>> Now let's take a look at the math class. It's part of java.lang, and recall that java.lang is imported by default, so you don't have to use an import statement with that. And it contains methods that perform various mathematical functions, you're familiar with many. Absolute value, square root, exponentiation, the trig functions.

And it also has a, pseudorandom number generator, like we saw in the random class. In fact, let's take a look at it first, since we just talked about using the random class. It's used to generate numbers. It only generates doubles, in the range 0 to 1. It includes 0 but not 1, so we say it's written in that interval of 0 to 1.

And, other ranges can be derived by using multipliers and offsets, and that sort of thing. So, let's look at, RandomNumbersExample2, And I've got it cued up here. This was RandomNumber, NumbersExample1. Recall it used the, random, class. Now we're looking at one that we don't have to import anything for this, since this is coming out of the math class and math is in, in Java.lang.

So, let's just we'll just, execute this and and then run through it and take a look at it. I've got a, a break point set on line 18, and let's run down to that. Notice I've just declared a, a couple of, variables up here, randomInt and randomDouble. And I'm about to, call Math.random, and that generates that full range, random in that interval, 0 to 1.

So let's, I'm gonna step. And there it is, we see we've got this, 0 point and a lot of significant digits there. And if we wanted to generate lots of those, again I could just copy this down into interactions and hit Enter. And there's one, I'm using the up arrow, a second one, and so on.

And we get the sort of full interval there, 0 to 1, if you will. So this, I'm gonna step and print that. And now, suppose we wanted something between 0 and .999. Well in that case, we could just take that number that comes back in the range of 0 to almost 1 and multiply it by 10, and that would give us something in that range.

I'm gonna step here and, there we see over here we've got 5.11 and a bunch of stuff. And let's, run this one down below in interactions. I'm just gonna do a copy and paste down into interactions, and Enter. In there, we're seeing, we're getting those, random numbers in that range, in this case 0 to 9.999.

So back up in our program, We'll step and now we want something in the range 1 to 10. We could do that same sort of thing. And then we're going to actually add 1 to it. And at some point we've got to, cast that to an int. And so we could do that with the random number that comes back after we multiplied by 10.

So, take a look, it would be this guy up here, 0 to 0.999, and we're going to cast that to an int so it gets rid of the fraction. So we will be in the range 0 to 9. And then we add 1 to it and now we're in the range 1 to 10.

So that's kind of how the arithmetic work there. And if we wanted an integer in the range 0 to 4, same sort of thing, we could just multiply by 5 and that's gonna give us something in the range 0 up to 4.999. Recall this doesn't quite go to 1 and, and and so on.

So I'll just step there. And if we want something in the range of 5 to 24, same sort of thing. Multiply the random number that we get back by 20. Cast it to an int and and then, add 5 to it. And this gives us the range 90 to 100 by multiplying by 11, which gives us, 0 to 10, if you will.

And then we add 90 to that. And then finally down here, if we want something in, in the negative range we just, multiply by by 10, and then subtract 10. And we get something in the range minus 10 to plus rather, to minus 1. Now the important thing is here that we're casting this to an Int, to get rid of the fraction.

That's how we end up with an integer. And notice I was setting them to random int and so on. Anytime, you can always take this whole expression that we've got up here. Let's just try this and copy it down to interactions, And hit Enter. Don't, don't, use the semicolon in the end, that would make a, a statement and you wouldn't actually see the return value.

But if you just enter a, an expression here you get to see these. So, theres minus 7, minus 9, minus 2, you gonna get these all gonna be in the range from from minus 10 to minus 1. OK, that sort of completes our, our, discussion of random numbers.

Again, you could use the, the random class which we showed here in, random numbers example 1 or you can use just the random method in the math class. You don't have to import anything for that, but it always gives you a double so you have to do a little bit of work to get it back to an int there.

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Transcript: Math Class