When Nicolas Bourbaki applied to the American Mathematical Society

in the 1950s,

he was already one of the most **influential** mathematicians of his time.

He’d \_\_\_\_\_\_ articles in international journals

and his textbooks were required reading.

Yet his application was **firm**ly \_\_\_\_\_ for one simple reason—

Nicolas Bourbaki did not exist.

Two decades earlier, mathematics was in **disarray**.

Many **establish**ed mathematicians had lost their \_\_\_\_\_ in the first World War,

and the field had become **fragment**ed.

Different \_\_\_\_\_\_\_ used **disparate** methodology to **pursue** their own goals.

And the lack of a shared mathematical language

made it difficult to share or **expand** their work.

In 1934, a group of French mathematicians were ­\_\_\_\_\_\_ **fed up**.

While studying at the **prestigious** École normale supérieure,

they found the textbook for their calculus class so **disjointed**

that they \_\_\_\_\_\_\_ to write a better one.

The small group quickly took on new members,

and as the \_\_\_\_\_\_ grew, so did their **ambition**.

The result was the "Éléments de mathématique,"

a **treatise** that **sought** to create a **consistent** \_\_\_\_\_ **framework**

**unifying** every branch of mathematics.

The text began with a \_\_\_\_\_\_ of simple axioms—

laws and **assumptions** it would use to build its argument.

From there, its authors **derived** more and more \_\_\_\_\_ theorems

that **correspond**ed with work being done across the field.

But to truly **reveal** common \_\_\_\_\_\_\_,

the group needed to identify \_\_\_\_\_\_ rules

that applied to a wide range of problems.

To **accomplish** this, they gave new, clear definitions

to some of the most important mathematical objects,

including the function.

It’s \_\_\_\_\_\_\_ to think of functions as machines

that accept **inputs** and produce an **output**.

But if we think of functions as \_\_\_\_\_\_\_\_ between two groups,

we can start to make claims about the logical relationships between them.

For example, consider a group of numbers and a group of letters.

We could define a function where every numerical input corresponds

to the same alphabetical output,

but this doesn’t establish a particularly interesting \_\_\_\_\_\_\_.

**Alternatively**, we could define a function where every numerical input

corresponds to a different alphabetical output.

This second function sets up a logical relationship

where \_\_\_\_\_\_\_ a process on the input has corresponding effects

on its mapped output.

The group began to define functions by how they mapped elements across **domain**s.

If a function’s output came from a \_\_\_\_\_\_ input,

they defined it as injective.

If every output can be mapped onto at least one input,

the function was surjective.

And in bijective functions, each \_\_\_\_\_\_\_ had perfect one to one correspondence.

This allowed mathematicians to establish logic that could be translated

across the function’s domains in both directions.

Their systematic \_\_\_\_\_\_\_ to abstract principles

was in **stark** contrast to the popular belief that math was an intuitive science,

and an over-dependence on logic **constrain**ed creativity.

But this **rebellious** band of scholars **gleefully** **ignored conventional wisdom**.

They were **revolutionizing** the \_\_\_\_\_\_, and they wanted to **mark** the occasion

with their biggest **stunt** yet.

They decided to publish "Éléments de mathématique"

and all their **subsequent** work under a collective pseudonym:

Nicolas Bourbaki.

Over the next two \_\_\_\_\_\_\_, Bourbaki’s publications became standard **references**.

And the group’s members took their **prank** as seriously as their work.

Their **invented** mathematician \_\_\_\_\_\_ to be a **reclusive** Russian **genius**

who would only meet with his selected **collaborators**.

They sent telegrams in Bourbaki’s name, \_\_\_\_\_\_\_ his daughter’s wedding,

and publicly **insulted** anyone who doubted his existence.

In 1968, when they could no longer maintain the **ruse**,

the group ended their \_\_\_\_\_\_ the only way they could.

They printed Bourbaki’s **obituary**, complete with mathematical **puns**.

**Despite** his apparent death, the group **bearing** Bourbaki’s name lives on today.

Though he’s not associated with any single major discovery,

Bourbaki’s influence \_\_\_\_\_\_ much current research.

And the modern emphasis on formal proofs **owes** a great deal to his **rigorous** methods.

Nicolas Bourbaki may have been imaginary— but his legacy is very real.