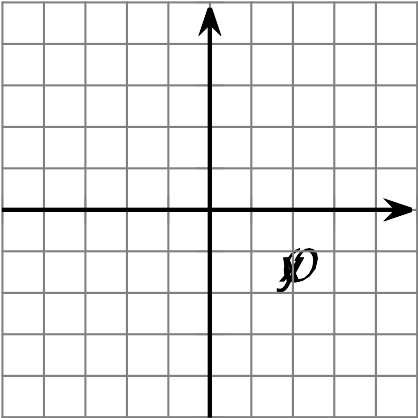
## Unit 6 Lesson 10: Parallel Lines in the Plane

### 1 Translating Lines (Warm up)

#### Student Task Statement

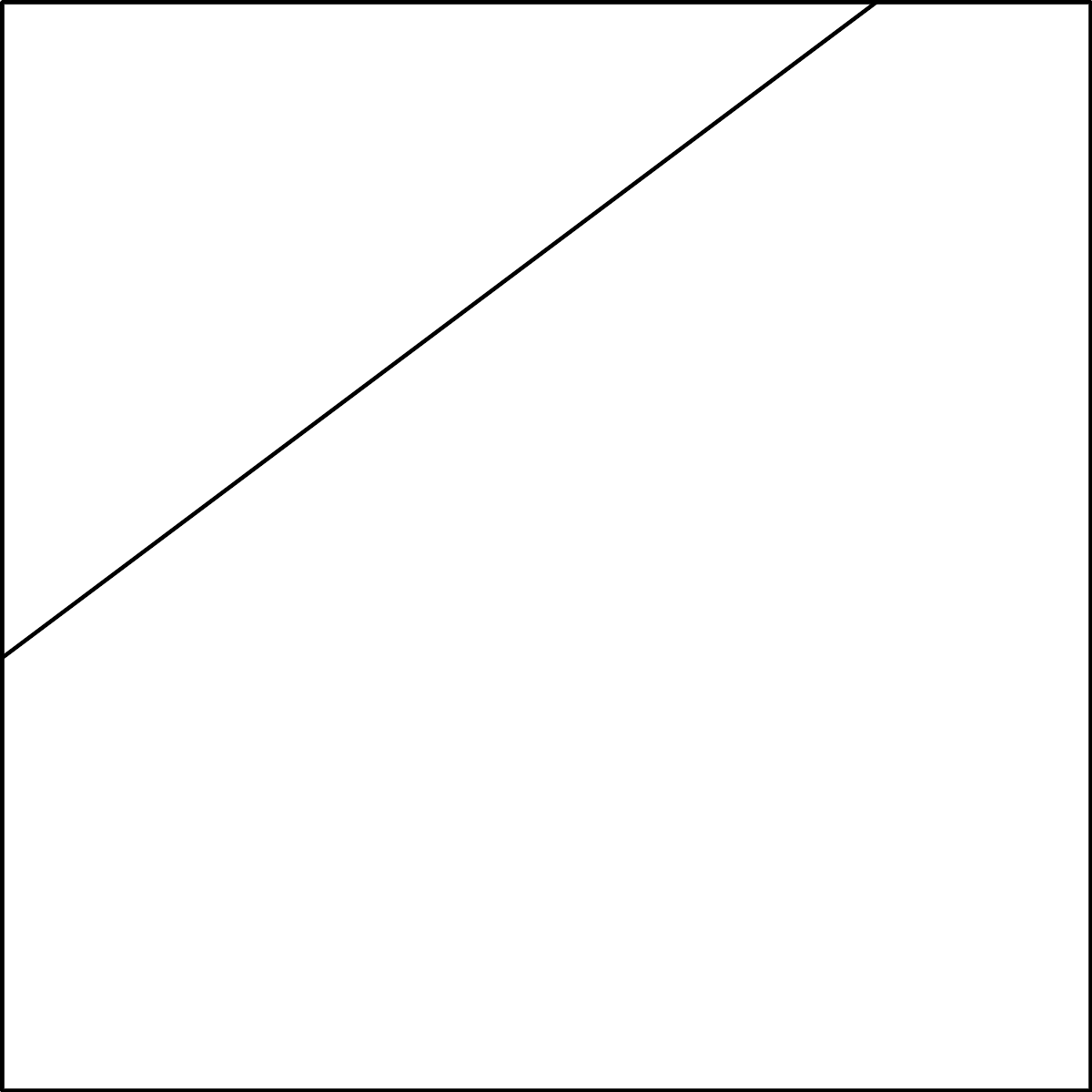
1. Draw any non-vertical line in the plane. Draw 2 possible translations of the line.

