What are three likely differences in the properties of the compounds formed when aluminum and fluorine combines and when fluorine and fluorine combines?

Answer: When fluorine combines with aluminum, we obtain a solid compound AlF_3 – it is a salt, which is called aluminum fluoride. This salt has a low chemical reactivity.

And, when fluorine combines with fluorine, we obtain a gaseous element F_2, which has a highest chemical reactivity among all known substances.

We can make a table to compare their properties:

Property	AlF_3	F_2
Substance type	Compound	Element
State of matter	Solid salt	Gas
Reactivity	Low	Very high