Warm Up

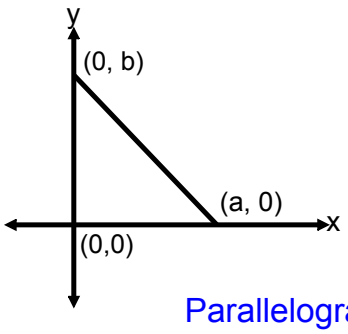
1. How can you tell if two lines are parallel just by looking at their equations?
2. How can you tell if two lines are perpendicular just by looking at their equations?
3. How can you prove a quadrilateral is a parallelogram?
4. How can you prove a quadrilateral is a rectangle?
5. How can you prove a quadrilateral is a square?
6. How can you prove a triangle is equilateral?
7. How can you prove a quadrilateral is an isosceles trapezoid?
8. How can you prove a triangle is a right triangle?

Mar 19-9:50 AM

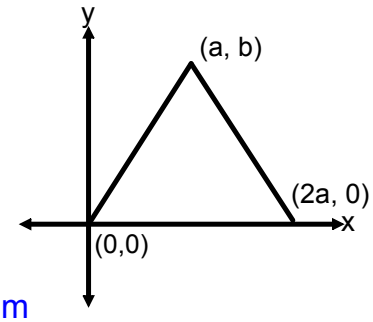
Coordinate Proofs

Convenient locations in the coordinate plane:

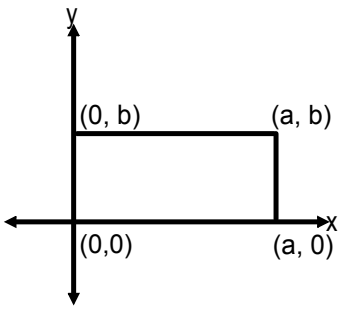
Right Triangle



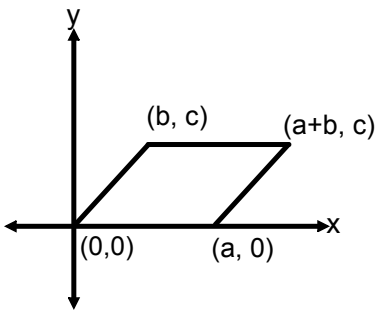
Isosceles Triangle



Rectangle



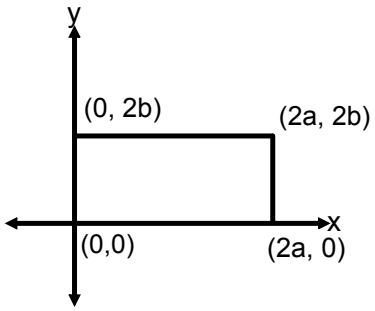
Parallelogram



Make index cards!! :)

When midpoints are involved in a problem, it is helpful to use coordinates that make computations easier.

For example, you could use the following rectangle:



Another index card!!

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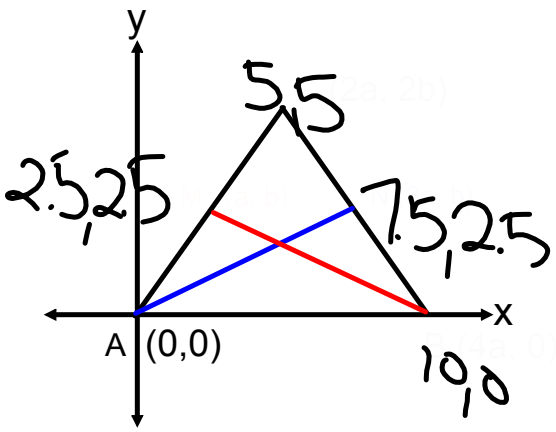
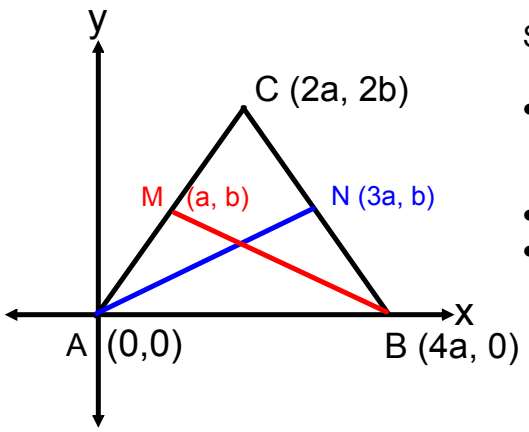
EXAMPLE

