(DN) ON BACK OF PACKET

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.
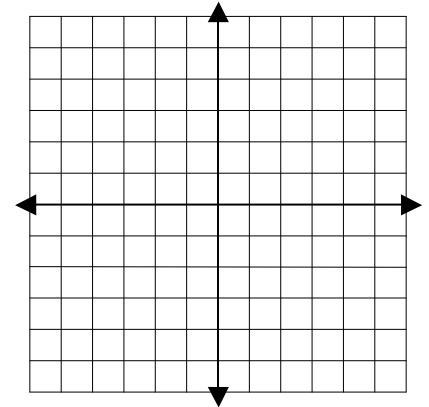
☐ (1)   **How can we use right triangles to write coordinate plane proofs? Slope Distance Midpoint**
calculator
Graph segment PQ with points P(–5,6) and Q(3,2). Find the slope, distance from P to Q and the midpoint of PQ.

(a) Slope is the $\dfrac{rise}{run}$ or the $\dfrac{vertical\ change}{horizontal\ change}$

   (i) Find the slope of PQ using the graph: m = _____

   (ii) Find the slope of PQ algebraically: m = _____

         Ms. Lomac's shortcut   Algebraic formula

         P(–5,6) Q(3,2)   P(–5,6) Q(3,2)   **Slope** $m = \dfrac{y_2 - y_1}{x_2 - x_1}$

(b) 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.

(c) 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 = _____

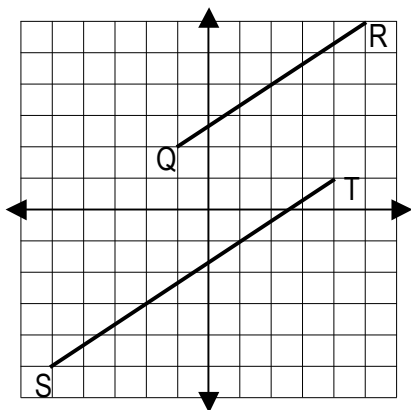   (ii) Find the midpoint of PQ algebraically: m = _____   **Midpoint** $\left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2} \right)$

                    P(–5,6) Q(3,2)
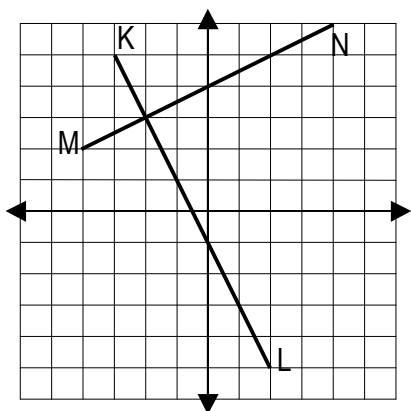
☐ (2) **Coordinate Grids: How can we use right triangles? SLOPE**
calculator

☐ (a) What is the slope of each segment?

QR: _____   ST:_____

☐ (b) The segments are _____ because they have

_____ slope but are not the same line.
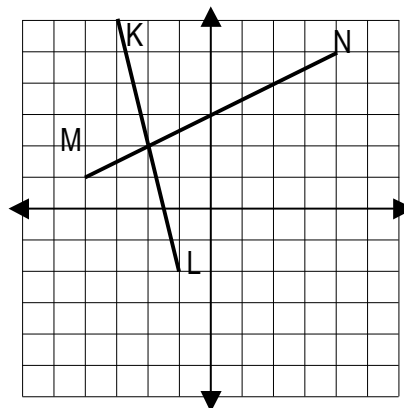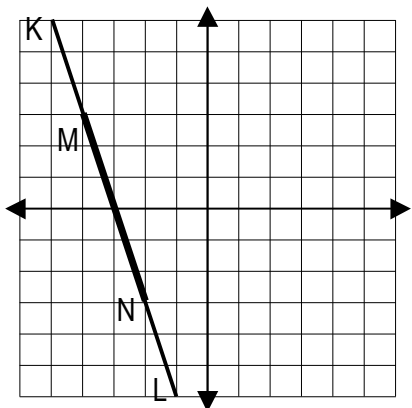
☐ (c) What is the slope of each segment?
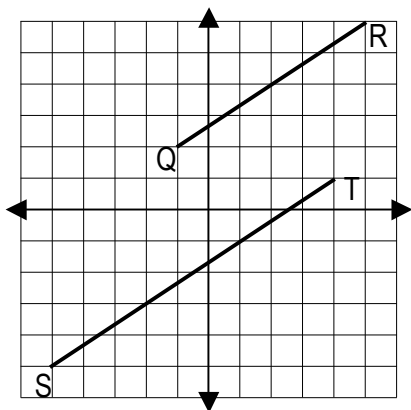
☐ (d) The segments are _____ because they have

