

INDEPENDENT VARIABLE

IDV WORKSHEETS



SERIES OF TRANSFORMATIONS

ASK THE QUESTIONS | TWO MOVES | FLIPS AND TURNS

ANIMATED
POWERPOINT:
DOES THE WORK
FOR YOU!

FULL ANSWER
KEYS
INCLUDED

18 EXAMPLE
PROBLEMS
4 PRACTICE
SHEETS

LEVELED
PRACTICE +
FIND THE
MISTAKE

MORE PRACTICE. LESS PREP. BETTER OUTCOMES.

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Inside the Animated Lesson

INDEPENDENT VARIABLE

GRADE 8 • GEOMETRY

SERIES OF TRANSFORMATIONS

ASK THE QUESTIONS | TWO MOVES | FLIPS AND TURNS

Animated PowerPoint lesson
Every guided problem animated one move at a time
Practice A, B, C • full answer keys

MORE PRACTICE. LESS PREP. BETTER OUTCOMES.
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LESSON OVERVIEW

Today's Goals

I CAN...

- 1 Name a move by asking the questions: translate? reflect? rotate?
- 2 Describe a series of rigid moves, in order, that takes a figure onto its image.
- 3 Write each move as a coordinate rule, like $(x, y) \rightarrow (-y, x)$.

KEY VOCABULARY

Series (sequence) two or more moves done in order	A' (A prime) the matching point on the image
Translation a slide; which way, how far	Reflection a flip across a line
Rotation a turn: center, angle, direction	Congruent every rigid series keeps size and shape

STANDARDS

CCSS.8.G.A.2 CCSS.8.G.A.3 HS.G.CO.A.5

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WARM-UP

What Do These Symbols Mean?

A RAY
Translation: shows which way and how far it slid.

A POINT
Rotation: the center it turns about.

A LINE
Reflection: the line it flips across.

DISCUSSION ONLY. NOT IN YOUR PACKET

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GUIDED PROBLEM 1 • PART 1: ASK THE QUESTIONS

PART 1

1. Identify the transformation that maps the pre-image onto the image.

Move: Translate right 2 and down 3

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

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GUIDED PROBLEM 1 • PART 2: TWO MOVES WITH A SLIDE

PART 2

1. The figure below was transformed by two rigid motions. Identify both transformations.

1st: Translate right 4 and up 5
 $(x, y) \rightarrow (x + 4, y + 5)$

2nd: Rotate 90° counterclockwise about the origin $(x, y) \rightarrow (-y, x)$

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CHALLENGE • GUIDED PROBLEM 4 • PART 3: FLIPS AND TURNS

PART 3

4. The figure below was transformed by three rigid motions. Identify all three, in order.

1st: Translate down 3
 $(x, y) \rightarrow (x, y - 3)$

2nd: Reflect across the y-axis
 $(x, y) \rightarrow (-x, y)$

3rd: Rotate 180° about the origin
 $(x, y) \rightarrow (-x, -y)$

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GUIDED PROBLEM 1 • PUT IT TOGETHER

PUT IT TOGETHER

1. The figure below was transformed by two rigid motions. Identify both transformations.

1st: Translate left 4 and down 3
 $(x, y) \rightarrow (x - 4, y - 3)$

2nd: Reflect across the y-axis
 $(x, y) \rightarrow (-x, y)$

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CHALLENGE • GUIDED PROBLEM 6 • PUT IT TOGETHER

PUT IT TOGETHER

6. The figure below was transformed by two rigid motions. Identify both transformations.

1st: Reflect across the x-axis
 $(x, y) \rightarrow (x, -y)$

2nd: Reflect across the y-axis
 $(x, y) \rightarrow (-x, y)$

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Directions: Fill in the notes. Then do the guided problems with the class.