Prove: the medians to the legs of all isosceles triangle are congruent.



EXAMPLE

Prove: the medians to the legs of an isosceles triangle are congruent.



Solution:

- Use the isosceles triangle with doubled coordinates (because we'll be using midpoints)
- Use the midpoint formula to find M and N.
- Use the distance formula to complete the coordinate proof.

$$MB = \sqrt{(4a - a)^2 + (0 - b)^2} = \sqrt{9a^2 + b^2}$$

$$NA = \sqrt{(3a - 0)^2 + (b - 0)^2} = \sqrt{9a^2 + b^2}$$

Thus, $MB \cong NA$

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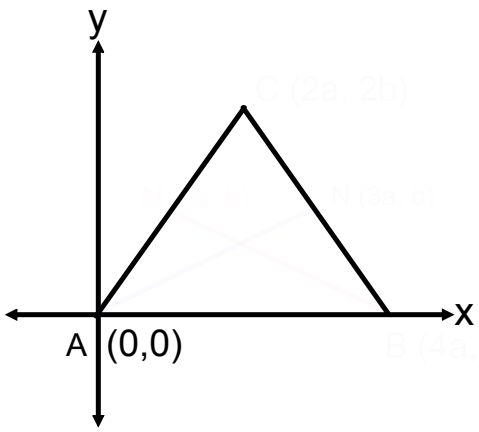
EXAMPLE

Prove: the medians to the legs of an isosceles triangle are congruent.



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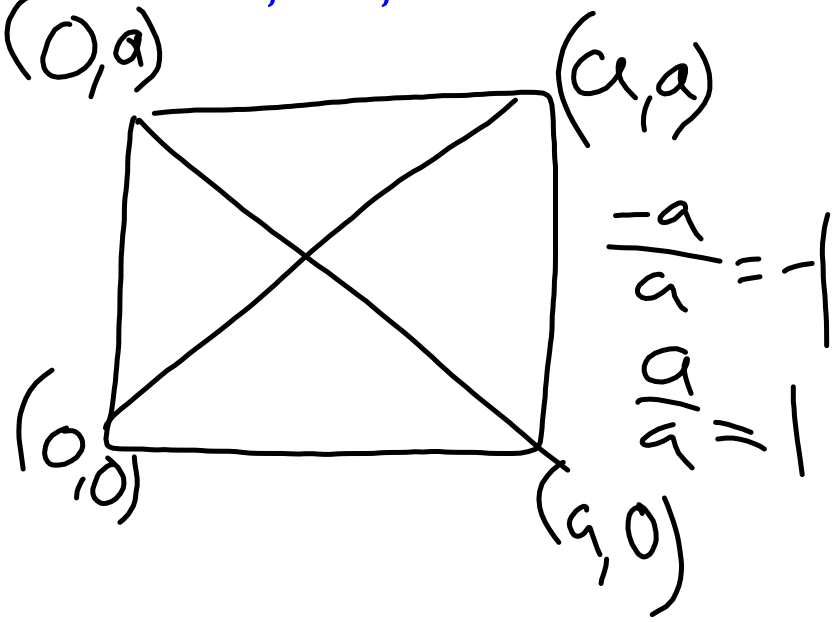
Homework:
p. 396 #12, 23, 24