_____ _____ slope.

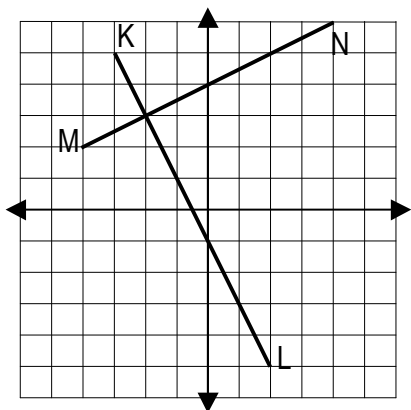☐ (e) Segments can also be:

_____ OR _____

☐ (3) **Coordinate Grids: How can we use right triangles? EQUAL SEGMENTS**
calculator

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

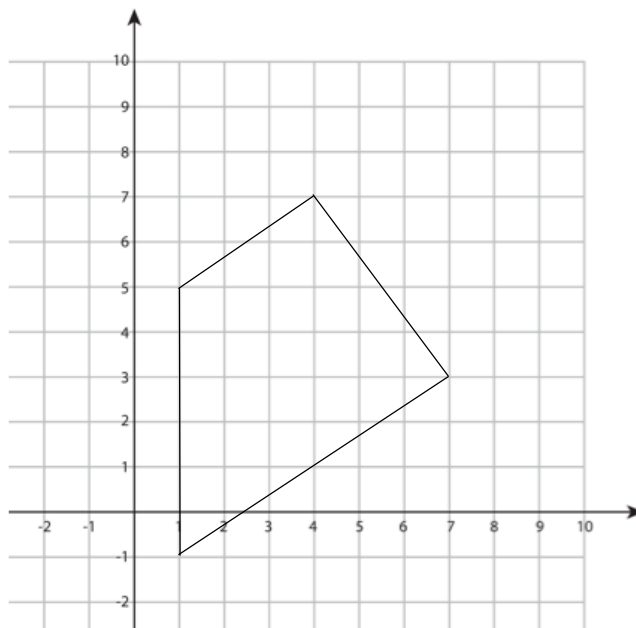☐ (b) Are segments MN and KL congruent? Provide sufficient evidence.

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

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.
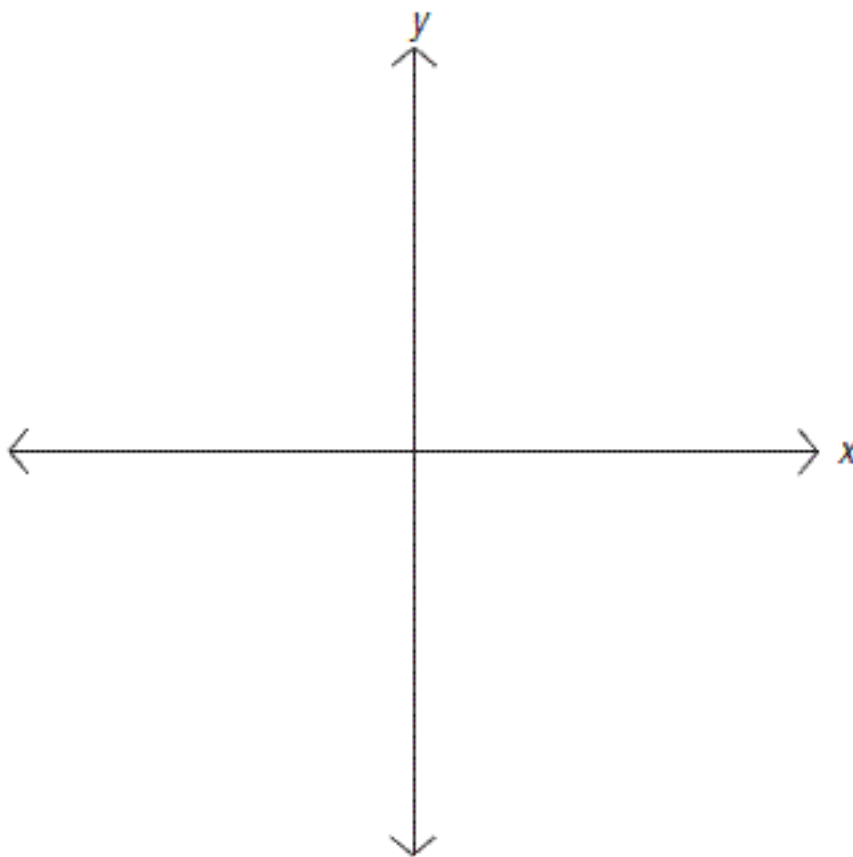**Think, what makes a trapezoid a trapezoid?**