PART 1 • NOTES

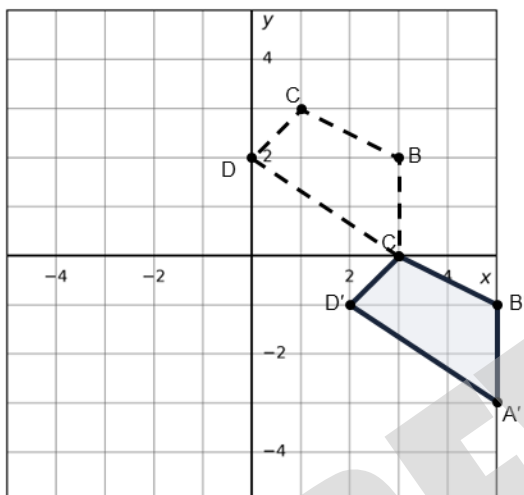
A translation is a _____. Ask: which way? how far?

A reflection is a _____ across a line. Ask: across what?

A rotation is a _____. Ask: about what point? which way? how far?

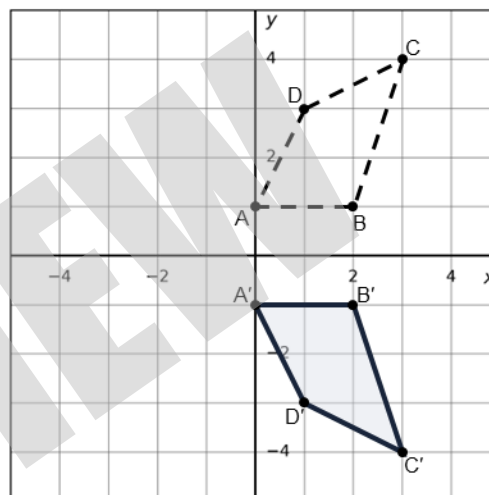
GUIDED PROBLEMS

1. Identify the transformation that maps the pre-image onto the image.



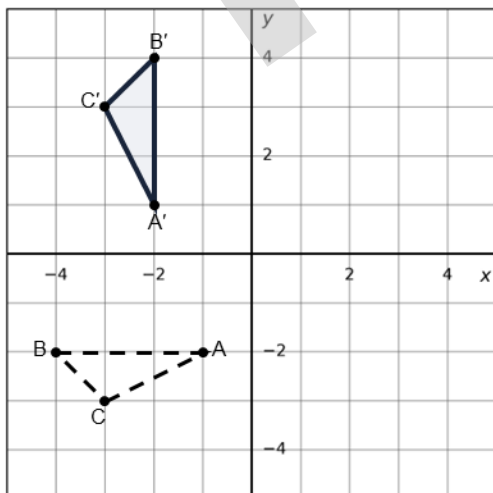
Move: _____

2. Identify the transformation that maps the pre-image onto the image.



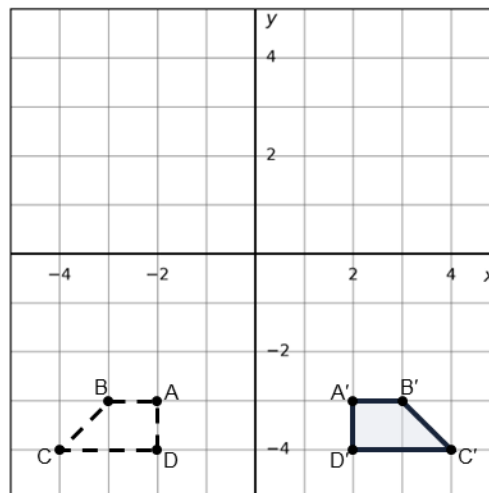
Move: _____

3. Identify the transformation that maps the pre-image onto the image.



Move: _____

4. Identify the transformation that maps the pre-image onto the image.

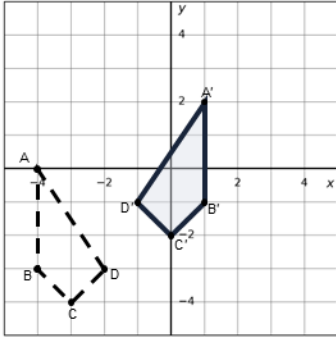


Move: _____

Directions: Each figure was moved by two rigid motions, one of them a translation. Identify both, in order.

