

Geo H

5.5, 5.7 Rhombus

1) Given: ABCD is a rhombus

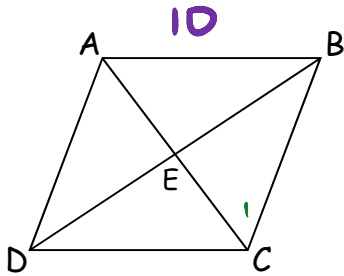
$m\angle AEB = (4x + 10)^\circ$

$AB = \frac{1}{2}x$

$AC = x - 5$

Find: a) Perimeter of ABCD

b) EC



$4x + 10 = 90$

$x = 20$

Perimeter = 40

EC = 7.5

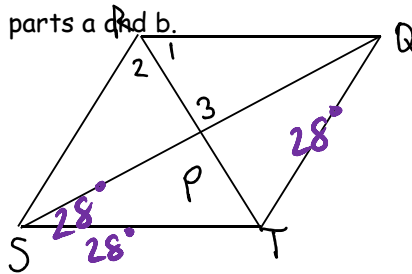
2) Use the diagram at right to answer parts a and b.

a. Given: QRST is a rhombus

$m\angle 3 = (y^2 - 31)^\circ$

Find: y

$y = \pm 11$



$y^2 - 31 = 90$   
 $y = \pm 11$

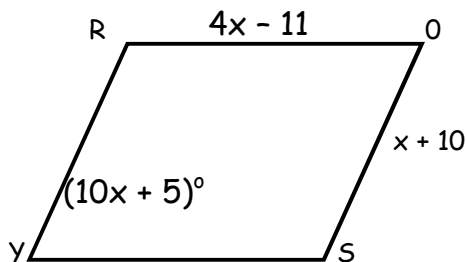
b. Given: QRST is a rhombus

$m\angle RST = 56^\circ$

Find:  $m\angle TQS$

$28^\circ$

3) Rhombus ROSY



$4x - 11 = x + 10$

$3x = 21$

$x = 7$

$x = 7$

$RY = 17$

$x = \underline{\hspace{2cm}}$   $RY = \underline{\hspace{2cm}}$

$m\angle O = \underline{75^\circ}$   $m\angle S = \underline{105^\circ}$

ALGB is a rhombus

$m\angle 1 = 40^\circ$

$m\angle 2 = (x^2 + 26)^\circ$

$m\angle LAB = (x + y + 22)^\circ$

$m\angle GBA = (z + 50)^\circ$

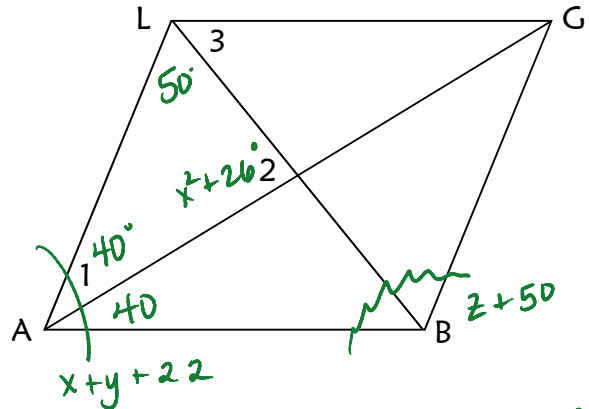
$BG = \sqrt{y + z}$

4)

a. What is the measure of  $\angle 3$ ?

$50^\circ$

b. What is the perimeter of ALGB?



$x^2 + 26 = 90$

$x^2 = 64$

$x = 8$

$x + y + 22 = 80$

$8 + y + 22 = 80$

$y = 50$

$y = 66$

$z + 50 = 100$

$z = 50$

$4 \cdot BG = 4 \cdot \sqrt{100}$

$= 40$

OR  $8\sqrt{29}$

5)

$G = (0, -5)$

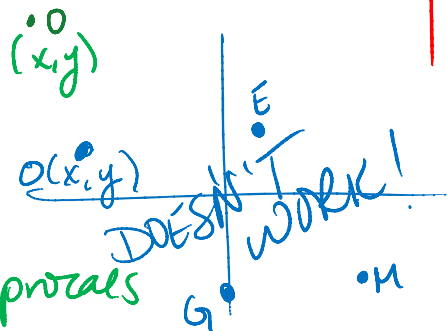
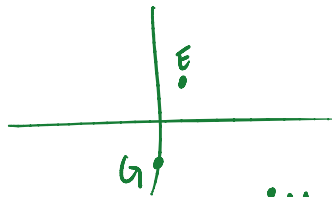
$E = (1, 2)$

$O = (x, y)$

$M = (6, -3)$

a. Do you need to know the coordinates of point O to find the slopes of both diagonals?

NO!



does not guarantee  $\perp$  diagonals

b. Find the slopes of the diagonals.

They should be opposite reciprocals

$m_{GM} = -\frac{1}{3}$     $m_{EO} = 3$

c. Find the coordinates of O.

$m_{GE} = \frac{-5 - 2}{0 - 1} = 7$

$7 = \frac{y + 3}{x - 6}$

$\begin{cases} 7x - 42 = y + 3 \\ -x = 5 + y \end{cases}$

$x = 5, y = -10$

$m_{EM} = \frac{2 - 3}{1 - 6} = \frac{-1}{-5} = \frac{1}{5}$

$\frac{1}{5} = \frac{-5 - y}{0 - x} = \frac{5 + y}{x}$

$\begin{cases} 7x - y = 45 \\ x + y = -5 \end{cases}$

$(5, -10)$