***Zukei Puzzles*** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Zukei Puzzles are logic puzzles originally created by a Japanese person named Naoki Inaba, and I have added a few of my own. In each case, you need to connect 3 or 4 of the dots to create the indicated shape. Note – there will be some MPM1D-related follow-up!

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| --- | --- | --- |
| 1. | 2.  | 3.  |
| 4.  | 5.  | 6.  |
| 7.  | 8.  | 9.  |
| 10.  | 11.  | 12.  |
| 13.  | 14.  | 15.  |
| 16. | 17.  | 18.  |
| 19.  | 20.  | 21.  |

***Zukei Puzzles - Follow up***

Recall: 

1. Consider Zukei puzzles #7, 11 and 21, which are all either parallelograms or rhombuses. Determine the slope of each side of each shape.

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| Puzzle #7 | Puzzle #11 | Puzzle #21 |

2. How many pairs of parallel sides does a parallelogram and rhombus have? How do your slopes from question #1 support this?

3. Consider Zukei puzzles #8, 18 and 19, which are all trapezoids. Determine the slope of each side of each shape. Remember to reduce each fraction.

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| Puzzle #8 | Puzzle #18 | Puzzle #19 |

4. How many pairs of parallel sides does a trapezoid have? How do your slopes from question #3 support this?

5. Consider Zukei puzzles #4, 15 and 17, which are all squares or rectangles. Determine the slope of each side of each shape. Remember to reduce each fraction.

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| Puzzle #4 | Puzzle #15 | Puzzle #17 |

6. How many pairs of parallel sides do squares and rectangles have? How do your slopes from question #5 support this?

7. Squares and rectangles have sides that meet at 90°. We say the lines are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Examine the slopes you determined in question #5. Suggest how we might be able to tell whether lines are perpendicular from their slopes.

8. Determine the slopes for the rectangle in puzzle #3 below. Do these slopes make sense given your response in question #7? Why/why not?


9. Two students say they’ve found a right angle triangle in #6. Use slopes to determine which is correct.
 Solution #1 Solution #2

 