

# Venn There, Done That

## Grades 3-5

### The Big Idea

This week you're going to think about your individual traits, and which traits most people have. You'll find out which ones show up the **most and least often** and use math to figure out just how unusual some traits are!

### Supplies You Provide

- ★ Glowsticks: 1 tube of 50. Can use 30 feet of string or masking tape instead. See **Other Key Prep** for details.
- ★ Handheld mirrors: 2-3 to share
- ★ Masking tape
- ★ **To print:** 1 copy of Venn diagram (page 6)
- ★ **To print:** 1 copy of Trait Chart (page 7)

### Room Set-up

- ★ You'll need to clear an open space, about 10 x 10 feet.
- ★ If you're using glowsticks, you'll want to make the room dark.

### Other Key Prep

- ★ **Print out** the Venn Diagram and Trait Chart at the end of these directions.
- ★ **If you're using string instead of glowsticks**, cut 3 10-foot strips and tie each strip together at the ends to make 3 separate circles.

### What's the Math?

- |                                     |                    |
|-------------------------------------|--------------------|
| ★ Sets and Venn diagrams            | ★ Frequency        |
| ★ Counting                          | ★ Bonus: Fractions |
| ★ Operations: addition, subtraction |                    |

## Kickoff

*Intro to the kids:* “Have you ever noticed how we all have different **traits**, like hair color, eye color, and nose shapes? No two people look exactly the same, except identical twins. Today we’ll count up who has what traits!”

## Tally Up the Traits (10 minutes)

*Intro to the kids:* “There are some traits that show up in more people. These are called **dominant** traits; less common traits are called **recessive**. For example, brown eyes are dominant: they’re more common than blue, green, or hazel eyes. We can’t control which traits we have, but let’s see what’s more common for our group! And remember, dominant doesn’t mean “better,” just more common!”

1. Pass out **mirrors** so kids can identify their traits.
2. **For each trait listed below**, take time to have kids with the dominant trait go to **one side of the room** and those with the recessive trait to the other **then tally up** the numbers on the **Trait Chart**.

*To the kids:*

- ★ “Here’s a basic one: how many of you are **left-handed**?” (Explain that left-handedness is **recessive**: more people in the world are right-handed than left-handed.)
- ★ “Do you know what a **widow’s peak** is? It’s when the top of your hairline dips down in a V-shape instead of going straight across your forehead. Who has one?” (Discuss. Let kids look in the mirrors or look at each other.) “It’s more common to have a widow’s peak than to not have one!”

- ★ “Which way do you fold your fingers when you clasp your hands – **which thumb** is on top? Left thumb on top is **dominant**.” (See if the kids figure out that it **has nothing to do with** being right-handed or left-handed!)
- ★ “Whose **earlobes** are attached at the bottom, or detached and flopping around? Detached is **dominant**.”
- ★ “Who has **dimples**? Interestingly, dimples are **dominant**!”
- ★ Check out the photos below for examples - or think up your own!



**Ask the kids:**

- ★ “Based on our chart, on which trait are we **most recessive**?”
- ★ “For each trait, did we have more people with the dominant or recessive version?”

**Bonus (optional): Ask the kids:** “Just using the numbers, is it possible for everyone in our group to be **recessive on only one trait**?” (Discuss. If the recessive totals add up to less than the club total, then yes!)

## Going in Circles (25-30 minutes)

**Intro to the kids:** “Now let’s see how many of us have the most unusual traits. We’re going to use a **Venn diagram** to do this. Has anyone ever drawn one?” (Discuss.) “A Venn diagram uses circles to separate items into groups, with overlaps to show items that sit in both groups.”

1. Hold up the Venn diagram printout:

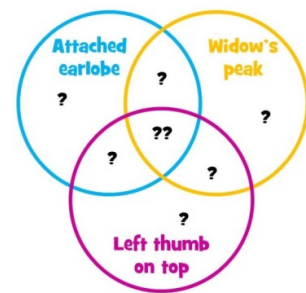
**Ask the kids:**

- ★ “Can you name all the **Furry Animals** shown?” (Answer: 6 animals.)
- ★ “Can you name all the animals that are **Great Pets**?” (Answer: 6 animals, if you agree they’re great!)
- ★ “Why are some animals in the **overlap** of the blue and yellow circles?” (Discuss. They are furry AND make great pets.)
- ★ “Why are some animals **not in either circle**?” (Discuss. They are not furry NOR do they make great pets!)



**To the kids:** “A Venn diagram can have more than 2 circles, and items in 3 or 4 groups can sit in the overlaps. We’re going to make a glowing Venn diagram to map our traits!”

2. Open up the glowsticks and **snap them** to make them glow.
3. Break the kids into 3 groups and give each group 16 glowsticks with connectors. Have each group **connect** all 16 glowsticks to make a large circle.
4. Lay the 3 circles on the ground **as shown**
5. Pick three traits from those previously discussed and **label** each circle’s trait with tape.



6. One at a time, have each kid **jump into the correct section** based on his/her traits. If kids are having a hard time visualizing the entire Venn diagram while standing inside it, have each kid place a piece of masking tape with his/her name on it in the correct section instead.

