

Name _____ Per _____

LO: I can find slopes and distances for pairs of points and use them to identify congruent segments and parallel segments on a graph.

DO NOW On the back of this packet

(1) **How can we use right triangles to write coordinate plane proofs? Slope Distance Midpoint**

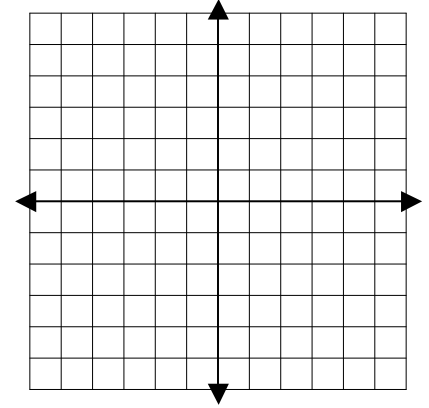
calculator

Graph segment PQ with points P(-5,6) and Q(3,2). Find the slope, distance from P to Q and the midpoint of PQ.

(a) **SLOPE** Slope is the $\frac{\text{rise}}{\text{run}}$ or the $\frac{\text{vertical change}}{\text{horizontal change}}$

(i) Find the slope of PQ using the graph: $m = \underline{\hspace{2cm}}$

(ii) Find the slope of PQ algebraically: $m = \underline{\hspace{2cm}}$



Ms. Lomac's shortcut

Algebraic formula

P(-5,6) Q(3,2)

P(-5,6) Q(3,2)

Slope $m = \frac{y_2 - y_1}{x_2 - x_1}$

(b) **DISTANCE** Use the slope triangle to determine the length of PQ which is also the **distance** from P to Q. PQ is a _____ of a right triangle so we can find the length PQ with the Pythagorean Theorem which states: _____

Distance $a^2 + b^2 = c^2$

(c) **MIDPOINT** Find the midpoint by finding the middle value for the x-coordinates and the middle value for the y-coordinates.

(i) Find the midpoint of PQ using the graph: $m = \underline{\hspace{2cm}}$

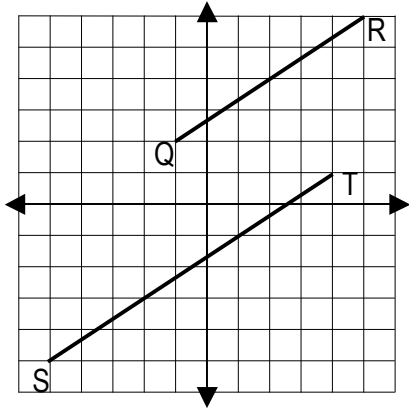
(ii) Find the midpoint of PQ algebraically: $m = \underline{\hspace{2cm}}$

P(-5,6) Q(3,2)

Midpoint $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$

(2)
calculator

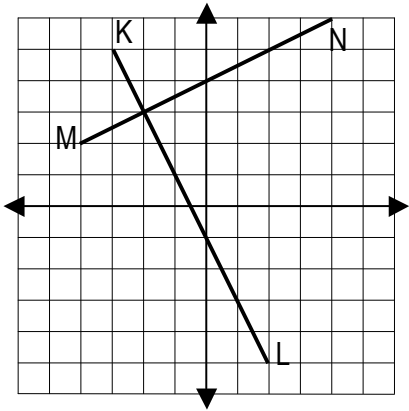
Coordinate Grids: How can we use right triangles? SLOPE



(a) What is the slope of each segment?

QR: _____ ST: _____

(b) The segments are _____ because they have _____ slope but are not the same line.

