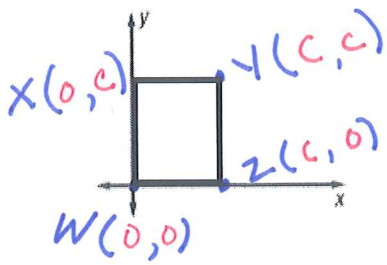
ACCELERATED GEOMETRY

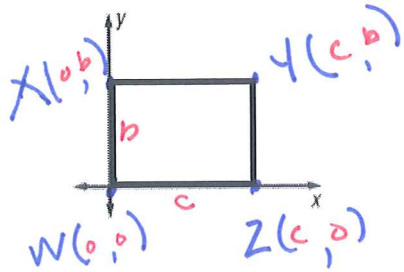
Name: Key

Notes: 6-7 Coordinate Proof with Quadrilaterals

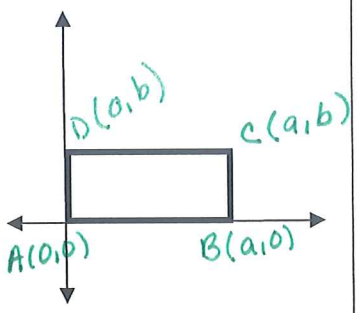
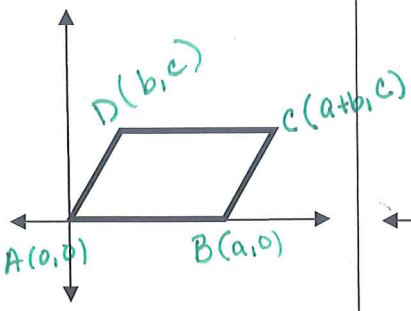
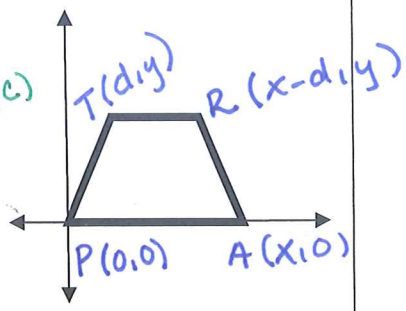
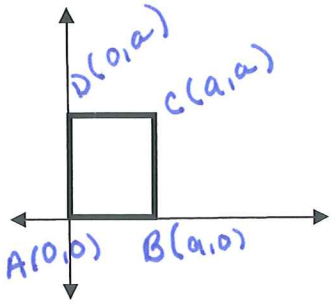
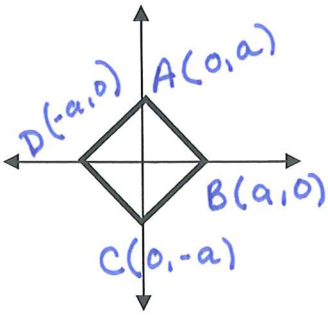
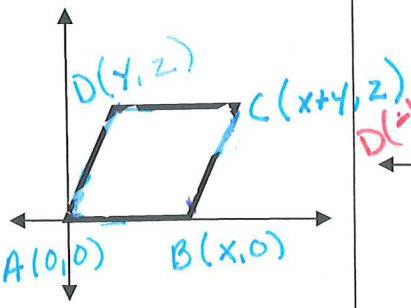
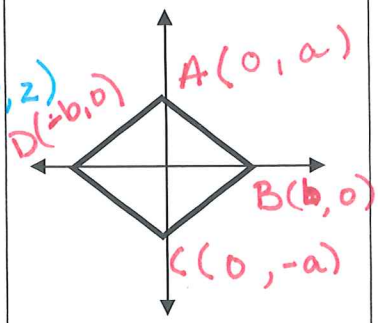
Ex 1.) Using the axis below, sketch square WXYZ with side lengths of length c.



Ex 2.) Using the axis below, sketch Rectangle WXYZ that has the length c and the width of b.



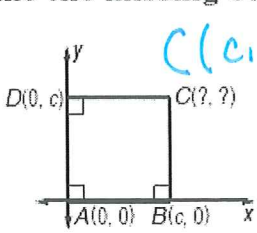
Place and label the following quadrilaterals on the coordinate plane.

Rectangle	Parallelogram	Isosceles Trapezoid	
			
Square	**Square**	**Rhombus**	**Rhombus**
			

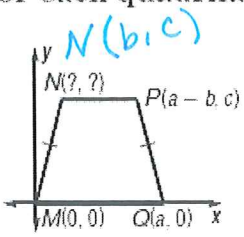
Practice:

Name the missing coordinates for each quadrilateral.

