

Investigations in Geometry

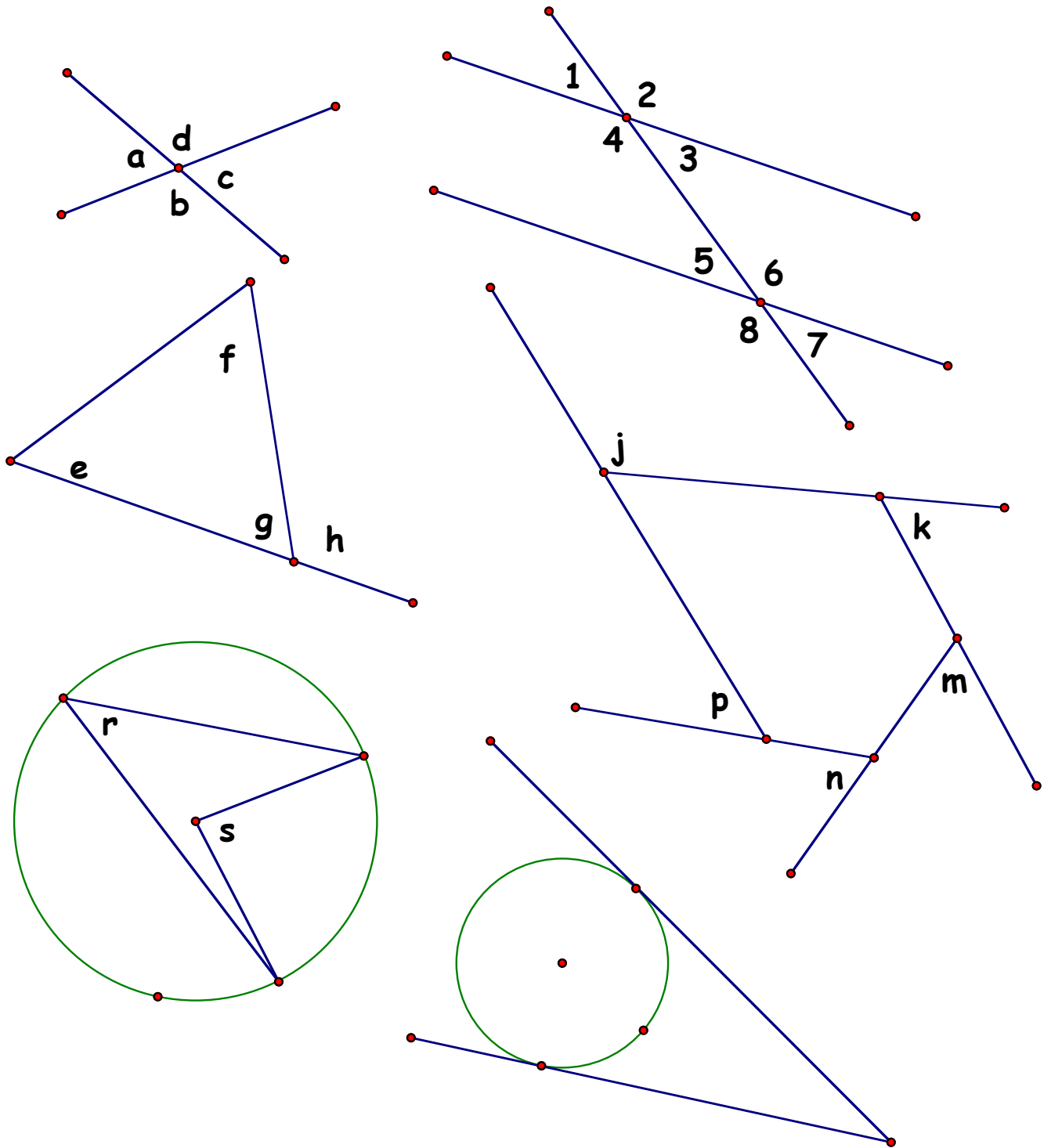
With and without videos

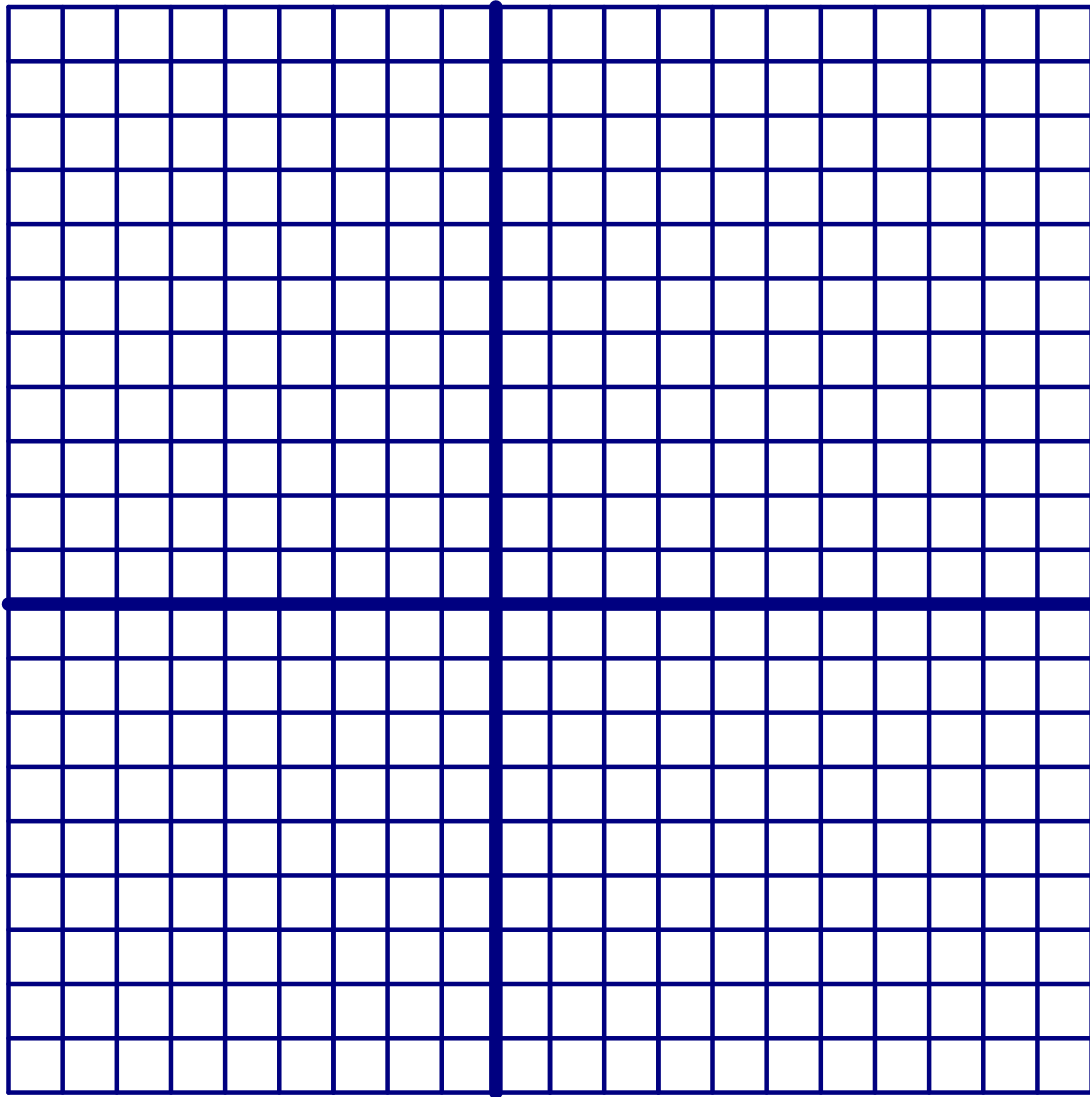
TODOS Conference

Chandler, AZ

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Patty Paper Discoveries





Discovering Geometry® Video Series

I. Teacher Prep

- A. The teacher might watch the video investigation at home as he prepares his lesson for the next day. By watching the video the teacher gains a clear understanding of the materials to have ready, the points in the lesson that may need more scaffolding, what vocabulary review may be necessary, or even suggests alternate tools. The teacher watching all the investigations of the day's lesson can better decide whether to use *Pair-Share* or *Jigsaw* for their cooperative learning mode of instruction.
- B. Geometry teachers sharing prep periods can view the video investigations while discussing lesson plans. Encourages math department collegiality.

II. In-class lesson

- A. If students have one laptop with Internet connection for their group they can view the investigations for the day with their geometry tools in hand and follow along doing the investigation, stopping and starting as necessary.
- B. If the teacher has one laptop with Internet connection the class can view the day's investigations by using an LCD projector. The teacher observes students and stops and starts the video as students follow along doing the investigation with their geometry tools. As the semester progresses and students get better at the investigative process, the teacher might decide to stop the video at earlier and earlier points, leaving the students to complete the investigations without seeing the entire video.
- C. If the teacher has one laptop with Internet connection the class can view the day's investigation by using an LCD projector. The teacher starts the video as students watch. When she feels the students understand what they are going to do in the investigation, she can stop the video. Once students have completed their investigations and made their conjectures the teacher has the option to resume the video at any time for students to compare their results.

III. "Flipped" instruction

- A. Students can go online at home and watch the assigned video. They follow along with the video doing the investigation and making their conjecture. They can check their results with other classmates through their social media. A positive feature of the video lesson is that they can use the pause, rewind, and fast-forward buttons to learn at their own pace. Students no longer have to spend 45-60 minutes on exercises without someone to help.
- B. Teachers do not have to create their own videos to start "flipped" instruction. These videos cover all the properties of a traditional high school geometry course. Class begins with students sharing what the investigations were about and what were their conjectures. Then the teacher can model the application of the conjecture, moving from cooperative group to cooperative group giving guidance and support. Student then present some of their problem solving approaches to the entire class.

IV. Absent students or for student review

- A. Students that are absent can look at the video investigations at home prior to returning to class. If a student needs to review "how" a conjecture was discovered or even "why" the conjecture is true they can return to the video and clarify their understanding.

V. English Language Learners

- A. The videos can be a useful audio visual aid for students learning English. ELL students can watch the video, understand what is being done, and hear it in English.
- B. Students can also turn off the narration and the videos can be used, as intended, as a tool for inquiry based instruction. Students or teachers can stop and start the videos as needed as they follow along doing the investigations.
- C. The videos are now available in English and Spanish.

VI. Professional Development for School Districts

- A. When a school or district adopts *Discovering Geometry*, or are creating their own inquiry-based curriculum, the videos can be a powerful, quick and easy tool during professional development workshops to model the discovery approach.

VII. "Back to School Night"

- A. On "Open House" or "Back to School Night" teachers can show parents what students are doing in their investigations and if instruction has been "flipped" explain why they are "no longer doing homework" but are instead watching geometry videos.

Please visit our website www.michaelserra.net or contact us at mserramath@gmail.com for subscription information on the *Discovering Geometry® Video Series*.

My textbook, *Discovering Geometry An Investigative Approach*, covers the majority of the geometry investigations and is published by Kendall Hunt Publishing.