* 

1. Find the slope of your original line and the slopes of the images.

### 2 Priya’s Proof

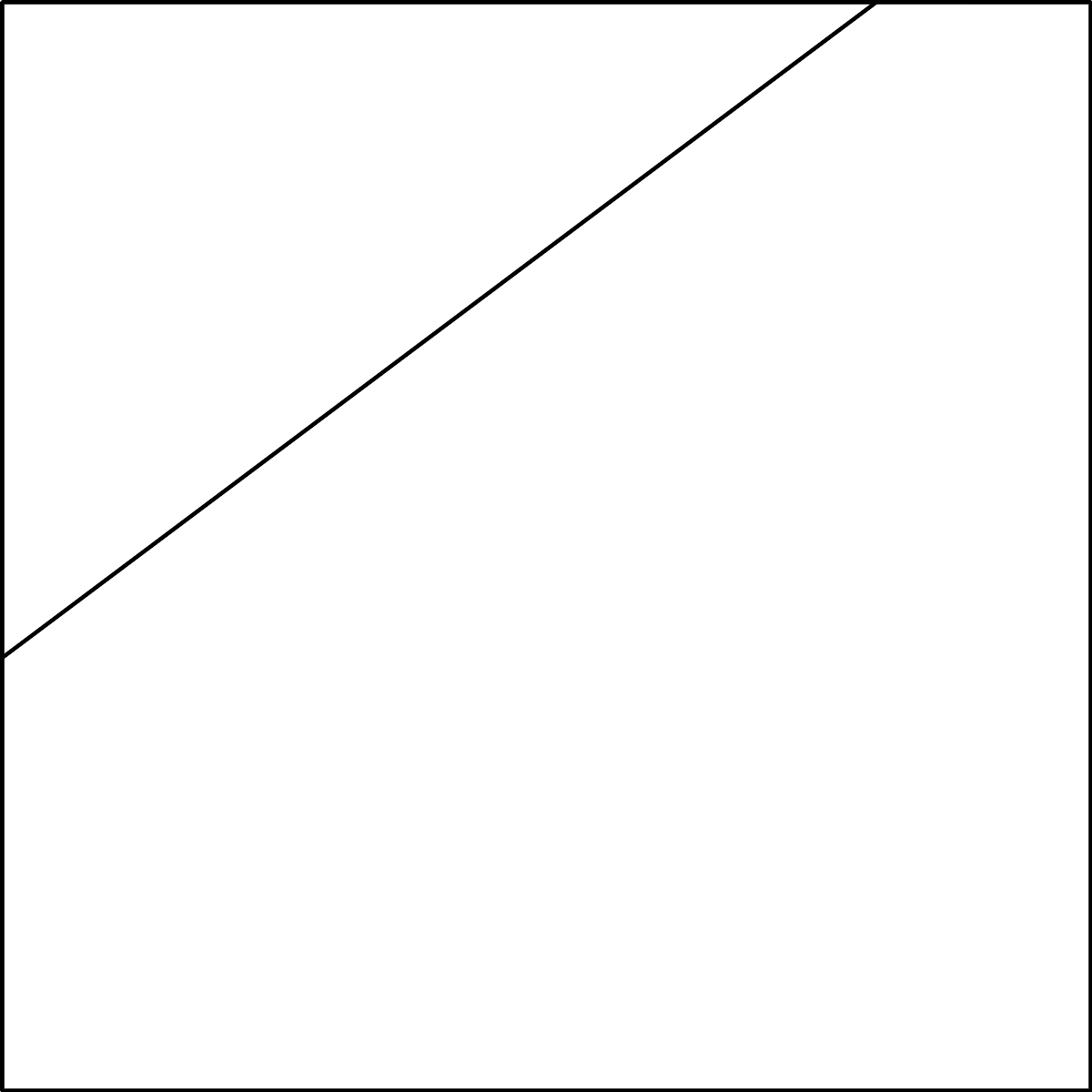
#### Images for Launch



#### Student Task Statement

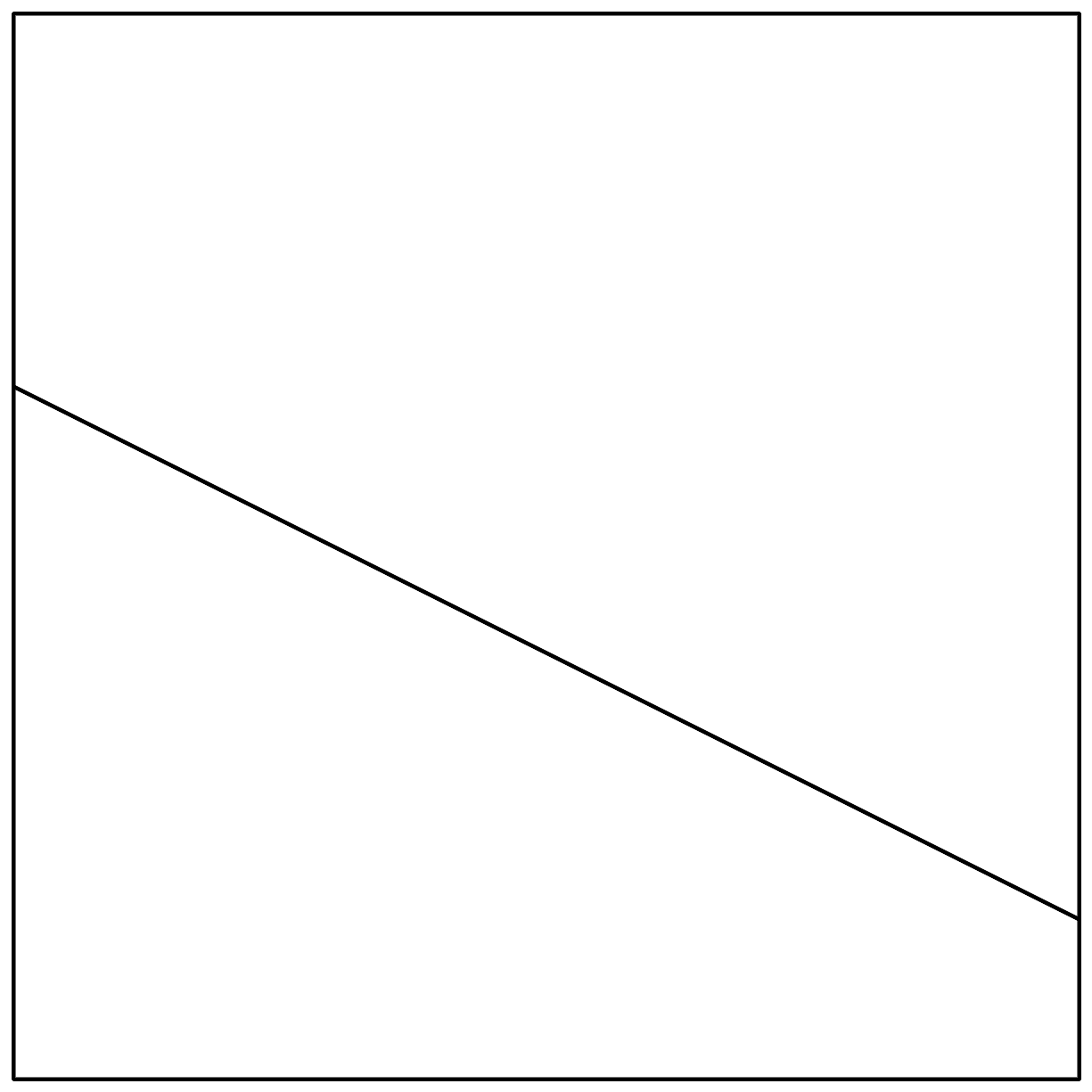
Priya writes a proof saying:

Consider any 2 parallel lines. Assume they are not horizontal or vertical. Therefore they must pass through the -axis as well as the -axis. This forms 2 right triangles with a second congruent angle. Call the angle . The tangent of is equal for both triangles. Therefore the lines have the same slope.



1. How does Priya know the right triangles have a second congruent angle?
2. Show or explain what it means that the tangent of is equal for both triangles.
3. How does this prove the slopes of parallel lines are equal?

#### Activity Synthesis



### 3 Prove Your Parallelogram

#### Student Task Statement

1. Write the equation of a line parallel to , passing through .
2. Graph both lines described in the previous question.
3. Draw a parallelogram using the 2 lines you graphed and using  as one of the vertices.
4. Prove that your figure is a parallelogram.

#### Images for Activity Synthesis





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