00:00:07.220 --> 00:00:09.439
Today we're going to talk about exponents,

00:00:09.440 --> 00:00:11.944
and so there are a lot of rules

00:00:11.944 --> 00:00:13.799
that deal with exponents,

00:00:13.800 --> 00:00:16.328
but the first thing before we can talk

00:00:16.328 --> 00:00:18.931
about any of the rules is to actually

00:00:18.931 --> 00:00:21.750
just talk about what an exponent is. So.

00:00:26.030 --> 00:00:30.266
When we are dealing with exponents,

00:00:30.270 --> 00:00:32.688
it's really just a shorthand way

00:00:32.688 --> 00:00:34.362
to write multiplication, right?

00:00:34.362 --> 00:00:37.134
So mathematicians, we like to make

00:00:37.134 --> 00:00:39.737
shortcuts for things and to make

00:00:39.737 --> 00:00:42.397
symbols for things and stuff like that.

00:00:42.400 --> 00:00:44.220
So all in exponent is is a

00:00:44.220 --> 00:00:46.039
shorthand way to write something.

00:00:46.040 --> 00:00:47.276
So, for instance,

00:00:47.276 --> 00:00:51.918
if I wanted to multiply out 2 * 2 * 2.

00:00:51.918 --> 00:00:55.458
So instead of writing 2 * 2.

00:00:55.458 --> 00:00:58.860
Times 2 I can shortcut it and write it

00:00:58.961 --> 00:01:02.372
as a two with a little three up here.

00:01:02.380 --> 00:01:06.762
So what that 3 means is the

00:01:06.762 --> 00:01:12.140
three is the exponent. And.

00:01:12.140 --> 00:01:14.394
Besides the fact that it's the exponent,

00:01:14.400 --> 00:01:15.900
what it's doing is it's

00:01:15.900 --> 00:01:17.100
giving us an instruction.

00:01:17.100 --> 00:01:20.090
So what it's saying is.

00:01:20.090 --> 00:01:20.780
Take.

00:01:23.360 --> 00:01:27.560
The two now the two here.

00:01:27.560 --> 00:01:29.120
Has a special name in math.

NOTE Confidence: 0.580810603333333

00:01:29.120 --> 00:01:31.748
It's called the base.

00:01:31.750 --> 00:01:33.710
So take the two.

00:01:33.710 --> 00:01:36.160
Which is really the base.

00:01:39.280 --> 00:01:42.010
And multiply it times itself.

00:01:46.540 --> 00:01:49.000
Multiply times itself.

00:01:53.770 --> 00:01:55.334
Whatever the exponent is,

00:01:55.334 --> 00:02:00.098
so in our case 3. 3. The exponent.

00:02:03.200 --> 00:02:03.930
Times.

00:02:06.900 --> 00:02:09.408
So it's just a shorthand notation

00:02:09.408 --> 00:02:13.378
for multiplication to write it fast.

00:02:13.380 --> 00:02:15.216
Calculators have buttons that do exponents,

00:02:15.220 --> 00:02:16.347
so you don't have to type it.

00:02:16.350 --> 00:02:21.300
2 * 2 * 2 right two to the to the Exponent 3.

00:02:21.300 --> 00:02:23.393
Sometimes you also hear us refer to

00:02:23.393 --> 00:02:25.491
the exponent as the power, right?

00:02:25.491 --> 00:02:29.348
So sometimes we call it the power.

00:02:29.350 --> 00:02:33.258
And all it is is fast multiplication and so

00:02:33.258 --> 00:02:35.386
because of that it actually carries over.

00:02:35.390 --> 00:02:38.790
Even if you had not numbers but variables.

00:02:38.790 --> 00:02:41.868
So if I had X ^3.

00:02:41.870 --> 00:02:46.446
Just like 2 ^3 was 2 * 2 * 2 X

00:02:46.446 --> 00:02:52.278
cubed is going to be X * X * X,

00:02:52.280 --> 00:02:55.346
So my exponent here was a 3.

00:02:55.350 --> 00:02:59.540
And I have X * X * X three times.

00:02:59.540 --> 00:03:02.550
So the exponent is again

00:03:02.550 --> 00:03:04.356
just fast multiplication,

00:03:04.360 --> 00:03:06.502
and it's telling you how many times

00:03:06.502 --> 00:03:08.380
do you multiply the base right?

00:03:08.380 --> 00:03:11.730
And so in this example, X ^3 was the base.

00:03:13.790 --> 00:03:16.157
So it's just a shortcut way to write it,

00:03:16.160 --> 00:03:19.004
and you could have multiple things

00:03:19.004 --> 00:03:21.644
inside of an exponent you could have.

00:03:21.644 --> 00:03:27.240
For instance, say 4X all of that cubed.

00:03:27.240 --> 00:03:33.164
And that would just mean 4X times 4X.

00:03:33.164 --> 00:03:35.947
Times 4X. Right,

00:03:35.947 --> 00:03:37.956
so it just takes whatever is being

00:03:37.956 --> 00:03:40.377
raised to the power being raised to the

00:03:40.377 --> 00:03:42.698
exponent and it repeats it that many times.

00:03:42.700 --> 00:03:44.722
But you're multiplying it and that's

00:03:44.722 --> 00:03:46.920
all there really is to exponents.

00:03:46.920 --> 00:03:49.404
Wow, that's all there really is

00:03:49.404 --> 00:03:51.980
to the notation of exponents.

00:03:51.980 --> 00:03:53.016
Because of our notation,

00:03:53.016 --> 00:03:55.179
we actually get a bunch of rules which

00:03:55.180 --> 00:03:57.260
are featured in different videos,

00:03:57.260 --> 00:03:58.345
so be sure to check them out.