What is found in an Engaging Mathematics TEKS-based activity?

Each activity addresses a specific student expectation that is reflected in the content objective.

Common classroom materials are used for ease of preparation. Materials are listed 1-per-student unless otherwise noted. Page titles for student handouts are represented with bold font.

Students should have continuous access to graphing technology and reference materials.

Facilitation questions are provided for teacher use when supporting student thinking and discourse.

Making Conjectures about Figures, Activity 2
G(5)(A)

Activity Objective
The student will determine the validity of a conjecture about properties related to the diagonals of parallelograms.

Materials
- **With Which Conjecture Do You Agree?**
- Patty paper (optional)

Facilitation Questions
- **What are the characteristics of a parallelogram? What quadrilaterals are parallelograms?**
  A parallelogram has two pairs of parallel sides. Rectangles, squares, and rhombi are all parallelograms.
- **How can it be determined if two segments are congruent?**
  A figure will have tick marks on the segments that are congruent.
- **How can it be determined if two segments are perpendicular?**
  Two segments are perpendicular if a right angle is formed where the segments intersect.
- **How can it be determined if two segments bisect each other?**
  Two segments bisect each other if the segments intersect at the midpoint of both segments.

Answer
Answers may vary.
I agree with conjecture 3 because *when each parallelogram is traced onto patty paper and folded along the diagonals, the midpoint for each diagonal is the intersection of the diagonals.*

I disagree with conjecture 1 because *when each diagonal was sketched onto patty paper they were not the same length for the rhombus or the first parallelogram. I disagree with conjecture 2 because when each diagonal was sketched onto patty paper, they were only perpendicular for the square. I disagree with conjecture 3 because when each diagonal was sketched onto patty paper and the paper was folded on the diagonal, the angles did not match in the parallelogram or the rectangle.*

An answer key is included for each activity.

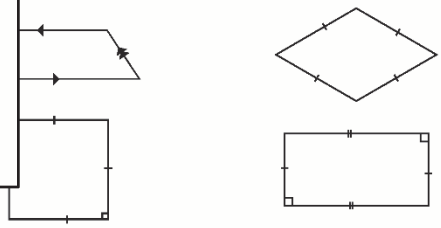
Date: _____

With Which Conjecture Do You Agree?

Mr. Smith's geometry class were asked to write a conjecture about the parallelograms. The following conjectures were written.

diagonals of a parallelogram are congruent.
diagonals of a parallelogram are perpendicular.
diagonals of a parallelogram bisect each other.
diagonals of a parallelogram bisect the angles whose vertices they connect.

parallelograms shown below to test each conjecture.



I agree with conjecture(s) _____ because . . .

I disagree with conjecture(s) _____ because . . .

Communicating about Mathematics
Are you able to determine if the conjecture with which you agreed is always true? Why or why not?

Each activity includes an opportunity for students to articulate and summarize aspects of their learning.