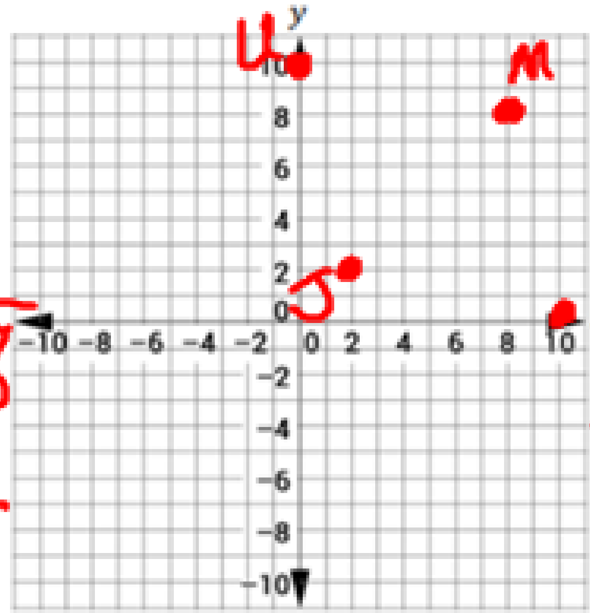
Consider the information below.

Given: $J(2,2), U(0,10), M(8,8), P(10,0)$.
Prove: $JUMP$ is a rhombus



$JU = \sqrt{(2-0)^2 + (2-10)^2}$

$= \sqrt{2^2 + (-8)^2}$

$= \sqrt{4 + 64} = \sqrt{68}$

$UM = \sqrt{(0-8)^2 + (10-8)^2}$

$= \sqrt{(-8)^2 + (2)^2}$

$= \sqrt{64 + 4} = \sqrt{68}$

$MP = \sqrt{(8-10)^2 + (8-0)^2}$

$= \sqrt{(-2)^2 + 8^2}$

$= \sqrt{4 + 64} = \sqrt{68}$

$JP = \sqrt{(2-10)^2 + (2-0)^2}$

$= \sqrt{(-8)^2 + 2^2}$

$= \sqrt{64 + 4} = \sqrt{68}$

$\overline{JU} \cong \overline{UM} \cong \overline{MP} = \overline{JP}$

by Def Jump is a Rhombus

Quadrilateral $GRIT$ has coordinates $G(10,8)$, $R(10,20)$, $I(18,20)$, and $T(18,8)$.

Part A: Circle the correct answer that completes the statement below.

$GRIT$ is a rectangle | rhombus | isosceles trapezoid.

Part B: Which of the following statements is enough to justify your answer?

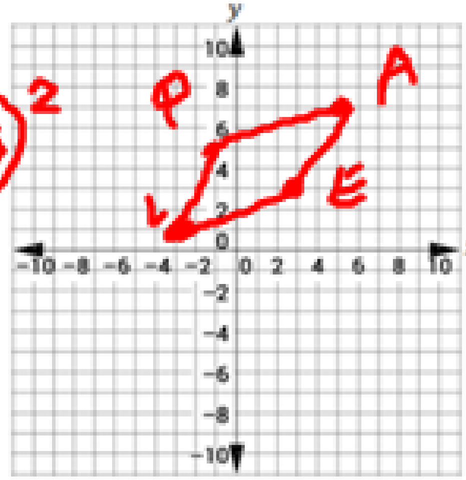
- Ⓐ $GRIT$ has four right angles and two pairs of congruent sides.
- Ⓑ $GRIT$ has opposite angles that are congruent but not right angles.
- Ⓒ $GRIT$ has diagonals that intersect at $90°$.
- Ⓓ $GRIT$ has one pair of parallel opposite sides and one pair of non-parallel but congruent sides.

2. Prove that quadrilateral $LEAP$ with vertices $L(-3,1), E(3,3)$, $A(5,7)$, and $P(-1,5)$ is a parallelogram.

$LP = \sqrt{(-3+1)^2+(1-5)^2}$

$= \sqrt{(-2)^2+(-4)^2}$

$= \sqrt{4+16} = \sqrt{20}$



$LE = \sqrt{(-3-3)^2+(1-3)^2}$

$= \sqrt{(-6)^2+(-2)^2}$

$= \sqrt{36+4} = \sqrt{40}$

$LE = \frac{2}{6} = \frac{1}{3}$

$LP = \frac{4}{2} = 2$

$EA = \frac{4}{2} = 2$

Which of the following statements help to prove that $LEAP$ is a parallelogram? Select all that apply.

- [x] $LE = 2\sqrt{10}$, $EA = 2\sqrt{5}$, $AP = 2\sqrt{10}$, $LP = 2\sqrt{5}$, so $\overline{LE} \cong \overline{AP}$ and $\overline{EA} \cong \overline{LP}$. Opposite sides of a parallelogram are congruent.
- [ ] $LE = EA = AP = LP = 2\sqrt{10}$, so $\overline{LE} \cong \overline{EA} \cong \overline{AP} \cong \overline{LP}$. All sides are congruent, depicting a square, which is a type of parallelogram.
- [x] The slope of $\overline{LE}$ and $\overline{AP}$ is $\frac{1}{3}$. The slope of $\overline{EA}$ and $\overline{LP}$ is 2. Since $\overline{LE} \parallel \overline{AP}$ and $\overline{EA} \parallel \overline{LP}$, opposite sides of a parallelogram are parallel.
- [ ] The slope of $\overline{LE}$ and $\overline{AP}$ is $\frac{1}{3}$. Since $\overline{LE} \parallel \overline{AP}$, parallelograms have one pair of parallel sides.
- [ ] The slope of $\overline{LE}$ and $\overline{AP}$ is $\frac{1}{3}$, while the slope of $\overline{EA}$ and $\overline{LP}$ is -3. These slopes are opposite reciprocals of each other, so $LEAP$ is a rectangle, which is a type of parallelogram.