

TEACHER AND STUDENT RESOURCE

Function Notation for Geometric Images



NC Math 2 • NC.M2.F-IF.2

Interpreting Functions

Seven instructional sections with 30 multiple-choice and 30 open or performance tasks, teaching scripts, original mathematical visuals, generous workspaces, and worked keys.

Free sample | Contents

NC.M2.F-IF.2 | NC Math 2 mathematics

This sample contains 22 complete selected pages from the 124-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-16, 32-33, 62-63, 92-93

Representative activities

M01: sample PDF page(s) 17; original page(s) 16

M02: sample PDF page(s) 17; original page(s) 16

O01: sample PDF page(s) 18; original page(s) 32

O02: sample PDF page(s) 19; original page(s) 33

Selected teacher prompts and keys: original page(s) 62-63, 92-93

Using this sample

Read the preparation and access guidance before using a selected activity.
Keep teacher keys and private preparation pages separate from student copies.
Use the original resource contents to see the scope of the complete packet.

Complete paid download

The complete resource includes the full PDF task bank and teaching materials.

ALIGNMENT

Standard and learning targets

Extend the use of function notation to express the image of a geometric figure in the plane resulting from a translation, rotation by multiples of 90 degrees about the origin, reflection across an axis, or dilation as a function of its pre-image.

T1 Express point and whole-figure images with function notation while preserving corresponding labels and the complete geometric figure.

T2 Evaluate coordinate rules for translations, axis reflections, origin-centered quarter-turn rotations and positive origin-centered dilations.

T3 Infer, reverse, construct or audit transformation rules using complete point correspondences and explicit constraints.

T4 Compare compositions, invariant figures and fixed points using precise function notation, counterexamples and general-coordinate reasoning.

Each item names its own target. The bank supports multiple sessions; do not assign all 60 tasks in one sitting.

NAVIGATION

Choose evidence deliberately

Warm-up: M01-M04 and O01-O04

I Do: M05-M08 and O05-O08

We Do: M09-M13 and O09-O13

Collaborative practice: M14-M18 and O14-O18

Independent practice: M19-M23 and O19-O23

Small-group reteach: M24-M27 and O24-O27

Exit ticket: M28-M30 and O28-O30

T1: M01, O01, M03, M10, O12, M24, O24

T2: M02, O02, O03, M04, O04, O05, M06, O08, O10, M12, O25, M26, O27

T3: M05, O06, M07, O07, M08, M09, O09, M11, O11, O13, M16, O16, M18, M19, O19, M20, O20, M21, O21, M23, M25, O26, O28, M29

T4: M13, M14, O14, M15, O15, M17, O17, O18, M22, O22, O23, M27, M28, O29, M30, O30

DAILY LEARNING TARGETS

A multi-session teaching path

Session 1 Identify and represent

Learning target: Express point and whole-figure images with function notation while preserving corresponding labels and the complete geometric figure.

Learning target: Evaluate coordinate rules for translations, axis reflections, origin-centered quarter-turn rotations and positive origin-centered dilations.

Use Warm-up, I Do, and early We Do tasks. Ask for a first response before showing the model.

Session 2 Explain and connect

Learning target: Evaluate coordinate rules for translations, axis reflections, origin-centered quarter-turn rotations and positive origin-centered dilations.

Learning target: Infer, reverse, construct or audit transformation rules using complete point correspondences and explicit constraints.

Learning target: Compare compositions, invariant figures and fixed points using precise function notation, counterexamples and general-coordinate reasoning.

Use We Do and collaborative tasks. Compare approaches and justify each step with the original conditions.

Session 3 Transfer independently

Learning target: Express point and whole-figure images with function notation while preserving corresponding labels and the complete geometric figure.

Learning target: Evaluate coordinate rules for translations, axis reflections, origin-centered quarter-turn rotations and positive origin-centered dilations.

Learning target: Infer, reverse, construct or audit transformation rules using complete point correspondences and explicit constraints.

Learning target: Compare compositions, invariant figures and fixed points using precise function notation, counterexamples and general-coordinate reasoning.