9 PROBLEMS • TWO MOVES, ONE OF THEM A SLIDE

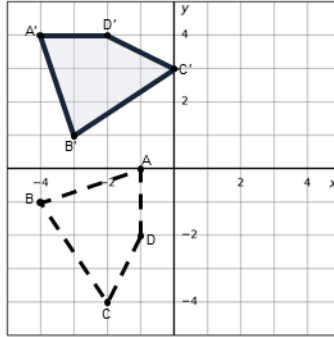
1. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

2nd: _____

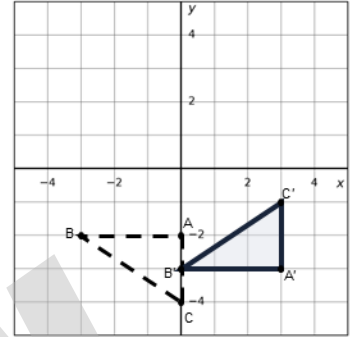
2. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

2nd: _____

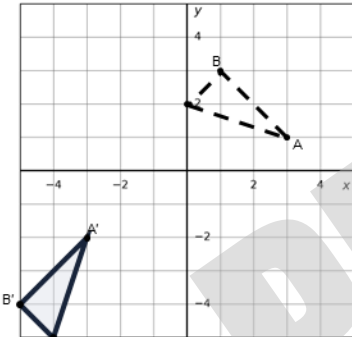
3. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

2nd: _____

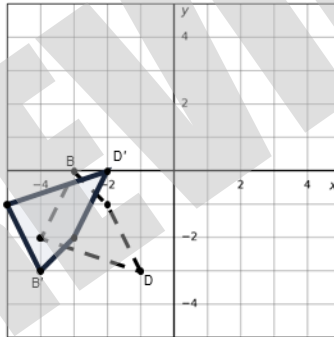
4. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

2nd: _____

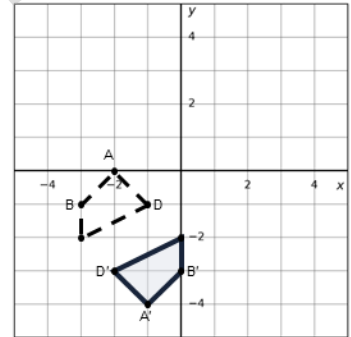
5. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

2nd: _____

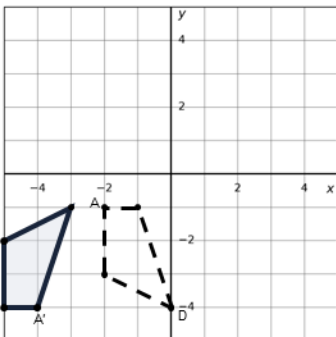
6. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

2nd: _____

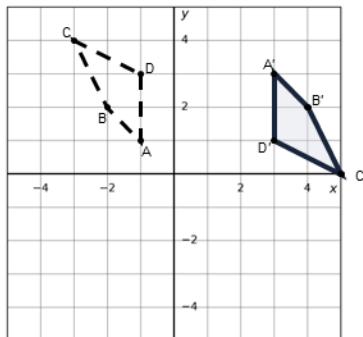
7. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

2nd: _____

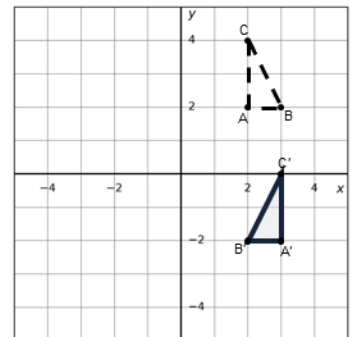
8. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

2nd: _____

9. The figure below was transformed by two rigid motions. Identify both transformations.



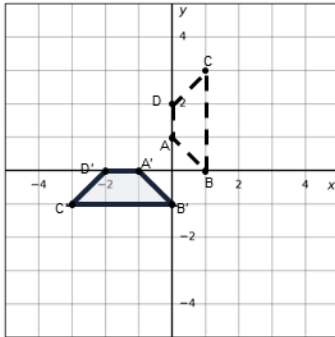
1st: _____

2nd: _____

Directions: Identify each series of moves in order, or follow point A through every move.

