

Two is Better than Infinity - Part 2

1 Warm-Up

On the Island of Knights and Knaves, knights always tell the truth and knaves always lie.

Island resident Jeremiah says, "Yesterday I baked 39 cookies for my party. Every child at the party ate exactly 4 cookies and every adult ate exactly 2 cookies. Nobody else ate any cookies, not even me! And none were thrown away. By the end of the party, all the cookies were eaten. Too bad I have no cookies left to share with you."

Can you tell if Jeremiah a knight or a knave?

2 Evens and Odds

- What does it mean for a number to be even?
- What does it mean for a number to be odd?
- What happens when you add an even number and an even number?
- Fill in the chart by writing "Even", "Odd", or "Can't Tell" .

Even	+	Even	=
Even	+	Odd	=
Odd	+	Even	=
Odd	+	Odd	=
Even	×	Even	=
Even	×	Odd	=
Odd	×	Even	=
Odd	×	Odd	=

3 Nice to Meet You

Shake hands an odd number of times with people at your table. Keep track of how many times you shake hands.

4 Problems

1. A beaver is cutting several long logs into smaller pieces. The beaver makes 30 cuts and ends up with 36 pieces of wood. How many long logs did he start with?
2. Harry Potter’s copy of the book *Advanced Potion-Making* was falling apart. When he shook it, 25 pages fell out. He used a spell to add up all the page numbers on both sides of each page, and found that the total of all these numbers was 2000.

”Harry,” said Hermione, ”You’re doing the spell all wrong.”

How did Hermione know?

3. You are cutting a loaf of bread with a knife . What is the maximum number of pieces of bread that you can get if you are allowed to make only three straight cuts? Each cut should be a through cut, and you cannot stack or otherwise rearrange pieces between cuts.
4. Kolya placed a full set of dominos (all 28 pieces) into a line according to the rule of dominos (see below). The left half of the leftmost domino has 6 spots on it. How many spots are there on the right half of the rightmost domino?

Rule of Dominos: When two dominos are placed next to each other, end to end, the halves that are next to each other must have the same number of spots.

