

Statements with *And* and *Or*



Reason abstractly and quantitatively.

MATERIALS • paper and pencil

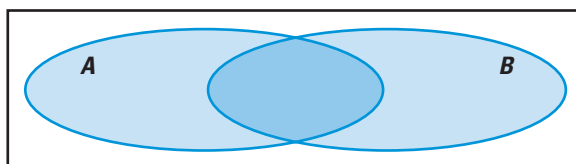
QUESTION What is the difference between a statement with *and* and a statement with *or*?

EXPLORE Use a Venn diagram to answer questions about a group

STEP 1 Answer questions Copy the questions below and write your answers beside them.

1. Are you taking an art class?
2. Are you taking a foreign language class?

STEP 2 Complete a Venn diagram Form a group with 3 or 4 classmates. Draw a Venn diagram, like the one shown below, where set *A* consists of students taking an art class, and set *B* consists of students taking a foreign language class. Then write the name of each student in the appropriate section of the diagram.



DRAW CONCLUSIONS Use your observations to complete these exercises

In Exercises 1–3, use your Venn diagram to list the students who belong in the given set.

1. Set *A*
2. Set *B*
3. Set *A* and set *B*
4. The students who belong in set *A* or set *B* are all of the students who belong only in set *A*, only in set *B*, or in set *A* and set *B*. List the students in your group who belong in set *A* or set *B*.
5. **OPEN-ENDED** Write a statement with *and* so that the statement is true for all students in your group.
6. **OPEN-ENDED** Write a statement with *or* so that the statement is true for all students in your group.

REASONING Tell whether the statement is *true* or *false*.

7. If a student belongs in set *A* and set *B*, then the student belongs in set *A* or set *B*.
8. If a student belongs in set *A* or set *B*, then the student belongs in set *A* and set *B*.