

CLASS EXERCISE WITH VENN DIAGRAMS

Materials:

- A Venn diagram sheet for each group
- A shapes packet for each group containing:
 - A shapes inventory (listing exactly what and how many is in each group)
 - 1 large red triangle
 - 1 large red square
 - 2 large red rectangles
 - 2 small red triangles
 - 3 small red squares
 - 2 small red rectangles
 - 1 large green square
 - 2 large green rectangles
 - 5 small green triangles
 - 3 small green squares
 - 1 small green rectangle
 - 2 small blue triangles
 - 2 small blue squares
 - 4 small blue rectangles
- Venn diagram overhead
- Shapes for the overhead – the same number, color and size of each shape as the packets, plus:
 - 1 large green triangle
 - 1 large blue triangle
 - 1 large blue square
 - 1 large blue rectangle
- Candy, or other small prizes

Warm-up:

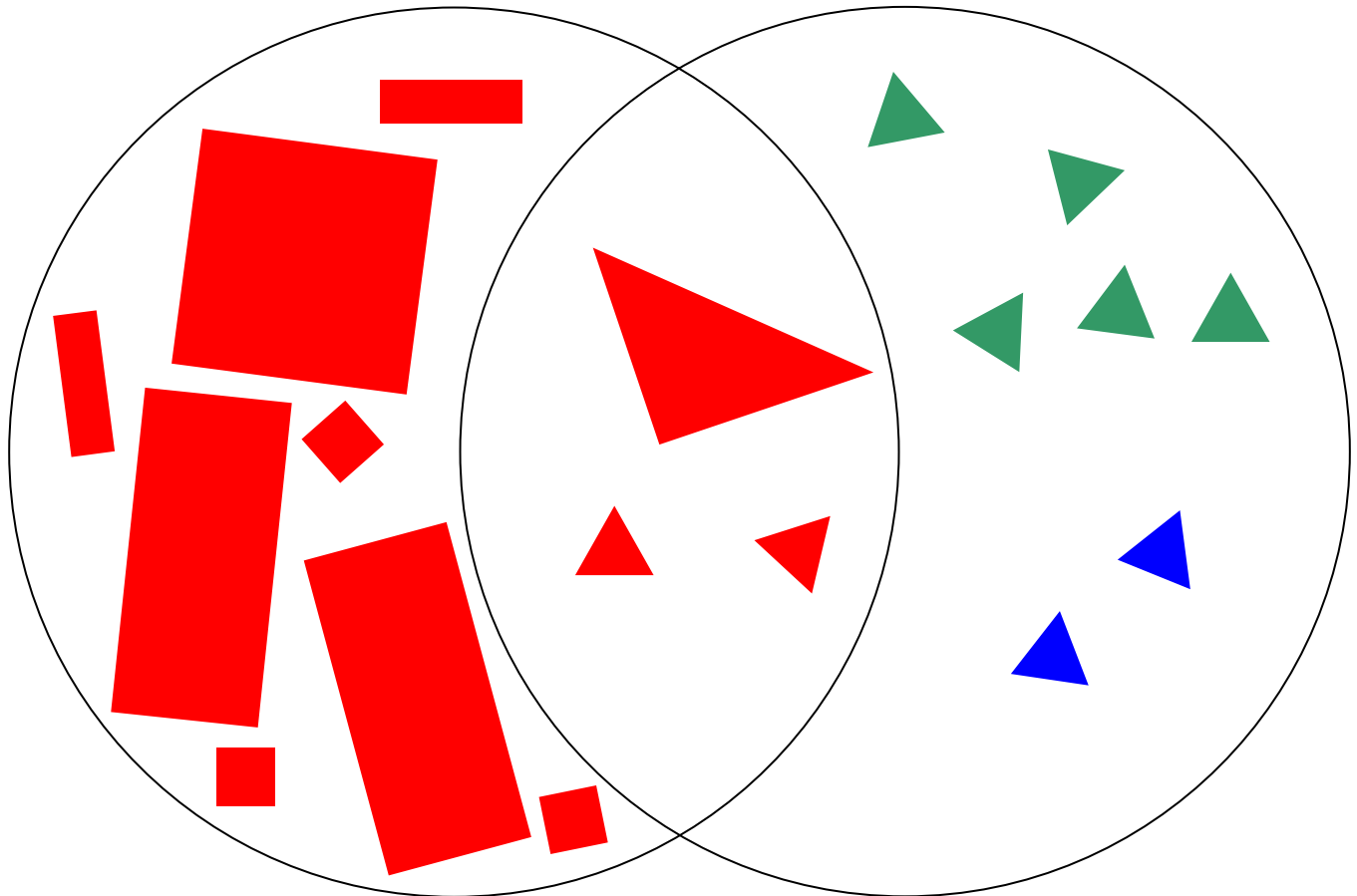
“I have a bag of various shapes. They are red, blue and green. There are large shapes and small shapes. There are triangles, rectangles and squares. How many *different* kinds of shapes do I have?”

Elicit that there are $3 \times 2 \times 3 = 18$ different kinds of shapes. Have students list the possible shapes. As they are listed, show them on the overhead.

Activity:

1. Divide students into groups of two or three. Distribute one Venn diagram worksheet and one shape packet to each group.
2. Have each group use their inventory to verify that they have *exactly* the right amount of each shape, size and color. Collect any extra shapes; distribute any missing shapes.

- Remove the large green triangle and the large blue shapes from the overhead shapes so that the overhead shapes pile contains exactly the same number of shapes as each group.
- Ask students to place all the red shapes in the circle on the left. In the circle on the right, students should place all the triangles. Elicit that red triangles should go in the center. If necessary, demonstrate on the overhead. When groups have completed, show the correct arrangement on the overhead.



- Questions for students:

How many shapes are red?	11
How many shapes are triangles?	10
How many shapes are red <i>and</i> triangles?	3
How many shapes are red <i>or</i> triangles?	18
- Review that the center area represents *and*.
- Review that to determine *or*, we may either count the total number of shapes on the board, or use the formula:
 $\# \text{ of shapes in one circle} + \# \text{ of shapes in other circle} - \# \text{ of shapes in both circles}$
 Remind students that we subtract the number of shapes in both circles so those shapes are not counted twice.

8. Have students work on the following examples. Award candy to the first group to get the correct arrangement, or the first group to correctly list the right totals.

Left Circle	Right Circle	# of Items in Left Circle	# of Items in Right Circle	# of Items in Left Circle <i>and</i> in Right Circle	# of Items in Left Circle <i>or</i> in Right Circle
Big Shapes	Green Shapes	7	12	3	16
Small Shapes	Rectangles (not Squares)	24	11	7	28
Big Shapes	Blue Shapes	7	8	0	15

9. Remind students that, since there are no shapes in common in the last example, we refer to those sets as *disjoint*.