

In 2010 the value of a car was \$24,500. Since this time the value has been decreasing. This relationship can be modeled with either a linear or exponential model. The linear model has a constant decrease of \$1100 per year. The exponential model has a decrease of 6% per year. Which model indicates a higher value for the car in 2016?

I will figure out which model gives a higher value in 2016. I will write a linear model & an exponential model, then plug in $x=6$ to determine the value of the car in 2016, because 2016 is 6 years after the start, 2010.

Exponential	Linear
$E(x) = b(m)^x$	$L(x) = mx + b$
$E(x) = 24500(1-.06)^x$	$L(x) = -1100x + 24500$
$E(6) = 24500(1-.06)^6$	$L(6) = -1100(6) + 24500$
$E(6) = 16901.81$	$L(6) = 17900$

After 6 years, the exponential model is 16901.81, while the linear model is 17900. The linear model is a higher value.

I'll reflect & check by making a table for each model.

Years	Exponential	Linear
0	24500	24500
1	23030	23400
2	21648	22300
3	20349	21200
4	19128	20100
5	17981	19000
6	16902	17900

The linear model has a higher value.