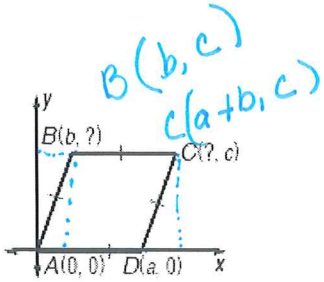
1.



2.

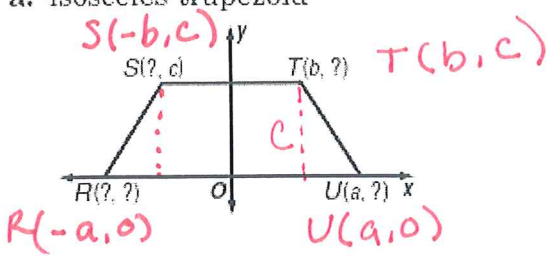


3.

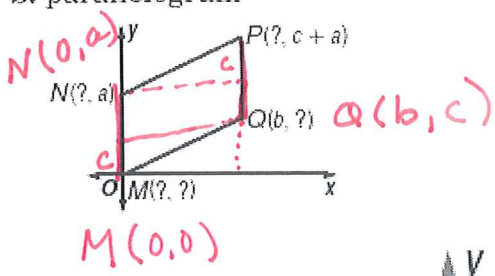


4. Find the missing coordinates in each figure. Then write the coordinates of the four vertices of the quadrilateral.

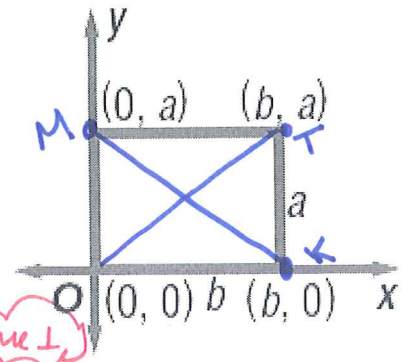
a. isosceles trapezoid



b. parallelogram



5) Prove the following figure is a rectangle.



a) Prove that the opposite sides of a rectangle are parallel and consecutive sides are perpendicular. * as HW!

Slopes

Slope MT = 0

Slope OK = 0

Slope MO = undefined

Slope TK = undefined

∴ op. sides are // and consecutive sides are ⊥ Together

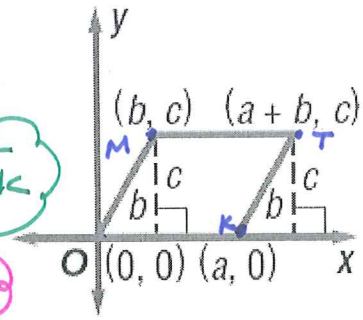
b) Prove that the diagonals of a rectangle are congruent.

$b^2+a^2=OT^2$ $\quad$ $b^2+a^2=MK^2$

$\boxed{\sqrt{b^2+a^2}=OT}$ $\quad$ $\boxed{\sqrt{b^2+a^2}=MK}$

$OT \cong MK$

6) Prove the following figure is a parallelogram.



a) Prove that the opposite sides of a parallelogram are parallel. HW

Slope MT $= \frac{0}{a} = 0$ $\quad$ Slope OM $= \frac{c}{b}$

Slope OK $= \frac{0}{a} = 0$ $\quad$ Slope TK $= \frac{c}{b}$

// $\quad$ // $\quad$ MT // OK, OM // TK

∴ Op. sides are //

b) Prove that the opposite sides of a parallelogram are congruent. HW

$\boxed{MT = a}$ $\cong$ $\boxed{OK = a}$

$OM^2 = b^2+c^2$

$\boxed{OM = \sqrt{b^2+c^2}}$

$TK^2 = b^2+c^2$

$\boxed{TK = \sqrt{b^2+c^2}}$

$\cong$

MT ≅ OK

OM ≅ TK ∴ op. sides of a parallelogram are ≅

c) Prove that the diagonals of a parallelogram bisect each other. Together

Means meet at their midpts = SAME midpt

midpoint of OT

$\left(\frac{0+a+b}{2}, \frac{0+c}{2}\right)$

$\left(\frac{a+b}{2}, \frac{c}{2}\right)$

midpt of MK

$\left(\frac{a+b}{2}, \frac{0+c}{2}\right)$

$\left(\frac{a+b}{2}, \frac{c}{2}\right)$

Same!!

The diags of this Parallelogram intersect at the midpts of the diags. ∴ the diags of a para bisect each other