Math Curriculum:

* Logic and Set Theory.
* Formal math notation.

membership symbol. Basically means “a is in the set b”

. For all natural numbers n, n+1 is also a natural number.

There exists an n in the natural numbers such that n-1 is NOT a natural number.

is equivalent to

Questions (convert sentence to formal notation):

1. There exists a set with no members.
2. p is a member of the set P
3. If x equals y and y equals z then x equals z
4. A natural number p exists and is equal to 1 times p
5. The set A is the intersection of the set B and the set C. This implies A is a subset of B and A is a subset of C.
6. if n is in the set P and n is equal to a times b (and both a and b are natural number) than either a equals 1 or b equals 1
7. For all sets x and y, there exists a set z such that x is in z and y is in z.
8. For all sets x and y, there exists a set z such that x is a subset of z and y is a subset of z.
9. For all sets x such that x is not the empty set, there exists y such that y is a member of x and not a subset of x. (Axiom regularity. It prevents things like Russel’s paradox from happening.)

Russel’s paradox: X is the set that only contains all sets that do not contain themselves. Does X contain X?

The Barber’s paradox: There is a town where the barber shaves everyone who doesn’t shave themself. Does the barber shave themself?

{} : empty set

{0}

{{}}: set containing the empty set

If A -> B

And B -> C

Then A -> C

$ S | S = Æ

p Î P

x = y, y = z -> x=z

$ p ' N | p = 1 x p = p

A = B Ç C -> A Í B, A Í C

n Î P, n = a x b -> a = 1 È b = 1

"x,y $ z | x Î z, y Î z

"x,y $ z | x Í z, y Í z

"x | x Ø Æ, $ y | y Î x Ç y ØÍ x