Select independent items spanning the targets, reteach an evidenced gap, and use an unrehearsed exit item.

PLANNING

Materials, access and pacing

Materials

Pencils, erasers, straightedge, student pages, and optional graph paper. A calculator may support arithmetic after a learner states the intended relationship. No device or paid software is required.

Prerequisites

Ordered pairs and coordinate grids, point-image correspondences, function evaluation, translations and reflections, right-angle rotations, positive scale factors, midpoint calculations and simple linear equations.

Pacing

Use a short diagnostic warm-up, a model and shared task in one session; collaborative and independent reasoning in later sessions; then targeted reteaching and an exit task. Select two to four tasks at a time based on evidence. Each section's full bank is reusable, not mandatory in one lesson.

Neutral access

Read directions aloud without interpreting the graph, enlarge a page, supply a writing or pointing response method, and allow a learner to dictate an explanation. Keep axes, units, data and mathematical demand unchanged.

Separate instruction from evidence

Keep the learner's first response. Record answer-supplying cues separately from access supports. A completed teacher graph or worked key is for discussion after independent work, never a student construction template.

Review convention

Coordinate axes use equal horizontal and vertical unit scales. R and Q rotations are centered at the origin; their direction and angle are always specified. All dilations in this packet have center the origin and a positive scale factor. A prime indicates an image label, not multiplication or differentiation. $T(\triangle ABC)$ names the full transformed triangle, with corresponding vertices in the stated order. Nested functions act from the inside outward. When filled regions or boundary-specific point sets matter, the prompt states them explicitly. An unlabeled figure image may equal the original point set even when its individual points move.

TEACHER MODEL

A figure image comes from a point rule

Let $R(x, y) = (-y, x)$, rotation 90° counterclockwise about the origin. Triangle ABC has $A=(1, 1)$, $B=(3, 1)$, $C=(1, 2)$. Express its image using both point and figure notation, and explain why corresponding labels matter.

$R(A)=R(1, 1)=(-1, 1)=A'$; $R(B)=R(3, 1)=(-1, 3)=B'$; $R(C)=R(1, 2)=(-2, 1)=C'$. Therefore $R(\triangle ABC)=\triangle A'B'C'$. The prime labels record which input vertex produces each image vertex. The rule applies to every point of the triangle, not only the named vertices. For example the midpoint $(2, 1)$ of AB maps to $(-1, 2)$, the midpoint of $A'B'$. To check the direction, $(1, 0)$ would move to $(0, 1)$, confirming counterclockwise rotation.

VISUAL ANCHOR

Name the rule, evaluate points, name the image

Treat the figure statement as a compact record of consistent point correspondences. Check the center and direction before applying a rule.

Transformation	Coordinate rule and useful check
Translation by (a, b)	$T(x, y)=(x+a, y+b)$. Every point has the same displacement.
Axis reflections	$S_x(x, y)=(x, -y)$; $S_y(x, y)=(-x, y)$. Only the coordinate perpendicular to the axis changes sign.
Origin rotations	90° CCW: $(-y, x)$; 180° : $(-x, -y)$; 270° CCW: $(y, -x)$. Check the image of $(1, 0)$.
Origin dilation, $k>0$	$D_k(x, y)=(kx, ky)$. Multiply both coordinates by the same factor.
Figure notation	For these transformations: if $F(A)=A'$, $F(B)=B'$, $F(C)=C'$, then $F(\triangle ABC)=\triangle A'B'C'$.

Do not add image coordinates to represent a figure. Do not infer a transformation from one ambiguous point pair. In $G(F(P))$, apply F first and then G .

REUSABLE REASONING GUIDE

Represent, justify, interpret

Name: _____ Date: _____

Givens, quantities and restrictions**Representation and calculation****Justification or check****Conclusion, domain and units**

WARM-UP

Teaching script

Core: 001 • T1: Express point and whole-figure images with function notation while preserving corresponding labels and the complete geometric figure.

Optional bank: M01–M04; O01–O04. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 5–8 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O01, including its visual when present. Separate the coordinate rule, the image point and the displacement vector. Require students to write each point-image equation before compressing the work into one figure-image statement.