**Ask the kids:** “Which sections are most crowded?” (See if anyone gets to stand in the middle!)

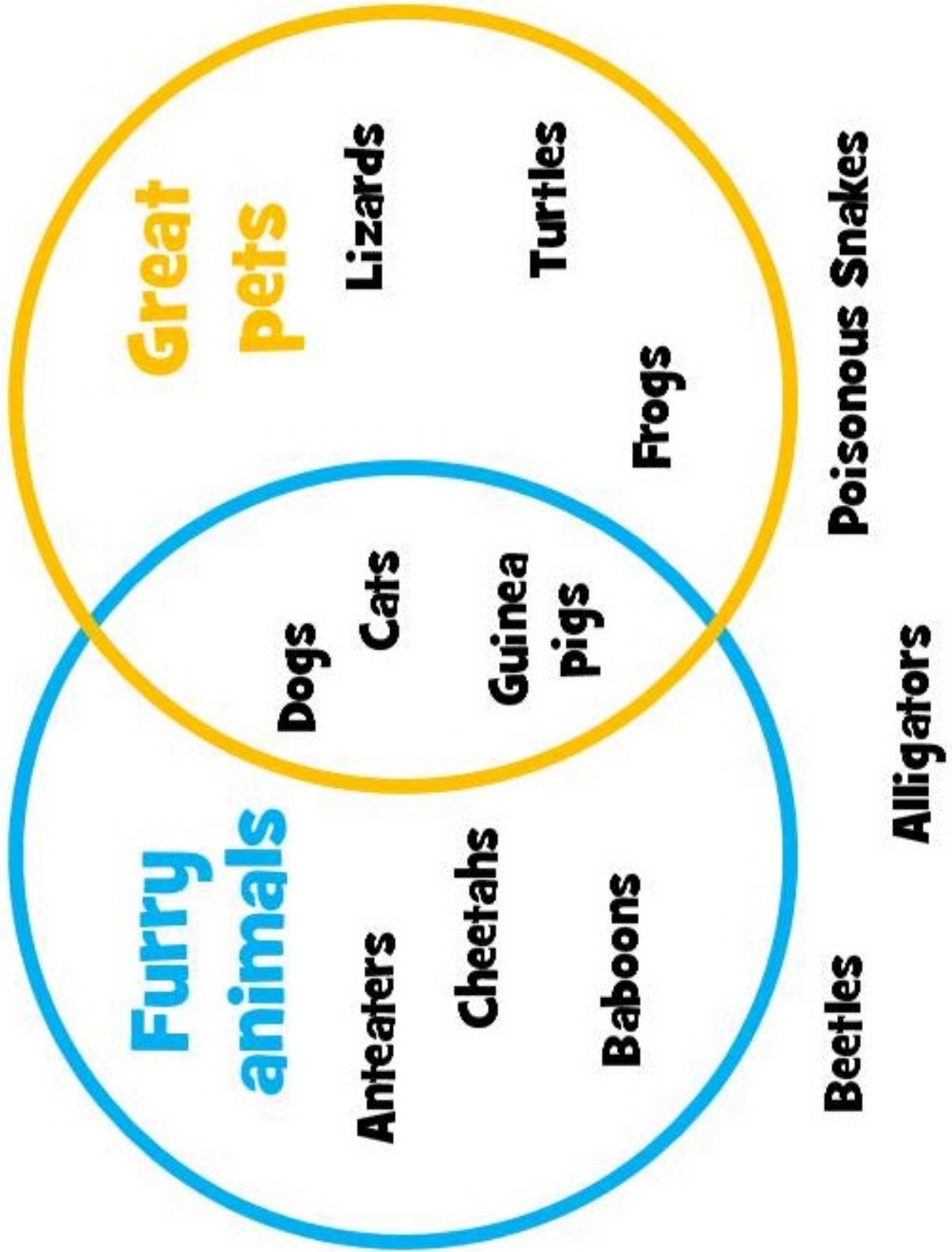
**Bonus (optional):** Calculate the fraction of the club that’s **recessive on all three!** Try out another diagram with different traits if there’s time!

**A Touch of Class:** “You know what’s cool? We just used glowsticks to learn about Venn diagrams and it’s not too different from the math you do in class! Try using Venn diagrams organize your toys. Put your Legos, wheeled toys or stuffed animals into groups and compare their traits!”

## All or Nothing (10-15 minutes)

**Intro to the kids:** “As we’ve seen, each person has a unique set of traits, but there are some things that are the same for everyone. Let’s check them out!”

1. Ask the kids to **hold one foot** up against the **opposite forearm** (the part between the wrist and elbow crease). **Ask the kids:** “What do you notice?” (See if they figure out that their foot is about the same length as their forearm!)
2. Ask the kids to **stand sideways against a wall**, making sure their inside shoulder and foot are touching the wall. Then ask them to try lifting their **outside foot** (the one farther from the wall) without falling over. **To the kids:** “Guess what? No one can do it! Why is that?” (Discuss. When you lift your outside foot, there’s no way to **center** your weight over your standing foot.)



## Trait Chart

Trait	Number of Dominant	Number of Recessive
Writing Hand		
Widow's Peak		
Thumb Folding		
Earlobes		
Dimples		