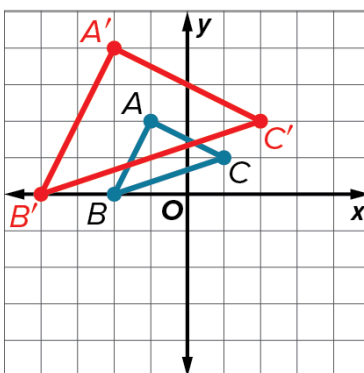
- Did I **multiply both coordinates** by the correct **scale factor**?
- Did I correctly identify whether the figure is an **enlargement** or **reduction**?
- Did I keep the **same shape and angles** in the image?

BRONZE

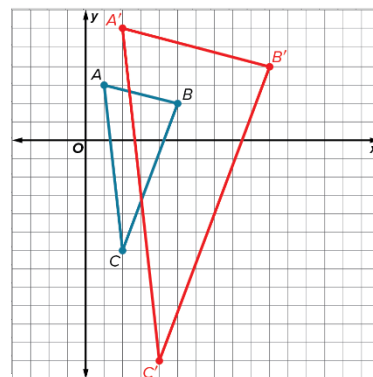
Triangle ABC has vertices $A(-1,3)$, $B(3,1)$, and $C(0,-3)$. Graph the image of the figure after a dilation with a scale factor of 2.



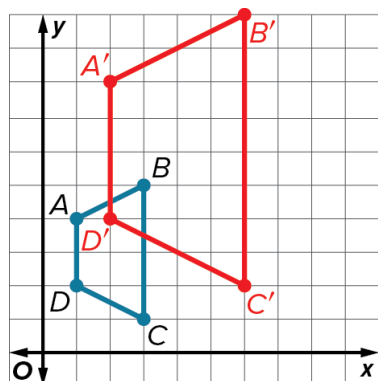
Triangle ABC has vertices $A(-1,2)$, $B(-2,0)$, and $C(1,1)$. Graph the image of the figure after a dilation with a scale factor of 2.



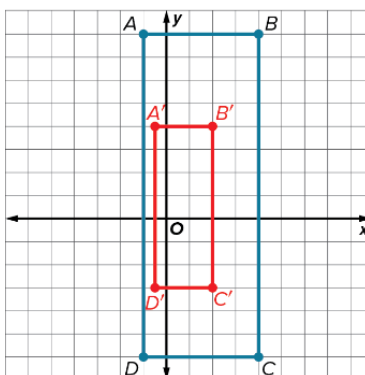
Triangle ABC has vertices $A(1,3)$, $B(5,2)$, and $C(2,-6)$. Graph the image of the figure after a dilation with a scale factor of 2.



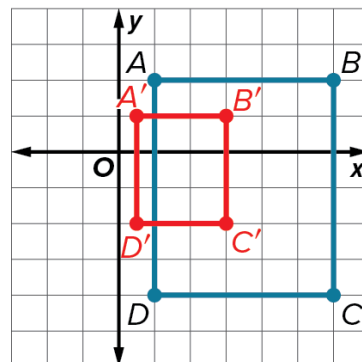
Trapezoid $ABCD$ has vertices $A(1,4)$, $B(3,5)$, $C(3,1)$, and $D(1,2)$. Graph the image of the figure after a dilation with a scale factor of 2.



Rectangle $ABCD$ has vertices $A(-1,8)$, $B(4,8)$, $C(4,-6)$, and $D(-1,-6)$. Graph the image of the figure after a dilation with a scale factor of $\frac{1}{2}$.

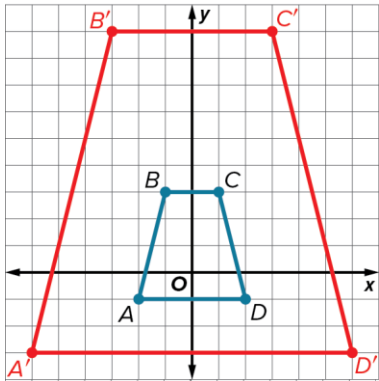


Rectangle $ABCD$ has vertices $A(1,2)$, $B(6,2)$, $C(6,-4)$, and $D(1,-4)$. Graph the image of the figure after a dilation with a scale factor of 0.5.

