Name: _____

1. Plot and label the following points:
A(-1, 3), B(3, 1), C(1, -2), and D(-3, 0).

What is the shape? __Parallelagram__
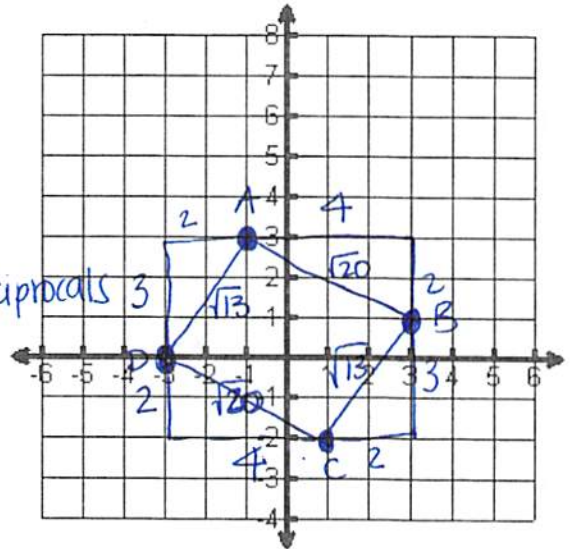
Proof:

$3^2 + 2^2 = c^2$ $2^2 + 4^2 = c^2$ opposite sides
$9 + 4 = c^2$ $4 + 16 = c^2$ $\underset{=}{not}$ opposite Reciprocals
$c = \sqrt{13}$ $c = \sqrt{20}$

length $AB = \sqrt{20}$ $BC = \sqrt{13}$
$CD = \sqrt{20}$ $AD = \sqrt{13}$

slopes: $AB: -2$ $BC: \frac{3}{2}$
$CD: -\frac{1}{2}$ $AP: \frac{3}{2}$

2. If a square has a diagonal of 10in, what is the area
of the square?

$x^2 + x^2 = 10^2$ $x = \sqrt{50}$
$2x^2 = 100$
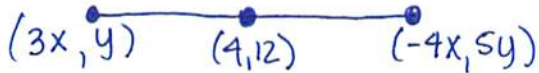$x^2 = 50$ $A = \sqrt{50} \cdot \sqrt{50}$
$\boxed{A = 50 \, in^2}$
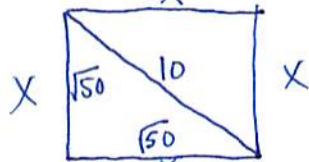
3. What is the perimeter of an isosceles trapezoid if the bases are 5 and 10, and one of the legs is 4?

$4 + 4 + 5 + 10 = 23$ ~~units~~
$\boxed{P = 23 \, units}$

4. If a segment has endpoints of (3x, y) and (-4x, 5y), and a midpoint of (4, 12), solve for x and y.

$(3x, y)$ $(4, 12)$ $(-4x, 5y)$

2. $\frac{3x + 4x}{2} = 4 \cdot 2$ 2. $\frac{y + 5y}{2} = 12 \cdot 2$
$-x = 8$ $6y = 24$
$x = -8$ $y = 4$

X = __-8__   Y = __4__

What are the coordinates of the endpoints? __(-24, 4)__   __(32, 20)__

5. Partition segment AB such that the ratio of A to B is 5 to 4 if point A is (-3, 1) and B is (15, 10)

$\left((15+3)\left(\frac{5}{9}\right) + -3, \ (10-1)\left(\frac{5}{9}\right) + 1 \right)$ $\boxed{(7, 6)}$

6. Find the equation of a line perpendicular to 2x + 3y = 5 that goes through (2, 1)

$\frac{3y}{3} = \frac{-2x}{3} + \frac{5}{3}$ $m = \frac{3}{2}$ $\boxed{y = \frac{3}{2}x - 2}$

$y = -\frac{2}{3}x + \frac{5}{3}$ $1 = \frac{3}{2}(2) + b$

$1 = 3 + b$
$b = -2$