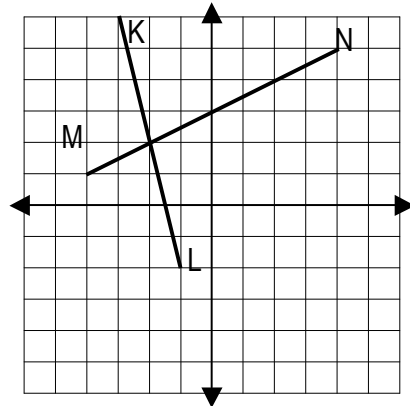
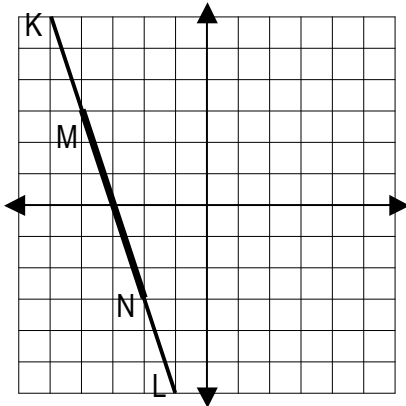


(c) What is the slope of each segment?

(d) The segments are _____ because they have _____ slope.

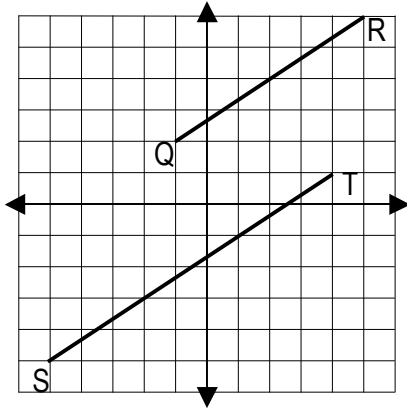
(e) Segments can also be:

OR

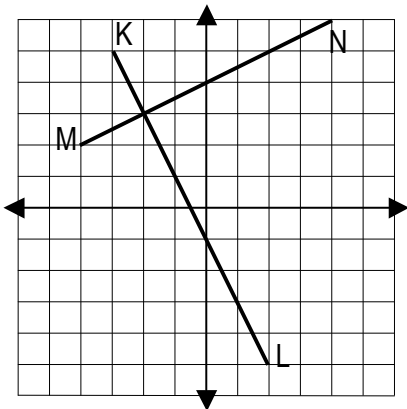


(3)
calculator

Coordinate Grids: How can we use right triangles? EQUAL SEGMENTS



(a) Are segments ST and QR congruent? What would be sufficient evidence to prove this?



(b) Are segments MN and KL congruent? Provide sufficient evidence.

(4)
calculator

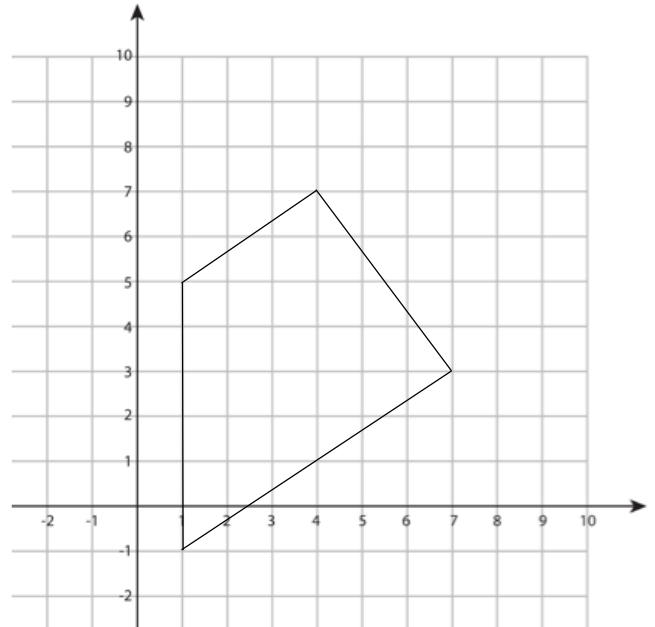
Coordinate Grids: What can we prove with distance (length) and slope?

Quadrilateral KATE has vertices $K(1,5)$, $A(4,7)$, $T(7,3)$, and $E(1,-1)$.

(a) Label KATE on the graph.

(b) Prove that KATE is a trapezoid.

