9 - 2
Translations

translation: moves all points the same distance in the same direction

**Real-world examples:

driving a car $\longrightarrow$

marching band show

Which coordinates are changing? And how?

Left 2

$$x - 2$$

Down 3

$$y - 3$$

Up 7

$$y + 7$$

Right 1
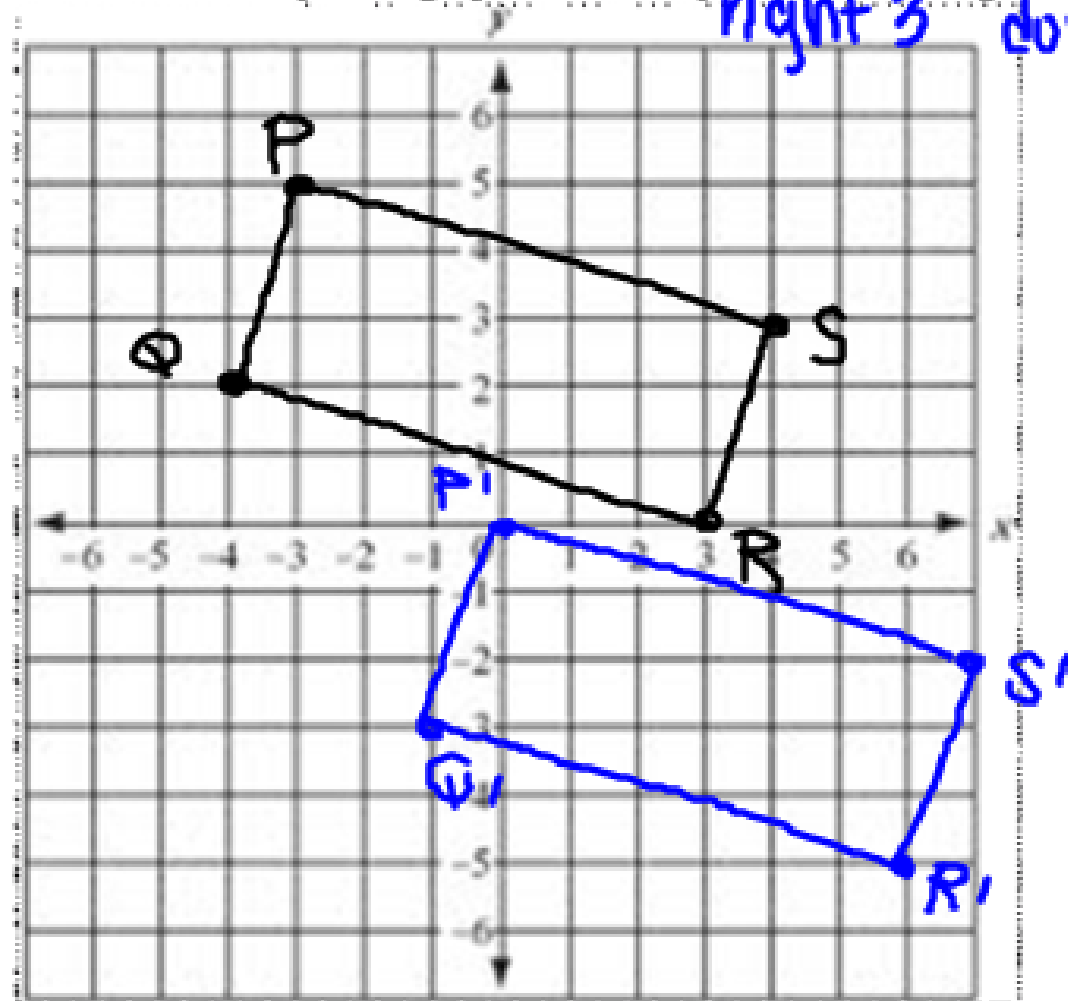
$$x + 1$$

Rectangle PQRS has vertices P(-3, 5), Q(-4, 2), R(3, 0), and S(4, 3). Graph PQRS and its image for the translation (x, y) ⟶ (x + 3, y - 5).

Handwritten annotations:
- Above P(-3, 5): 0, 0
- Above Q(-4, 2): -1, -3
- Above R(3, 0): 6, -5
- Above S(4, 3): 7, -2
- right 3   down 5

Parallelogram TUVW has vertices T(-1, 4), U(2, 5), V(4, 3), and W(1, 2). Graph TUVW and its image for the translation $(x, y) \longrightarrow (x - 4, y - 5)$.