9 PROBLEMS • SERIES AND POINT TRACKING

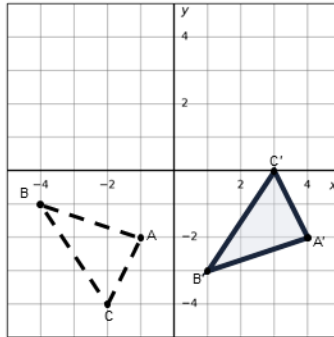
1. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

2nd: _____

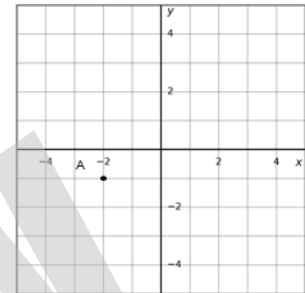
2. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

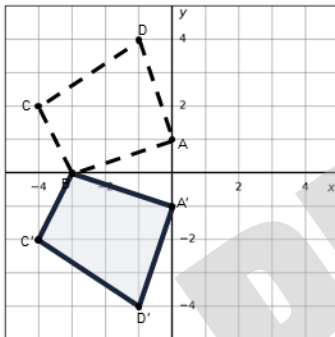
2nd: _____

3. Point A starts at $(-2, -1)$.
 1) rotate 180° about the origin
 2) reflect across the x-axis
 3) rotate 180° about the origin
 4) reflect across the y-axis
 Write the final point.



Final point: _____

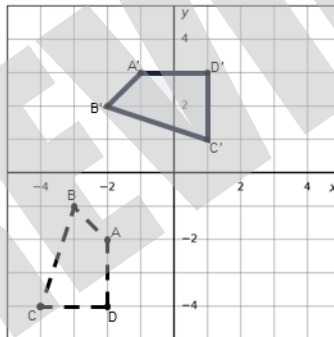
4. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

2nd: _____

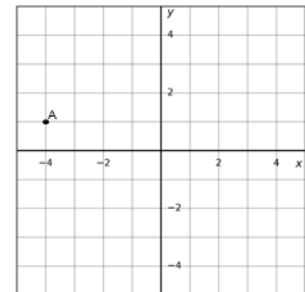
5. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

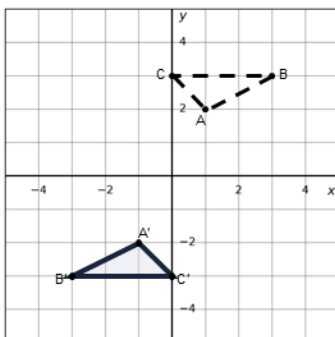
2nd: _____

6. Point A starts at $(-4, 1)$.
 1) translate right 7 and up 3
 2) rotate 270° clockwise about the origin
 3) reflect across the y-axis
 4) translate left 1 and up 1
 Write the final point.



Final point: _____

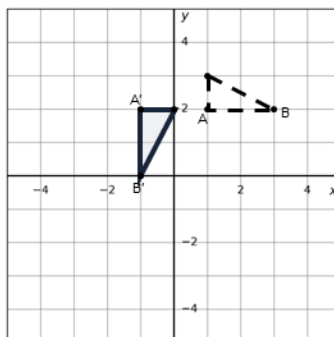
7. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

2nd: _____

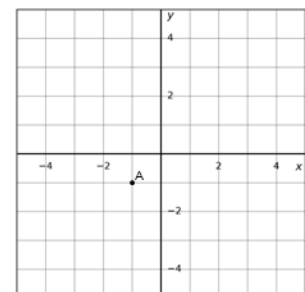
8. The figure below was transformed by two rigid motions. Identify both transformations.



1st: _____

2nd: _____

9. Point A starts at $(-1, -1)$.
 1) rotate 180° about the origin
 2) reflect across the y-axis
 3) translate right 3 and up 3
 4) rotate 90° counterclockwise about the origin
 Write the final point.



Final point: _____