Core task

Let $T(x, y) = (x+4, y-2)$ and let triangle ABC have $A = (-2, 1)$, $B = (0, 1)$, $C = (-2, 3)$. Build a point-image table, write $T(A)$, $T(B)$, $T(C)$ and $T(\triangle ABC)$ using primed labels, and sketch the original and image triangles on the grid.

Teacher solution and discussion

$T(A) = A' = (2, -1)$, $T(B) = B' = (4, -1)$, and $T(C) = C' = (2, 1)$. Thus $T(\triangle ABC) = \triangle A'B'C'$. Each point moves by the same vector $(4, -2)$; the triangle notation represents the figure obtained by transforming all its points, with corresponding vertices in the same order. The burgundy triangle is ABC and the green triangle is $A'B'C'$.

Evidence and response

Assess coordinate-rule accuracy, vertex correspondence, point and figure notation, representation and justification separately. Ask for a forward check after inverse work and a general-coordinate argument when equality for every point is claimed. A correct unlabeled sketch does not establish correct labeled correspondence. Use a fresh point away from a special axis to test competing rules, and record whether an error concerns direction, sign, order, scale or the meaning of the function notation.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M01 to compare all alternatives after evidence is collected.

I DO

Teaching script

Core: 005 • T2: Evaluate coordinate rules for translations, axis reflections, origin-centered quarter-turn rotations and positive origin-centered dilations.

Optional bank: M05–M08; O05–O08. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 10–12 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O05, including its visual when present. Model a counterclockwise quarter-turn with equal coordinate scales. Check the positive x-axis direction, preserve vertex labels, and contrast multiplication with addition in an origin-centered dilation.

Core task

Let R rotate 90° counterclockwise about the origin. For triangle ABC with $A=(1, 1)$, $B=(3, 1)$, $C=(1, 2)$, write $R(x, y)$, compute the three images, express $R(\triangle ABC)$, and sketch the original and image triangles. Use one vertex to check the direction of rotation.

Teacher solution and discussion

$R(x, y)=(-y, x)$. Thus $A'=(-1, 1)$, $B'=(-1, 3)$, $C'=(-2, 1)$, and $R(\triangle ABC)=\triangle A'B'C'$. The burgundy triangle is the pre-image; green is the image. In particular A lies at direction 45° from the positive x-axis and A' at 135° , a 90° counterclockwise change. The origin is the center, not a vertex chosen by convenience.

Evidence and response

Assess coordinate-rule accuracy, vertex correspondence, point and figure notation, representation and justification separately. Ask for a forward check after inverse work and a general-coordinate argument when equality for every point is claimed. A correct unlabeled sketch does not establish correct labeled correspondence. Use a fresh point away from a special axis to test competing rules, and record whether an error concerns direction, sign, order, scale or the meaning of the function notation.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M05 to compare all alternatives after evidence is collected.

WE DO

Teaching script

Core: 009 • T3: Infer, reverse, construct or audit transformation rules using complete point correspondences and explicit constraints.

Optional bank: M09–M13; O09–O13. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 10–15 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O09, including its visual when present. Build inverse rules by solving for the input coordinates. Check each recovered point with the forward function, and distinguish the full image figure from only its named vertices.

Core task

S reflects across the x -axis and $S(\triangle ABC) = \triangle A'B'C'$. The image vertices are $A' = (2, -3)$, $B' = (5, -3)$, $C' = (2, -1)$. Recover A , B , C . Write a rule for S^{-1} and verify that applying it to the image triangle recovers $\triangle ABC$.

Teacher solution and discussion

Reflection across the x -axis is its own inverse: $S^{-1}(u, v) = (u, -v)$. Therefore $A = (2, 3)$, $B = (5, 3)$, $C = (2, 1)$. Applying S to these points negates their y -coordinates and gives the listed primed points. Hence $S^{-1}(\triangle A'B'C') = \triangle ABC$; applying the reflection twice returns every point to its original location.