Think, what makes a trapezoid a trapezoid?

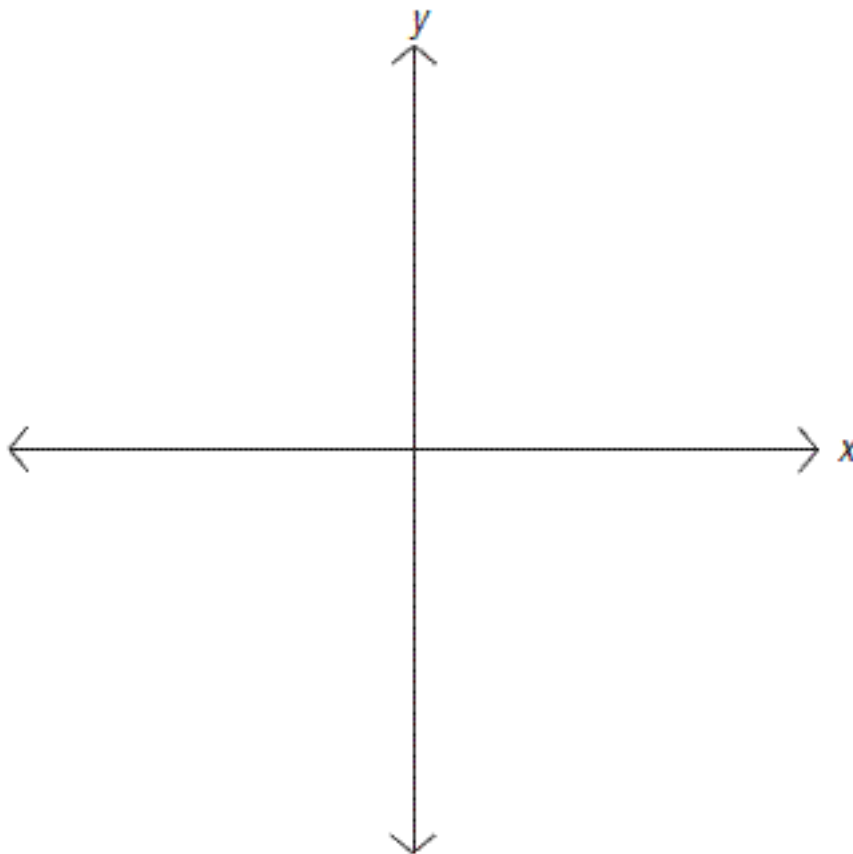


(c) Prove that KATE is *not* an isosceles trapezoid.

Think, what makes it isosceles?

(5)
calculator**Coordinate Grids: What can we prove with distance (length) and slope?**

A triangle has vertices $Q(148,73)$, $R(40,-8)$, $S(121,-116)$. Classify the triangle as specifically as possible. Provide sufficient evidence to prove your claim.