left 4 down 5
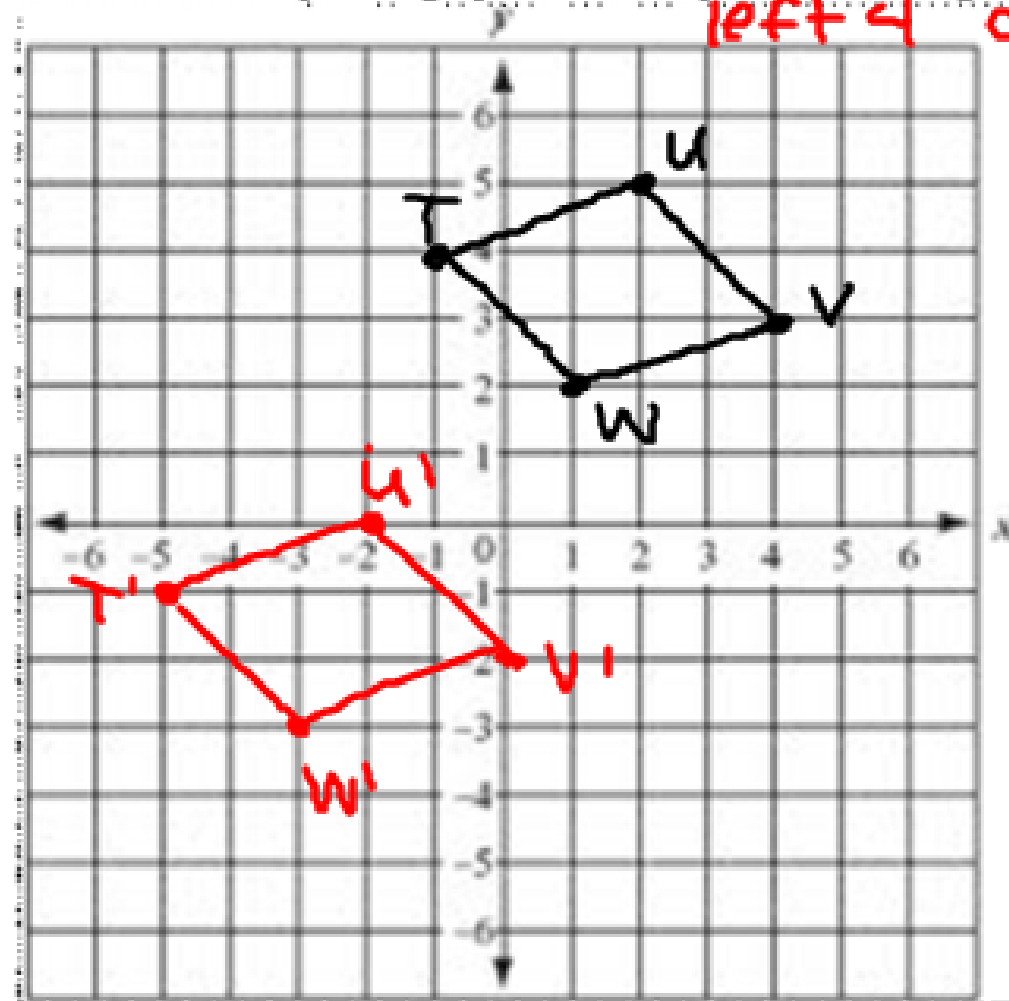
Ex: Find the translation from A(-5, -1) to B(-3, 1).

$$(x, y) \longrightarrow (x+2, y+2)$$

Ex: Find the translation from F(-3, 1) to G(4, 5).

$$(x, y) \longrightarrow (x+7, y+4)$$

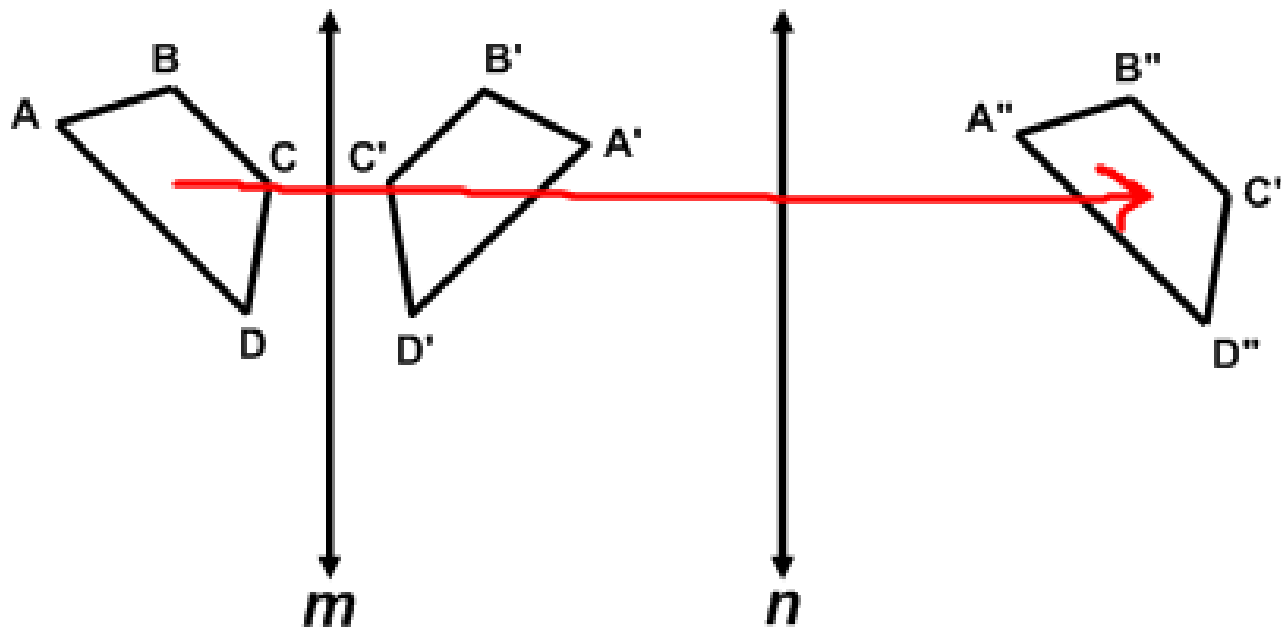**composition:** made up of successive transformations

Another way to find a translation is...

reflect a figure through
two parallel lines

Ex: In the figure, lines m and n are parallel. Determine whether quadrilateral A"B"C"D" is a translation of quadrilateral ABCD.

Yes

Homework:

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