

Slide and Sketch

Translate polygons on the coordinate plane.

GRADE 8 • 8.MG.3.d

8.MG.3.d "Sketch the image of a polygon that has been translated vertically, horizontally, or a combination of both."

NAME _____

DATE _____

TRANSLATION RULE

A translation slides every vertex the same distance and direction. Add or subtract the horizontal change from x , then add or subtract the vertical change from y .

WORKED EXAMPLE

Triangle ABC has A(1,2), B(3,2), and C(2,5). Translate it right 6 units and down 4 units.

1. Rule: (x,y) becomes $(x+6,y-4)$.
2. A': $(1+6,2-4) = (7,-2)$.
3. B': $(3+6,2-4) = (9,-2)$.
4. C': $(2+6,5-4) = (8,1)$.

Answer: A'(7,-2), B'(9,-2), C'(8,1)

PRACTICE 5 problems

- 1** Sketch triangle PQR with P(0,10), Q(10,10), and R(0,12). Translate it right 11 units.

ANSWER _____

- 2** Sketch rectangle ABCD with A(20,0), B(24,0), C(24,11), and D(20,11). Translate it left 10 units and up 12 units.

ANSWER _____

- 3** Sketch triangle JKL with J(20,20), K(30,20), and L(20,24). Translate it left 10 units and down 10 units.

ANSWER _____

- 4** Sketch parallelogram WXYZ with W(10,30), X(20,30), Y(24,40), and Z(14,40). Translate it right 12 units and down 20 units.

ANSWER _____

- 5** Sketch pentagon FGHJK with F(0,20), G(10,30), H(20,30), J(30,20), and K(20,10). Translate it left 20 units and up 10 units.

ANSWER _____

APPLY IT Show your work

- 1** A game designer places a triangular map zone at $(10,20)$, $(20,20)$, and $(10,30)$. The zone slides right 12 units and down 10 units. Sketch its new location.

WORK SPACE

ANSWER _____

- 2** A school club's rectangular screen graphic has corners at $(0,30)$, $(20,30)$, $(20,40)$, and $(0,40)$. The graphic moves left 10 units and up 20 units. Sketch the new graphic.

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Triangle ABC has $A(10,20)$, $B(30,20)$, and $C(20,40)$. Its image has $A'(22,10)$, $B'(42,10)$, and $C'(32,30)$. Describe the translation and explain how you know.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Sketch triangle PQR with P(0,10), Q(10,10), and R(0,12). Translate it right 11 units.	P'(11,10), Q'(21,10), R'(11,12)
2	Sketch rectangle ABCD with A(20,0), B(24,0), C(24,11), and D(20,11). Translate it left 10 units and up 12 units.	A'(10,12), B'(14,12), C'(14,23), D'(10,23)
3	Sketch triangle JKL with J(20,20), K(30,20), and L(20,24). Translate it left 10 units and down 10 units.	J'(10,10), K'(20,10), L'(10,14)
4	Sketch parallelogram WXYZ with W(10,30), X(20,30), Y(24,40), and Z(14,40). Translate it right 12 units and down 20 units.	W'(22,10), X'(32,10), Y'(36,20), Z'(26,20)
5	Sketch pentagon FGHIK with F(0,20), G(10,30), H(20,30), J(30,20), and K(20,10). Translate it left 20 units and up 10 units.	F'(-20,30), G'(-10,40), H'(0,40), J'(10,30), K'(0,20)

PART 2 • APPLY IT

1. **(22,10), (32,10), (22,20)** Add 12 to every x-coordinate and subtract 10 from every y-coordinate.
2. **(-10,50), (10,50), (10,60), (-10,60)** Subtract 10 from every x-coordinate and add 20 to every y-coordinate.

CHALLENGE

Translate right 12 units and down 10 units. Each x-coordinate increases by 12, and each y-coordinate decreases by 10.

Accept correctly plotted images even if vertices are listed in a different order. Each corresponding vertex must have the same horizontal and vertical change.