(6)
calculator

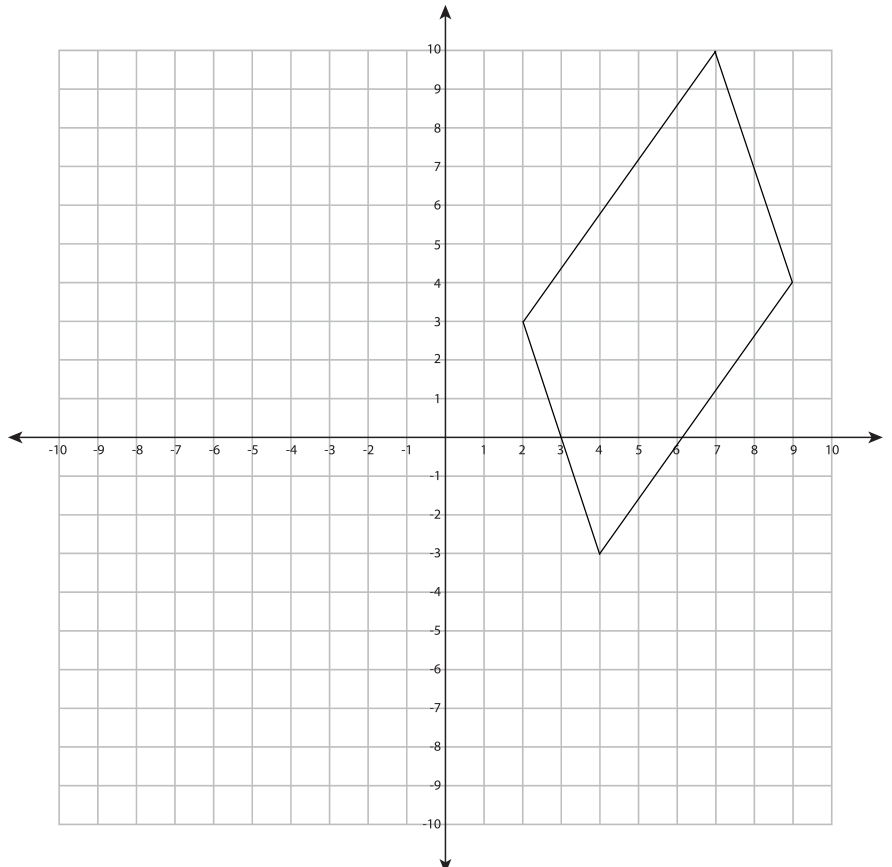
Coordinate Grids: What can we prove with distance (length) and slope?

Quadrilateral ABCD has vertices $A(2,3)$, $B(7,10)$, $C(9,4)$ and $D(4,-3)$.

Prove that ABCD is a parallelogram but not a rhombus.

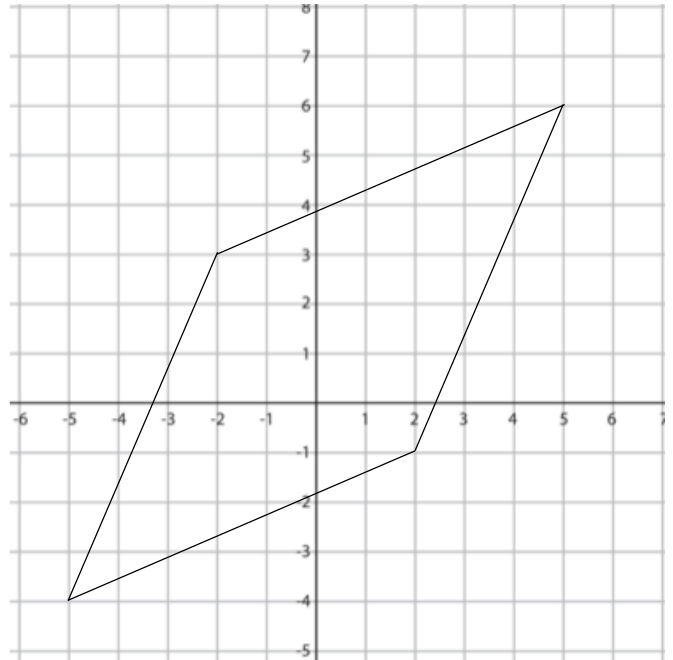
First, think, what makes a parallelogram a parallelogram?

Then, think, what makes a rhombus a rhombus?



(7)
calculator**Coordinate Grids: What can we prove with distance (length) and slope?**Quadrilateral TEAM has vertices $T(-2,3)$, $E(-5,-4)$, $A(2,-1)$ and $M(5,6)$.

