

Flip Then Slide

Track polygon vertices through two moves.

GRADE 8 • 8.MG.3.f

8.MG.3.f "Sketch the image of a polygon that has been translated and reflected over the x- or y-axis, or reflected over the x- or y-axis and then translated."

NAME _____

DATE _____

TRACK EACH MOVE

Translate (x,y) by $\langle a,b \rangle$ to get $(x+a,y+b)$. Then reflect over the x-axis by changing the y sign, or over the y-axis by changing the x sign.

WORKED EXAMPLE

Triangle A(41,43), B(47,43), C(41,49) is translated by $\langle 13,-17 \rangle$, then reflected over the y-axis.

1. Translate A, B, C to (54,26), (60,26), (54,32).
2. Reflect over the y-axis by changing each x-coordinate sign.

Answer: A'(-54,26), B'(-60,26), C'(-54,32)

PRACTICE 5 problems

- 1** Sketch triangle A(18,8), B(21,8), C(18,11) after a translation of $\langle -7,0 \rangle$, then a reflection over the x-axis.

ANSWER _____

- 2** Sketch rectangle P(8,10), Q(12,10), R(12,14), S(8,14) after reflection over the y-axis, then translation $\langle 0,8 \rangle$.

ANSWER _____

- 3** Sketch triangle J(14,16), K(18,16), L(16,20) after translation $\langle -7,-8 \rangle$, then reflection over the y-axis.

ANSWER _____

- 4** Sketch triangle M(9,18), N(14,18), O(11,22) after reflection over the x-axis, then translation $\langle 9,30 \rangle$.

ANSWER _____

- 5** Sketch rectangle E(15,19), F(19,19), G(19,23), H(15,23) after reflection over the y-axis, then translation $\langle 30,-8 \rangle$.

ANSWER _____

APPLY IT Show your work

- 1** A gaming club logo is a triangle with vertices A(10,14), B(16,14), and C(10,18). The logo is reflected over the x-axis, then moved by $\langle 8, 25 \rangle$. What are the image vertices?

WORK SPACE

ANSWER _____

- 2** A skateboard sticker is a rectangle with vertices P(18,12), Q(24,12), R(24,18), and S(18,18). It is reflected over the y-axis, then moved by $\langle 40, 10 \rangle$. What are the image vertices?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Mia says that translating triangle A(10,12), B(14,12), C(10,16) by $\langle 20, -7 \rangle$ and then reflecting over the y-axis gives the same image as reflecting first and then translating by $\langle 20, -7 \rangle$. Is Mia correct? Explain by listing both images.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Sketch triangle A(18,8), B(21,8), C(18,11) after a translation of $\langle -7, 0 \rangle$, then a reflection over the x-axis.	A'(-11,-8), B'(-14,-8), C'(-11,-11)
2	Sketch rectangle P(8,10), Q(12,10), R(12,14), S(8,14) after reflection over the y-axis, then translation $\langle 0, 8 \rangle$.	P'(-8,18), Q'(-12,18), R'(-12,22), S'(-8,22)
3	Sketch triangle J(14,16), K(18,16), L(16,20) after translation $\langle -7, -8 \rangle$, then reflection over the y-axis.	J'(-7,8), K'(-11,8), L'(-9,12)
4	Sketch triangle M(9,18), N(14,18), O(11,22) after reflection over the x-axis, then translation $\langle 9, 30 \rangle$.	M'(18,12), N'(23,12), O'(20,8)
5	Sketch rectangle E(15,19), F(19,19), G(19,23), H(15,23) after reflection over the y-axis, then translation $\langle 30, -8 \rangle$.	E'(15,11), F'(11,11), G'(11,15), H'(15,15)

PART 2 • APPLY IT

- A'(18,11), B'(24,11), C'(18,7)** Reflect each y-coordinate first, then add 8 to each x-coordinate and 25 to each y-coordinate.
- P'(22,22), Q'(16,22), R'(16,28), S'(22,28)** Change each x-coordinate sign for the reflection, then add 40 to x and 10 to y.

CHALLENGE

No. Translate, then reflect: A'(-30,5), B'(-34,5), C'(-30,9). Reflect, then translate: A'(10,5), B'(6,5), C'(10,9).

Accept correctly labeled sketches with vertices connected in the original order. Vertex order may differ if the same image polygon is shown.