☐ (c) Prove that KATE is *not* an isosceles trapezoid.
Think, what makes it isosceles?

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

calculator

☐ 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.
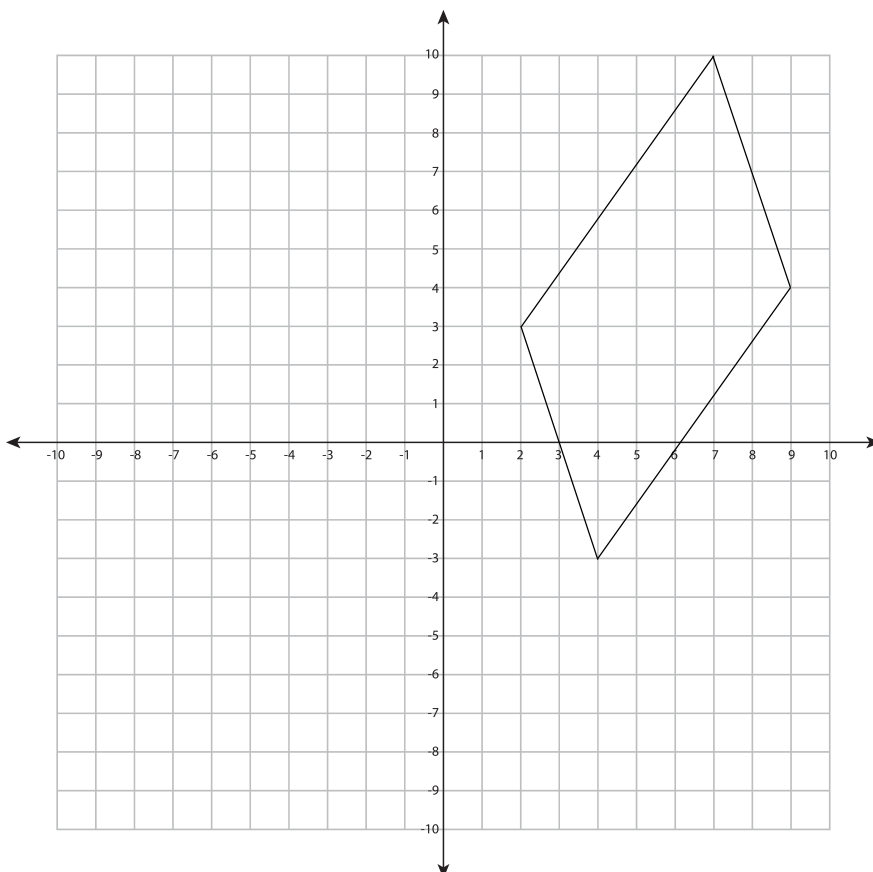
☐ (6)
calculator

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?

