

# Lesson Title 5.8 Coordinate Proofs NOTES

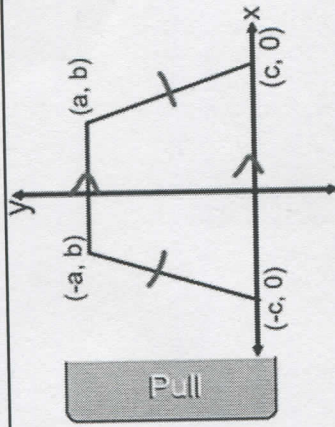
## Honors Geometry

Date \_\_\_\_\_

Coordinate proofs are all about placing a figure strategically on the coordinate grid to help you.

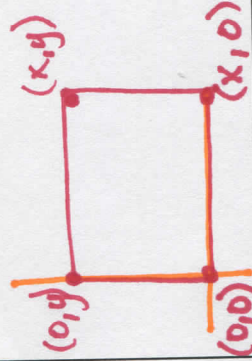
- Vertices at the origin
- Sides on the axis
- Axes splitting the figure in half

Example: Isosceles Trapezoid

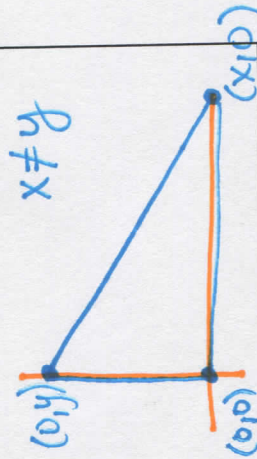


TASK 1: Place a figure in a coordinate plane

a) Rectangle



b) scalene triangle



TASK 2: Writing a Coordinate Proof

You buy a tall, three legged plant stand. When you place a plant on the stand, the stand appears to be unstable under the weight of the plant. The diagram at the right shows a coordinate plane superimposed on one pair of the plant stand's legs. The legs are extended to form  $\triangle OBC$ . Prove that  $\triangle OBC$  is a scalene triangle.

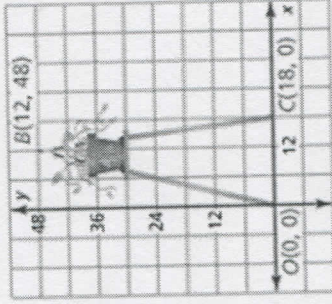
Write a paragraph proof. Give work as statements and reasons and then write a conclusion statement.

$$OB = \sqrt{(0-12)^2 + (0-48)^2} = \sqrt{144 + 2304} = \sqrt{2448}$$

$$BC = \sqrt{(12-18)^2 + (48-0)^2} = \sqrt{36 + 2304} = \sqrt{2340}$$

$$OC = \sqrt{(0-18)^2 + (0-0)^2} = \sqrt{324 + 0} = \sqrt{324}$$

∴ Based on the side lengths from the distance formula, no side lengths are the same making  $\triangle OBC \approx$  scalene.



TASK 3: Writing a paragraph proof

Given: Coordinates of vertices of  $\triangle NPO$  and  $\triangle NMO$

Prove:  $\triangle NPO \cong \triangle NMO$

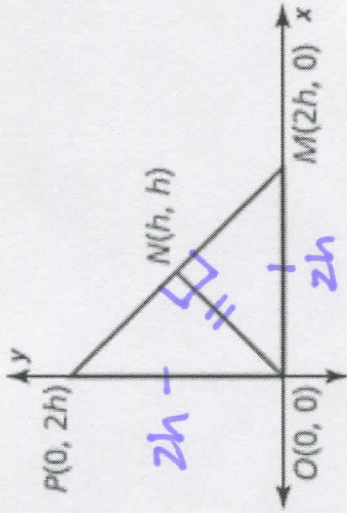
$$\overline{OP} \cong \overline{OM} \quad \text{both} = 2h$$

$\overline{ON} \cong \overline{ON}$  Reflexive POC

$$\frac{m\angle PNM}{m\angle MNO} = -1 \quad \left. \vphantom{\frac{m\angle PNM}{m\angle MNO}} \right\} \overline{ON} \perp \overline{PM}$$

$$\frac{m\angle PNM}{m\angle MNO} = 1$$

$\triangle NPO \cong \triangle NMO$  by HL  $\cong$  THM



Make any notes to yourself that you struggled with or you feel you would benefit from as reminders!!

- Final conclusion statement
- axes, origin
- show calculations

Still need help with: