



Led by Dr. Thomas J. Clark

1) Let's play Zendo:



Zendo Turn Summary

- Build a New Structure
- Choose "Tell" or "Quiz"
- Guess the Rule, or Pass

Attribute Possibilities

(not a complete list)

Color:

- blue
- yellow
- red

Quantity:

- zero
- at least 1
- exactly 1
- exactly 2
- exactly 3

Shape:

- pyramid
- wedge
- block

Orientation:

- flat
- vertical
- upright
- upside-down
- weird

Interaction:

- touching / not touching
- grounded / ungrounded
- pointing / not pointing
- one on top of another
- more of a certain type

See
Book 2
for full
definitions



- a. Attributes
 - i. Color: yellow, red, blue.
 - ii. Shape: pyramid, block, wedge.
 - iii. Number: of (description) pieces.
 - iv. Exactly/At Least:
 - v. Touching:
 - vi. Grounded/Ungrounded: resting on the table or not.
 - vii. Orientation:
 - 1. Upright: base down.
 - 2. Upside down: base up.
 - 3. Flat: on side.
 - 4. Weird: none of the above.
 - viii. Vertical: Upright or Upside down.
 - ix. Direction: multiple pieces aligned in a direction.
 - x. Cheesecake/doorstop: wedges on side have two options.
 - xi. Pointing:
 - 1. Blocks point in a beam.
 - 2. Wedges point in a ray.
 - 3. Pyramids point in a line.
 - xii. Nested: a pyramid fully within another piece.
 - xiii. Inside: a piece partially pushed through the open base of another.
 - xiv. Height: distance to topmost point.
 - xv. On Top: a piece setting on top of another.
 - xvi. Plurality: e.g., red more than any other color.
 - xvii. Majority: e.g., red more than all other colors combined.
 - b. Rules:
 - i. Moderator chooses a secret rule – use two clips to select attributes.
 - ii. Moderator builds two structures.
 - 1. One follows the rule – white token.
 - 2. One doesn't – black token.
 - iii. Players take turns building a structure.
 - 1. Tell: Moderator marks white or black.
 - 2. Quiz: Players guess, moderator marks, winners get a guess cube.
 - 3. Optional: Make one or more guesses at the rule – must pay a guess cube.
 - a. Guess is correct – Win.
 - b. Guess is incorrect – Moderator disproves:
 - i. Build a structure that satisfies guess but is incorrect.
 - ii. Build a valid structure that does not satisfy guess.
- 2) Think about the following questions as you play:
- a. Are you reasoning inductively or deductively?
 - b. How are you being creative?
 - c. How are you prioritizing your guess?
 - d. How are you drawing inferences?
 - e. How could this be easier/harder?
 - f. How are you improving?
 - g. How is this mathematical?



4) Mathematical Zendo – With Geometric Shapes

a. Example 1: Secret Rule – “A polygon with an odd number of sides.”

b. Example 2: Secret Rule – “A polygon with area equal to 12 square units.” (use graph paper)

c. What are some attributes we could use for Geometry Zendo?

d. Play Geometry Zendo

- i. Are you reasoning inductively or deductively?
- ii. How are you being creative?
- iii. How are you prioritizing your guess?
- iv. How are you drawing inferences?
- v. How could this be easier/harder?
- vi. How are you improving?
- vii. How is this mathematical?



5) Mathematical Zendo – With Functions

a. Example 1: Secret Rule – “Function has a y-intercept of 3.”

b. Example 2: Secret Rule – “Function has a positive slope at $x=2$.”

c. What are some attributes we could use for Function Zendo?

d. Play Function Zendo

- i. Are you reasoning inductively or deductively?
- ii. How are you being creative?
- iii. How are you prioritizing your guess?
- iv. How are you drawing inferences?
- v. How could this be easier/harder?
- vi. How are you improving?
- vii. How is this mathematical?



6) Wrapping up:

a. What did you notice? What did you wonder?

b. How could you use some version of this in your class?

c. What standards might this activity hit, either content or process standards?

d. What questions do you have?

e. Other Resources:

- i. <https://www.looneylabs.com/lit/rules/zendo-rules-getting-started>
- ii. <https://www.looneylabs.com/lit/rules/zendo-rules-going-deeper>
- iii. <https://sites.google.com/view/mathematicalzendo/honors-thesis?authuser=0>