Geometry Workbook
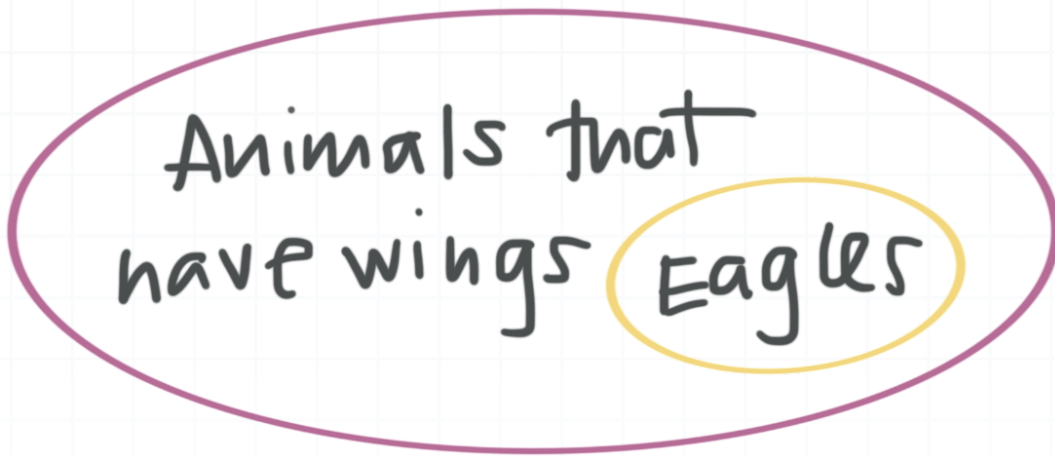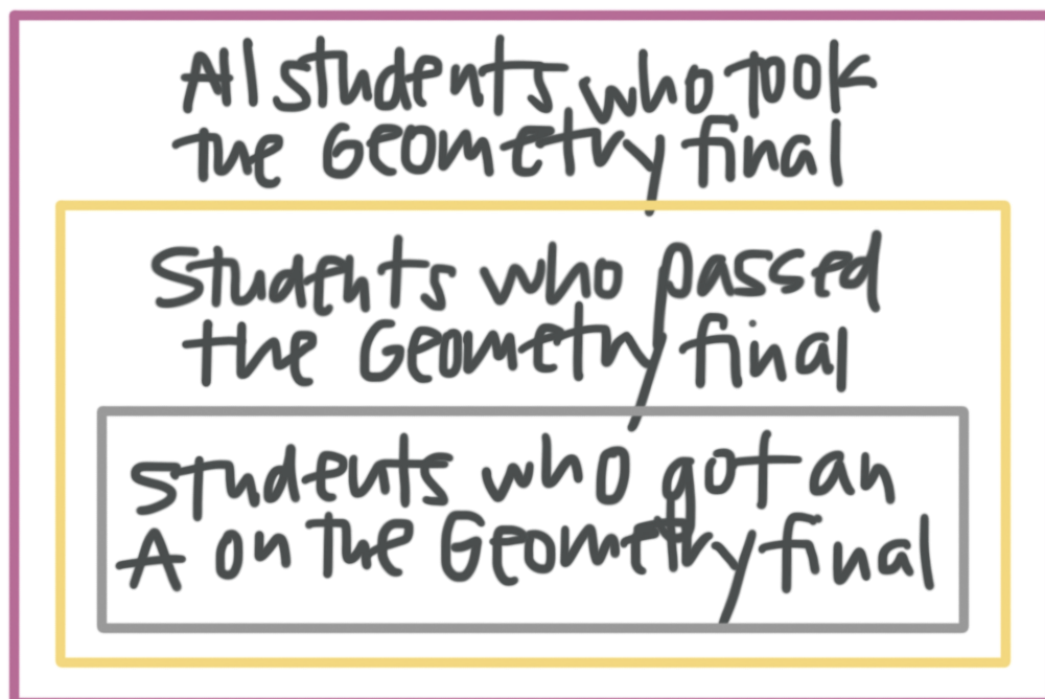
Logic

CONDITIONALS AND EULER DIAGRAMS

■ 1. Write the if-then statement that corresponds to the Euler diagram.

