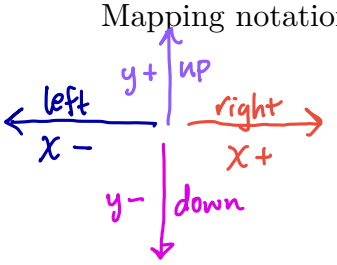
Artifact 2 – Translations

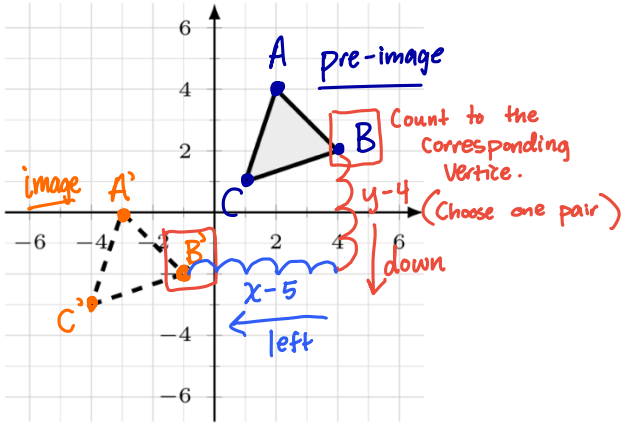
Driving Question: How can any translation be written as an algebraic rule?

Vocabulary

Translation ✓
Algebraic representation (rule) ✓
Mapping notation ✓



*A translation slides a 2-D figure left/right and/or up/down a coordinate plane, shifting each coordinate value positively or negatively by the same amount.



*We can also prove the rule by noting the change in coordinates:

Algebraic Rule:

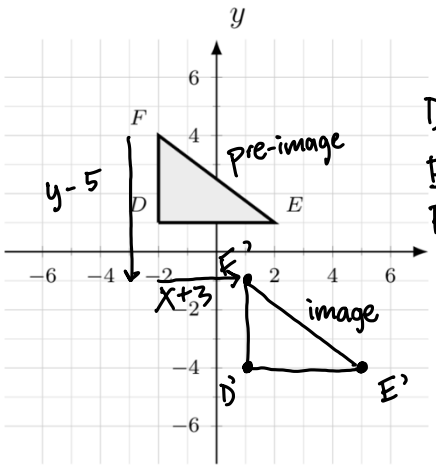
$(x, y) \rightarrow (\ x-5\ ,\ y-4\ )$

*same changes to each point

	Pre-image	Image
A	(2, 4)	(2 − 5, 4 − 4) → A' (−3, 0)
B	(4, 2)	(4 − 5, 2 − 4) → B' (−1, −2)
C	(1, 1)	(1 − 5, 1 − 4) → C' (−4, −3)

14. Triangle DEF with vertices $D(-2, 1)$, $E(2, 1)$, and $F(-2, 4)$ is translated by the rule $(x, y) \rightarrow (x + 3, y - 5)$. Plot the image $D'E'F'$ on the grid below, and label the coordinates of each vertex.

D' (1, −4)
E' (5, −4)
F' (1, −1)



Pre-image	Image
D (−2, 1)	(−2 + 3, 1 − 5) → (1, −4)
E (2, 1)	(2 + 3, 1 − 5) → (5, −4)
F_x (−2, 4)	(−2 + 3, 4 − 5) → (1, −1)

Algebraic representation (or mapping notation): $(x, y) \rightarrow (x + 3,\ y - 5)$

3 units right, 5 units down