- (a) Label TEAM on the graph.
- (b) Prove that TEAM is a rhombus but not a square

Think, what makes a rhombus a rhombus?**Think, what makes a square a square?**

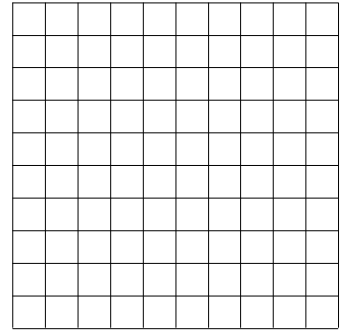
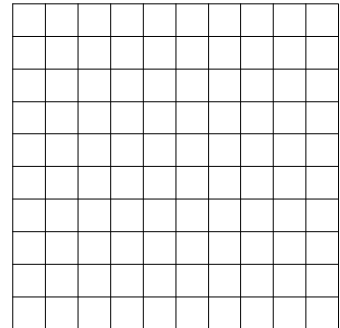
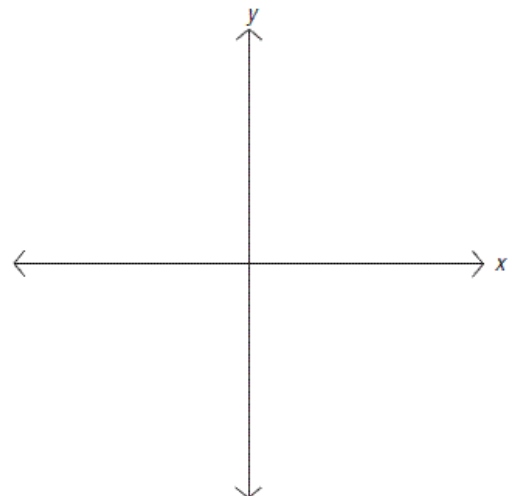
(8) **Exit Ticket**

calculator

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 (9) **Homework**

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Provide sufficient evidence for each response. (1) Is PQRS a parallelogram? $P(1,1)$, $Q(2,4)$, $R(5,6)$ and $S(4,3)$  (2) What kind of triangle is DAN? $D(-10,4)$, $A(-4,1)$, and $N(-2,5)$  (2) Is ABCD a rectangle? $A(74,37)$, $B(37,111)$, $C(-185,0)$ and $D(-111,74)$ 

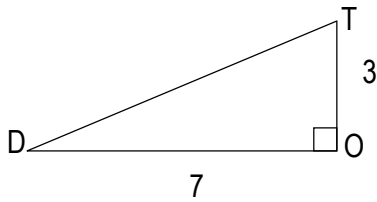
Exit Ticket **Name** _____ **Date** _____ **Per** _____ **8.1R**

(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

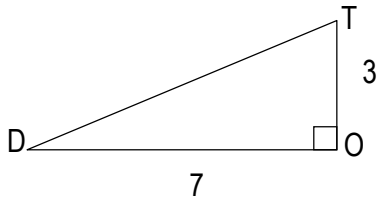
(1) Find the slope, length, and midpoint of the segment QB connecting $Q(-130,73)$ and $B(220, 23)$.
Provide sufficient evidence.

(2) Is QB from problem 1 parallel, perpendicular, or neither to segment DJ that connects $D(2,1)$ and $J(3,8)$?
Provide sufficient evidence.

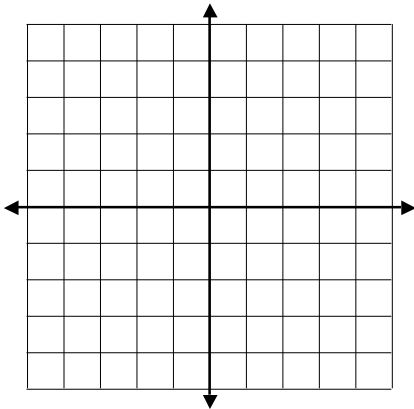
(1) Write an equation we can use to find the length of \overline{DT} . DO NOT SOLVE THE EQUATION.



(2) Write an equation we can use to find the measure of $\angle D$. DO NOT SOLVE THE EQUATION.



(3) Graph, label, and connect the points $D(-2, -1)$ and $T(5, 2)$.



(4) In problem #3, can we find the length of DT and the measure of angle D in the same way that we did in problems 1 and 2? How?

(5) What about the cartoon below is supposed to make people smile?