Evidence and response

Assess coordinate-rule accuracy, vertex correspondence, point and figure notation, representation and justification separately. Ask for a forward check after inverse work and a general-coordinate argument when equality for every point is claimed. A correct unlabeled sketch does not establish correct labeled correspondence. Use a fresh point away from a special axis to test competing rules, and record whether an error concerns direction, sign, order, scale or the meaning of the function notation.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M09 to compare all alternatives after evidence is collected.

COLLABORATIVE PRACTICE

Teaching script

Core: O14 • T4: Compare compositions, invariant figures and fixed points using precise function notation, counterexamples and general-coordinate reasoning.

Optional bank: M14–M18; O14–O18. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 15–20 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O14, including its visual when present. Assign coordinate calculator, notation checker, correspondence auditor and proof checker roles. Compare composition order, construct a rule from constraints and distinguish an invariant figure from fixed points.

Core task

Let $T(x, y) = (x+2, y)$ and $R(x, y) = (-y, x)$. For triangle ABC with $A = (0, 0)$, $B = (1, 0)$, $C = (0, 1)$, find both $R(T(\triangle ABC))$ and $T(R(\triangle ABC))$. Give general coordinate rules for both compositions, complete a comparison table and decide whether changing the order matters.

Teacher solution and discussion

$R(T(x, y)) = R(x+2, y) = (-y, x+2)$, whereas $T(R(x, y)) = T(-y, x) = (-y+2, x)$. The first composition gives $A_1 = (0, 2)$, $B_1 = (0, 3)$, $C_1 = (-1, 2)$. The second gives $A_2 = (2, 0)$, $B_2 = (2, 1)$, $C_2 = (1, 0)$. Thus $R(T(\triangle ABC)) = \triangle A_1B_1C_1$ and $T(R(\triangle ABC)) = \triangle A_2B_2C_2$. The two rules differ by the nonzero vector $(2, -2)$, so changing the order matters for every input point.

Evidence and response

Assess coordinate-rule accuracy, vertex correspondence, point and figure notation, representation and justification separately. Ask for a forward check after inverse work and a general-coordinate argument when equality for every point is claimed. A correct unlabeled sketch does not establish correct labeled correspondence. Use a fresh point away from a special axis to test competing rules, and record whether an error concerns direction, sign, order, scale or the meaning of the function notation.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M14 to compare all alternatives after evidence is collected.

INDEPENDENT PRACTICE

Teaching script

Core: O19 • T3: Infer, reverse, construct or audit transformation rules using complete point correspondences and explicit constraints.

Optional bank: M19–M23; O19–O23. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 15–20 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O19, including its visual when present. Require explicit transformation types, complete labels and all stated constraints. Use general coordinates to justify all-point claims and counterexamples to refute conclusions drawn from a special point.

Core task

Construct one translation T and one origin-centered dilation D with positive scale factor other than 1 such that both send $A=(1, 1)$ to $A'=(2, 2)$. For triangle ABC with $B=(3, 1)$, $C=(1, 2)$, give both complete image triangles. Explain why one point-image pair does not identify the transformation type.

Teacher solution and discussion

Take $T(x, y)=(x+1, y+1)$ and $D(x, y)=(2x, 2y)$. Both send A to $(2, 2)$. The translation gives $B_T=(4, 2)$, $C_T=(2, 3)$, so $T(\triangle ABC)=\triangle A'B'_TC'_T$. The dilation gives $B_D=(6, 2)$, $C_D=(2, 4)$, so $D(\triangle ABC)=\triangle A'B'_DC'_D$. The two functions agree at A but disagree at B and C ; the one correspondence permits both transformation types.

Evidence and response

Assess coordinate-rule accuracy, vertex correspondence, point and figure notation, representation and justification separately. Ask for a forward check after inverse work and a general-coordinate argument when equality for every point is claimed. A correct unlabeled sketch does not establish correct labeled correspondence. Use a fresh point away from a special axis to test competing rules, and record whether an error concerns direction, sign, order, scale or the meaning of the function notation.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M19 to compare all alternatives after evidence is collected.

SMALL-GROUP RETEACH

Teaching script

Core: O24 • T1: Express point and whole-figure images with function notation while preserving corresponding labels and the complete geometric figure.