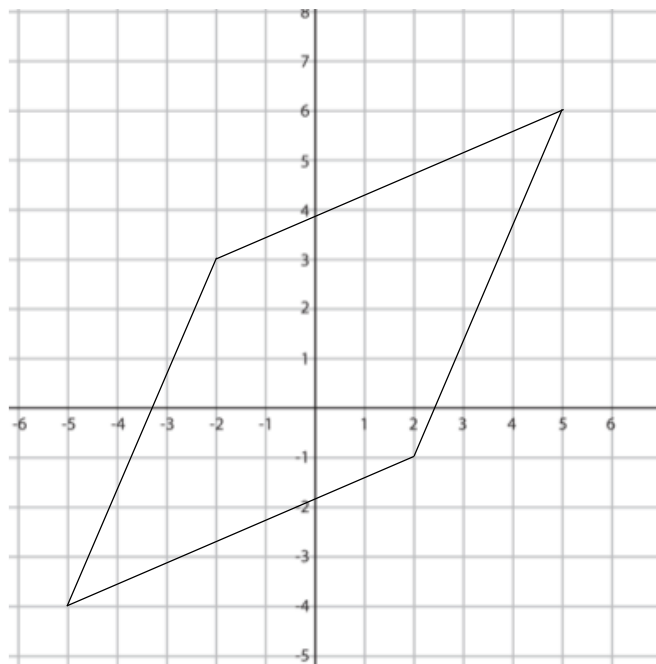☐ (7)   **Coordinate Grids: What can we prove with distance (length) and slope?**

calculator

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?
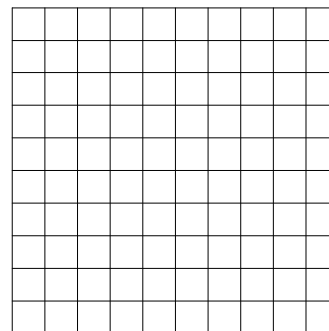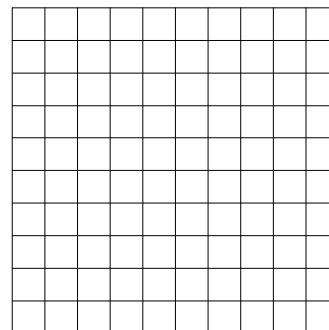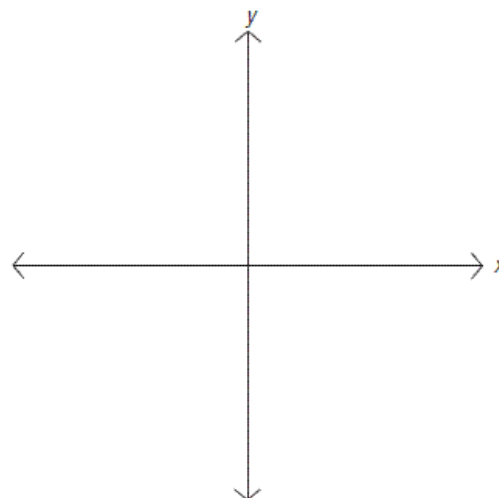
Think, what makes a square a square?

☐ (8) **Exit Ticket**
calculator

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☐ (9) **Homework**
calculator

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)

(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)
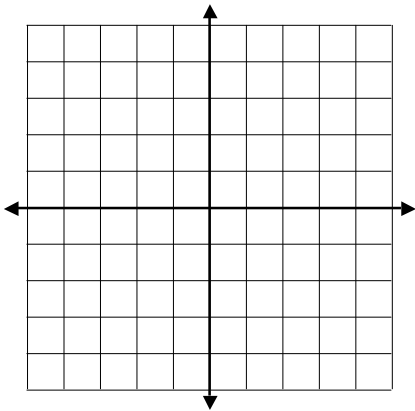Provide sufficient evidence.

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

```
        T
        |
        | 3
        |
D_____|O
    7
```
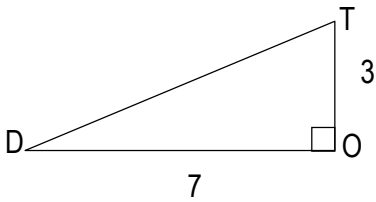
(2) Write an equation we can use to find the measure of ∠D. DO NOT SOLVE THE EQUATION.

```
         T
        /|
       / | 3
      /  |
D____/___|O
    7
```
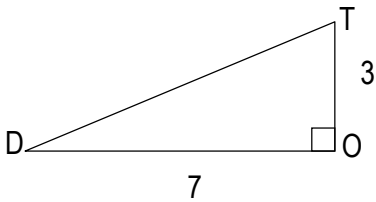
(3) Graph, label, and connect the points D(–2, –1) and T(5,2).

(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?

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