■ 2. True or false? The if-then statement is true based on the Euler diagram.

"If a student passed the geometry final, then they got an A."

3. True or false? The statement is true based on the Euler diagram.

"If a student took the Geometry final exam, then they passed the test."

All students who took
the Geometry final

Students who passed
the Geometry final

Students who got an
A on the Geometry final
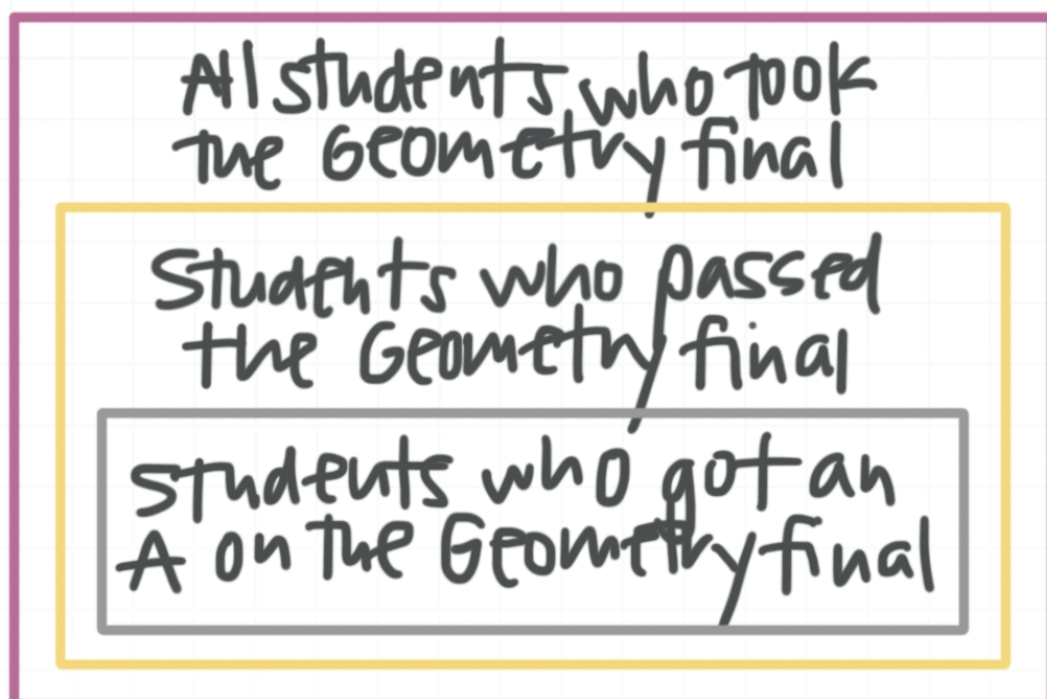
4. Draw a Euler diagram for the statement, "All quadrilaterals are polygons."

CONVERSES OF CONDITIONALS

■ 1. Write the converse for the if-then statement.

"If M is a midpoint of $\overline{AB}$, then $AM = MB$."

■ 2. Write the converse for the if-then statement.

"If a polygon is a triangle, the sum of its angles is $180°$.

■ 3. Write the converse of the if-then statement. Then determine if the converse is always, sometimes, or never true.

"If $\angle 1$ and $\angle 2$ are vertical angles, then they are congruent."

■ 4. Write the converse of the if-then statement. Determine if the converse is true or false. If it's false, provide a counterexample.

"If an animal is a cow, then it has four legs."

ARRANGING CONDITIONALS IN A LOGICAL CHAIN

■ 1. Fill in the blank with a logical conclusion.

All parallelograms have four sides.

All four-sided figures are quadrilaterals.

All parallelograms _____.

■ 2. If Jane's alarm does not go off, she will be late to school. If Jane is late to school, she will get in trouble. Jane got in trouble. Can a valid conclusion be drawn? Explain.

■ 3. Write the missing statement that will make the last statement true.

1. If a driver is going 60 mph, he is speeding.

2. _____

3. If a driver is going 60 mph, he will receive a speeding ticket.

■ 4. All squares are rectangles. Rewrite this statement in if-then form: $JKLM$ is a rectangle. Can a valid conclusion be drawn?