Optional bank: M24–M27; O24–O27. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 10–15 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O24, including its visual when present. Choose the observed issue: figure notation, a fixed axis point, rotation direction or positive fractional scaling. Rebuild the rule with one strategically chosen test point, then verify a new full figure without the earlier cue.

Core task

$T(x, y) = (x-1, y+2)$, with $A=(1, 0)$, $B=(3, 0)$, $C=(1, 2)$. A learner writes " $T(\triangle ABC) = T(A) + T(B) + T(C) = (2, 8)$." Replace this with correct point and figure statements, and explain what information is lost by adding the image coordinates.

Teacher solution and discussion

The correct point images are $T(A)=A'=(0, 2)$, $T(B)=B'=(2, 2)$, $T(C)=C'=(0, 4)$. Thus $T(\triangle ABC) = \triangle A'B'C'$. Adding these coordinate pairs does give $(2, 8)$, but that sum is a single vector/point coordinate pair, not the image triangle. It loses the three separate vertex positions and their edge connections, so it cannot replace the figure image.

Evidence and response

Assess coordinate-rule accuracy, vertex correspondence, point and figure notation, representation and justification separately. Ask for a forward check after inverse work and a general-coordinate argument when equality for every point is claimed. A correct unlabeled sketch does not establish correct labeled correspondence. Use a fresh point away from a special axis to test competing rules, and record whether an error concerns direction, sign, order, scale or the meaning of the function notation.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M24 to compare all alternatives after evidence is collected.

EXIT TICKET

Teaching script

Core: O28 • T3: Infer, reverse, construct or audit transformation rules using complete point correspondences and explicit constraints.

Optional bank: M28–M30; O28–O30. Select tasks across more than one meeting if needed.

Suggested discussion/work time: 5–8 minutes. Adjust for access and evidence; this is not a speed criterion.

Display student page O28, including its visual when present. Collect a composite inverse, an equality-of-compositions proof and a comparison of equal unlabeled image sets with different point correspondences. Require both a correct function statement and evidence that the stated rule produced it.

Core task

Q is a 270° counterclockwise rotation about the origin and $T(x, y) = (x+2, y-3)$. Their composition is $F = T$ after Q . The image triangle has $A' = (3, -5)$, $B' = (3, -7)$, $C' = (5, -5)$. Derive F and F^{-1} , recover $\triangle ABC$ and verify all three forward images.

Teacher solution and discussion

$Q(x, y) = (y, -x)$, so $F(x, y) = T(Q(x, y)) = (y+2, -x-3)$. Solving $(u, v) = (y+2, -x-3)$ gives $F^{-1}(u, v) = (-v-3, u-2)$. Therefore $A = (2, 1)$, $B = (4, 1)$, $C = (2, 3)$. Forward substitution gives $F(2, 1) = (3, -5)$, $F(4, 1) = (3, -7)$, $F(2, 3) = (5, -5)$. Thus $F(\triangle ABC) = \triangle A'B'C'$, and the inverse undoes the translation before undoing the rotation.

Evidence and response

Assess coordinate-rule accuracy, vertex correspondence, point and figure notation, representation and justification separately. Ask for a forward check after inverse work and a general-coordinate argument when equality for every point is claimed. A correct unlabeled sketch does not establish correct labeled correspondence. Use a fresh point away from a special axis to test competing rules, and record whether an error concerns direction, sign, order, scale or the meaning of the function notation.

Closure: Ask learners to state one feature they verified and one check they used. Use the worked key for M28 to compare all alternatives after evidence is collected.

MULTIPLE-CHOICE BANK

M01 / M02 • Select and justify**M01 | Warm-up | T1**

A translation is $T(x, y) = (x-3, y+4)$. For $A = (2, -1)$, what does $T(A)$ equal?

- A. $(-1, 3)$
- B. $(-3, 4)$
- C. $(5, -5)$
- D. $(-1, -5)$

Reasoning: _____

M02 | Warm-up | T2

R is rotation 90° counterclockwise about the origin. What is $R(-2, 5)$?

