PROBLEM SOLVED
MAKING SENSE OF MATHEMATICS

Area of a Circle
Video Script

Scene		Full Transcript
1	**Voice-Over Carlos:**	Bull's-eye! Nice shot. That's three in a row!
2	**Carlos:**	What's goin' on? It's Carlos. I'm here at Longshot Archery with my buddy, Kyle, who is taking an archery lesson. He is doing awesome.
3	**Voice-Over Carlos:**	But, his instructor said that some people get frustrated during their first lesson because they miss the target.
4	**Carlos:**	What might help is if they understood the areas of the circles. Let's get on target and get another *Problem Solved*.
5	**Carlos:**	While the guys are taking a break from shooting, I'm going to measure the target.
6	**Voice-Over Carlos:**	The diameter of the large circle is 122 centimeters, which means the radius is 61 centimeters. The diameter of the center circle is 12.2 centimeters, so it has a 6.1-centimeter radius. The area is the region within the circle. You can calculate the area of a circle by using the formula πr^2. To help you understand the formula, we're going to find the area of a circle by rearranging the region to form a parallelogram.
7	**Carlos:**	You already know how to determine the area of a parallelogram. Base times height, right? Watch this.
8	**Voice-Over Carlos:**	If you slice the circle into pieces, you can rearrange them into a shape that resembles a parallelogram. As you can see, the more pieces you have, the closer it is to a parallelogram. Here is the radius of the circle. If we had an infinite number of pieces, the radius would equal the height of the parallelogram.
9	**Carlos:**	To find the area of our parallelogram, we also need to know the base.
10	**Voice-Over Carlos:**	The base of our parallelogram is ½ the circumference of our circle. Remember, the circumference of any circle is $2\pi r$. So, half the circumference is πr. To find the area of the parallelogram, we multiply base times height. The base of our parallelogram is πr and the height is r, so the area is πr^2. That's also the area of the circle. Let's use this formula to find

MakingSense

		the area of the outer circle. The radius is 61 centimeters. Sixty-one squared is 3721. The area of the outer circle is 3721 times π square centimeters. If we substitute 3.14 for pi, we can get an approximation of the area, so 3721 times 3.14 equals 11,683.94 square centimeters. This is the approximate area of our circle in square centimeters.
11	**Carlos:**	The target seems a lot smaller from way back here! Heh, whoops!
12	**Voice-Over Carlos:**	Let's find the area of the bull's-eye using our formula for area of a circle. The radius of the bull's-eye is 6.1 centimeters. Six and one-tenth times 6.1 times 3.14. Wow, the outer circle is 100 times larger than the bull's-eye even though the radius is only 10 times bigger.
13	**Carlos:**	No wonder it's so hard to hit the bull's-eye. See? Finding the area of a circle should never make you quiver! *Problem Solved*. Hey, at least I didn't break a window this time.