

## The Mathematics of Loss

Here is how it works:

“If an investment declines 10%, it takes about an 11% gain to break even (assuming you don’t pump in additional dollars). If the drop is 20%, you need a 25% gain to recover.

A fall of one-third requires a rebound of 50%. And if your investment falls by half, “you need a double,” or a 100% return, says Mr. Wiener, the New York-based editor of the Independent Adviser for Vanguard Investors. The recovery percentages grow exponentially because you have so few dollars working for you after a big loss.

In 2008, the average diversified U.S.-stock fund was down 37.5%—requiring a 60% advance to break even—and plenty of funds were down 50% or more.”

Percent Loss	Percent Gain		Percent Loss	Percent Gain
5%	5.3%		55%	122.2%
10%	11.1%		60%	150.0%
15%	17.6%		65%	185.7%
20%	25.0%		70%	233.3%
25%	33.3%		75%	300.0%
30%	42.9%		80%	400.0%
35%	53.8%		85%	566.7%
40%	66.7%		90%	900.0%
45%	81.8%		95%	1900.0%
50%	100.0%			

Source: Raymond James research

If you understand how this simple math works, then you are in a better situation to appreciate the importance of capital preservation. [Source](#)

Here is a quick example: As we saw in the chart above, the S&P 500 is up 41% since January 2000. A \$100,000 investment back then is now worth \$141,000. Most people believe it will take a decline of 41% to get back to even. Unfortunately, that math doesn't work that way. A loss of 41% on \$141,000 will set you back to \$83,190. You will then you need a gain of over 67% to get back to \$141,000. This is why risk management is so important.

The math on losses is painful. Risk today is high. Protect your gains.