- A. $(5, -2)$
- B. $(-5, -2)$
- C. $(5, 2)$
- D. $(2, -5)$

Reasoning: _____

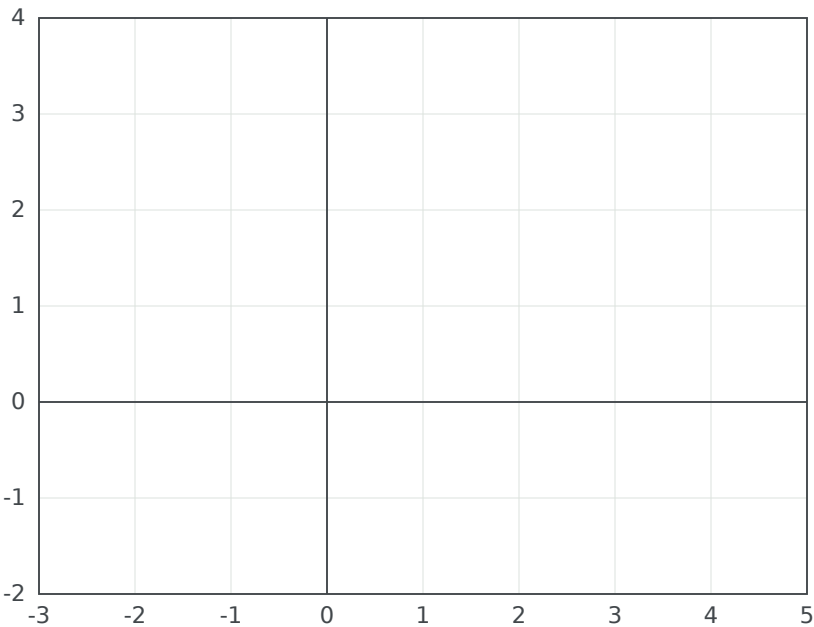
WARM-UP

001 • Show your reasoning

T1: Express point and whole-figure images with function notation while preserving corresponding labels and the complete geometric figure.

Let $T(x, y)=(x+4, y-2)$ and let triangle ABC have $A=(-2, 1)$, $B=(0, 1)$, $C=(-2, 3)$. Build a point-image table, write $T(A)$, $T(B)$, $T(C)$ and $T(\triangle ABC)$ using primed labels, and sketch the original and image triangles on the grid.

vertical axis: _____



horizontal axis: _____

Explanation and check

WARM-UP

002 • Show your reasoning

T2: Evaluate coordinate rules for translations, axis reflections, origin-centered quarter-turn rotations and positive origin-centered dilations.

Let S be reflection across the y -axis and let segment AB have $A=(-3, 2)$ and $B=(1, 4)$. Find $S(A)$, $S(B)$ and the image of the midpoint M . Write $S(AB)=A'B'$ and verify that $S(M)$ is the midpoint of $A'B'$.

Representation / calculation

Explanation / check

WORKED TEACHER KEYS

M01

M01 • T1: Express point and whole-figure images with function notation while preserving corresponding labels and the complete geometric figure.

Answer: A. (-1, 3)

$T(A)=T(2, -1)=(2-3, -1+4)=(-1, 3)$. The notation gives the image of the entire point A.

Check each alternative

- A. $T(A)=T(2, -1)=(2-3, -1+4)=(-1, 3)$. The notation gives the image of the entire point A.
- B. This is the translation vector, not the image of A.
- C. This applies the inverse shift instead of the stated translation.
- D. This subtracts 4 from y instead of adding it.

Evidence to assess

Require both coordinate substitutions and interpretation of $T(A)$ as one point image, not the displacement vector.

WORKED TEACHER KEYS

M02

M02 • T2: Evaluate coordinate rules for translations, axis reflections, origin-centered quarter-turn rotations and positive origin-centered dilations.

Answer: B. (-5, -2)

A 90° counterclockwise rotation has rule $R(x, y) = (-y, x)$, so $R(-2, 5) = (-5, -2)$.

Check each alternative

- A. This swaps coordinates without the necessary sign change.
- B. A 90° counterclockwise rotation has rule $R(x, y) = (-y, x)$, so $R(-2, 5) = (-5, -2)$.
- C. This uses the clockwise quarter-turn rule $(y, -x)$.
- D. This negates both coordinates, giving a half-turn.