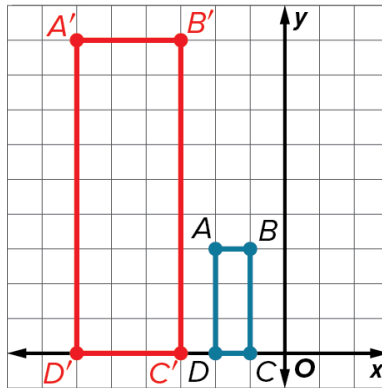


SILVER

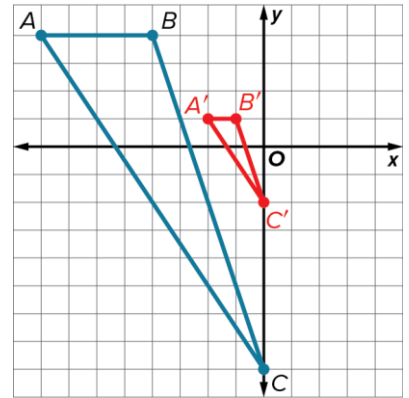
Trapezoid $ABCD$ has vertices $A(-2, -1)$, $B(-1, 3)$, $C(1, 3)$, and $D(2, -1)$. Graph the image of the figure after a dilation with a scale factor of 3.



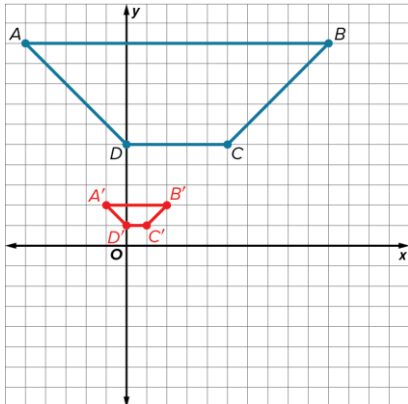
Rectangle $ABCD$ has vertices $A(-2, 3)$, $B(-1, 3)$, $C(-1, 0)$, and $D(-2, 0)$. Graph the image of the figure after a dilation with a scale factor of 3.



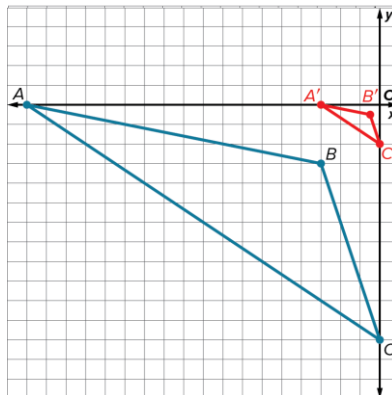
Triangle ABC has vertices $A(-8, 4)$, $B(-4, 4)$, and $C(0, -8)$. Graph the image of the figure after a dilation with a scale factor of 0.25.



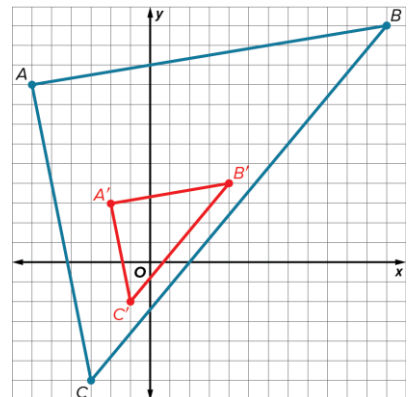
Trapezoid $ABCD$ has vertices $A(-5, 10)$, $B(10, 10)$, $C(5, 5)$, and $D(0, 5)$. Graph the image of the figure after a dilation with a scale factor of 0.2.



Triangle ABC has vertices $A(-18, 0)$, $B(-3, -3)$, and $C(0, -12)$. Graph the image of the figure after a dilation with a scale factor of $\frac{1}{6}$.

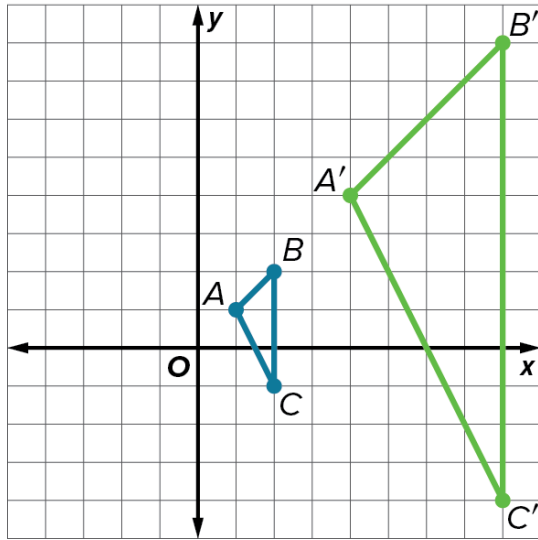


Triangle ABC has vertices $A(-6, 9)$, $B(12, 12)$, and $C(-3, -6)$. Graph the image of the figure after a dilation with a scale factor of $\frac{1}{3}$.