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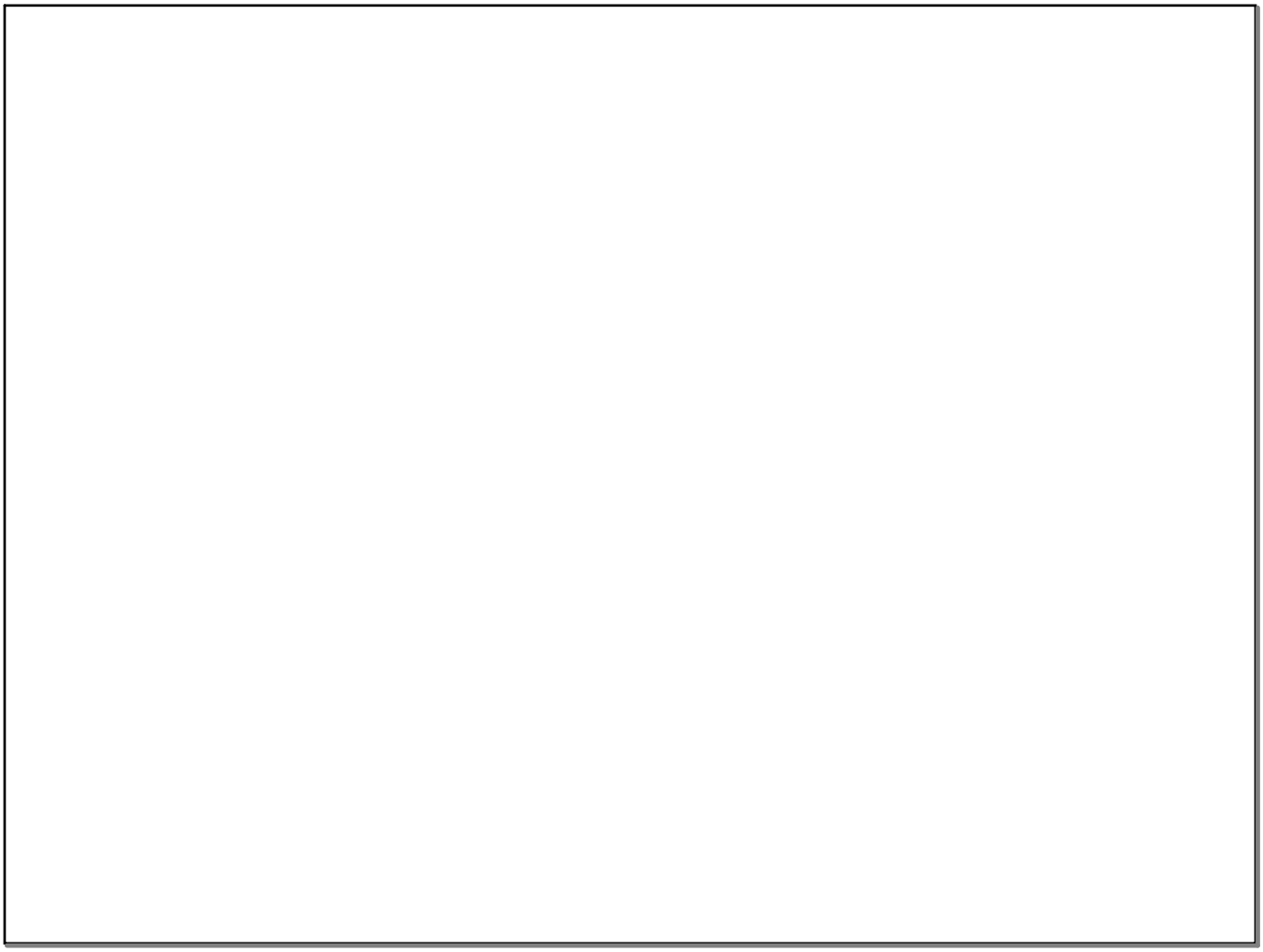
Exit Slip

Prove the diagonals of a square are perpendicular.

Draw a diagram and show your work!

Apr 9-12:54 PM



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