Evidence to assess

Require the correct counterclockwise sign-and-swap rule and the computed whole point.

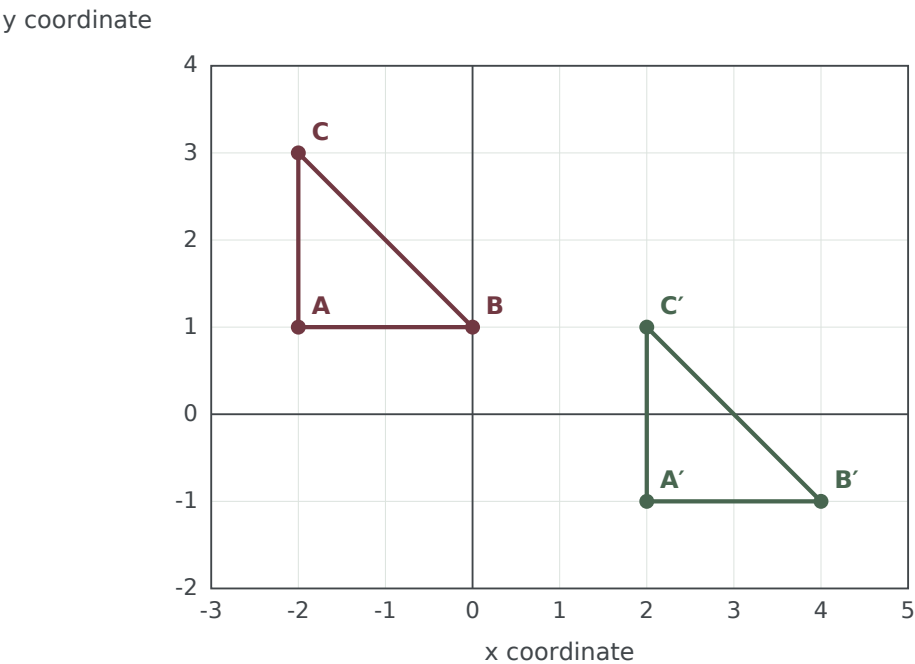
WORKED TEACHER KEYS

001

001 • T1: Express point and whole-figure images with function notation while preserving corresponding labels and the complete geometric figure.

$T(A)=A'=(2, -1)$, $T(B)=B'=(4, -1)$, and $T(C)=C'=(2, 1)$. Thus $T(\triangle ABC)=\triangle A'B'C'$. Each point moves by the same vector $(4, -2)$; the triangle notation represents the figure obtained by transforming all its points, with corresponding vertices in the same order. The burgundy triangle is ABC and the green triangle is $A'B'C'$.

Pre-image	Image under T
$A=(-2, 1)$	$A'=(2, -1)$
$B=(0, 1)$	$B'=(4, -1)$
$C=(-2, 3)$	$C'=(2, 1)$



Evidence to assess

Require the three correct point assignments, the whole-figure function statement and two labeled sketches connected in corresponding vertex order.

WORKED TEACHER KEYS

002

002 • T2: Evaluate coordinate rules for translations, axis reflections, origin-centered quarter-turn rotations and positive origin-centered dilations.

$S(x, y)=(-x, y)$, so $A'=(3, 2)$ and $B'=(-1, 4)$. The original midpoint is $M=\frac{(-3+1)}{2}, \frac{(2+4)}{2}=(-1, 3)$, and $S(M)=(1, 3)$. The image midpoint is $\frac{(3-1)}{2}, \frac{(2+4)}{2}=(1, 3)$, which agrees. Thus $S(AB)=A'B'$, including every point between the image endpoints.

Input point	Image under S
$A=(-3, 2)$	$A'=(3, 2)$
$B=(1, 4)$	$B'=(-1, 4)$
$M=(-1, 3)$	$M'=(1, 3)$

Evidence to assess

Require the reflection rule, both endpoint images, both midpoint calculations and the correctly ordered segment-image notation.