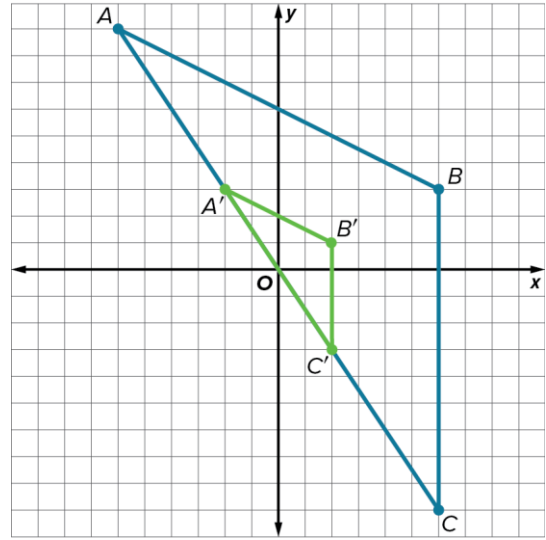


GOLD

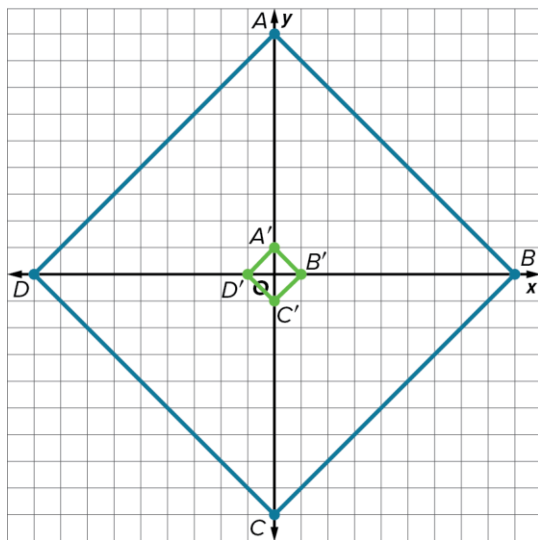
Use coordinate notation to describe the dilation.



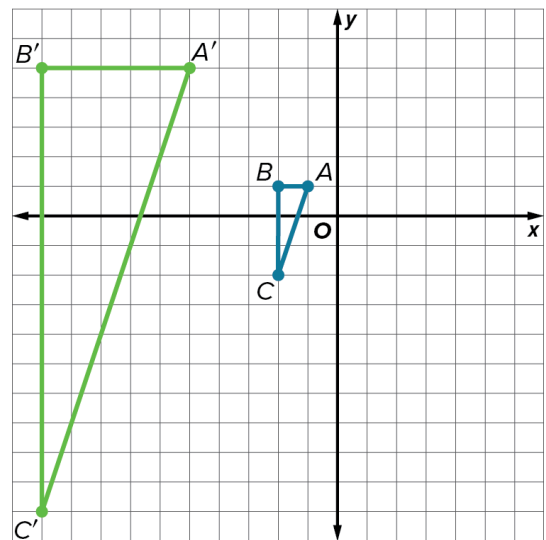
$$(x, y) \rightarrow (4x, 4y)$$



$$(x, y) \rightarrow \left(\frac{1}{3}x, \frac{1}{3}y\right)$$



$$(x, y) \rightarrow \left(\frac{1}{9}x, \frac{1}{9}y\right)$$



$$(x, y) \rightarrow (5x, 5y)$$

Self Reflection

Choose the sentence that best shows your understanding today.

3 - Bronze	2 - Silver	1 - Gold
I still need more practice to understand this.	I understand most of the lesson but made mistakes.	I understand the lesson well and can explain clearly.
I understand a little but need help to explain.	I can explain my answers if I get some help.	I can solve problems on my own and help others too.
I can solve some problems but not with confidence.	I can solve the problems, but I need to check my reasoning.	I feel confident and ready for more challenging work.

Action: Next Step

Choose one action you will do next to improve or extend your learning.

3 - Bronze	2 - Silver	1 - Gold
I will review examples in my notebook.	I will check and correct my mistakes.	I will create and solve my own example.
I will ask a partner or teacher for help.	I will explain one example to a partner.	I will help a classmate understand.
I will practice a few extra questions.	I will try one harder question.	I will connect this lesson to real life.

Peer Feedback

1. Swap your work with a partner/group.
2. Read their work carefully.
3. Choose **one positive comment** (✓ What they did well).
4. Choose **one suggestion** (→ What they can improve).
5. Give the paper back and discuss briefly.

Positive Feedback (Strengths)	Suggestions for Improvement
Choose one sentence to show what your partner did well.	Choose one sentence to suggest how your partner can improve.
Your answer is correct and clear.	Check this part again, it might need correction.
I like how you explained your steps.	Explain your reasoning more clearly.
Your solution is well organized.	Make your work more organized/neater.
You showed good reasoning.	Add more detail to support your answer.
You used the right vocabulary.	Think about another example to show your idea.