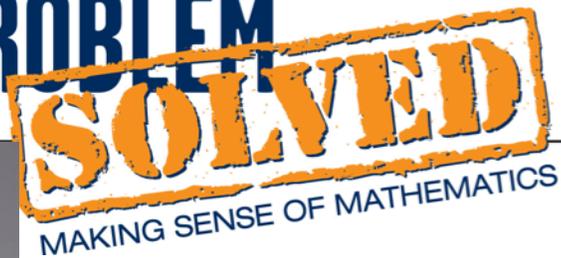




Scene	Full Transcript
1	<p>Tori: Wow, they sound great!</p> <p>Hi there, it's Tori and today I'm out on location with Travis from Live Link Tickets.</p>
2	<p>Voice-Over</p> <p>Live Link is broadcasting this jazz combos performance, online to their friends and family. You might remember Live Link tickets from the Exponential Growth video. Almost over night, the company has grown from a good idea to a successful company.</p> <p>Tori: Live Link Tickets plans to purchase a new server when their membership reaches twenty thousand. We can help them determine when their membership will reach this level by using logarithms. So take a seat and lets get another problem solved!</p> <p>Voice-Over</p> <p>Live Link Tickets started with a membership of one thousand and is growing by forty percent each month. The team uses this equation to predict total membership for any given month.</p> <p>Here is the table and graph for the equation. They can extend the values for total membership in this table until it exceeds twenty thousand, but they may want a closer estimate. That way they'll know exactly when, in the eighth month to get their new server up, and running. They could also get the estimate by looking at the numbers on a graph.</p> <p>The horizontal line shows a membership of twenty thousand. And the exponential curve shows the total membership when the growth factor is one and four tenths. The intersection of the curve and line will determine when they need a new server.</p> <p>There's another way to look at it. We can symbolically solve the equation for n, the unknown number of months. The team knows they can divide both sides of the equation by one thousand and both sides will remain equal. But how do they solve for the unknown exponent?</p> <p>Tori: Hmmm, solving for the exponent. I know, we'll use logarithms.</p>
3	<p>Voice-Over</p> <p>Think about this, when we're solving equations, we can, for example, add the same number to both sides, multiply both sides by the same number, raise both sides to the same power, all because of the properties of equality.</p> <p>In this case, we want to take the log base 10 of both sides of the equation. Doing this, we get log of 20 equals log of one and four tenths to the n power. The right hand side of the equation is equal to n times the log of one and four tenths. This is true because of a property of logarithms. If you want to learn more about this particular concept, watch Making Sense of Log Properties.</p>



	<p>We now have \log of 20 is equal to \log of one and four tenths times n. To finish solving for the number of months, we should divide both sides by \log of one and four tenths. This is similar to when we solve the equation $2x$ is equal to twenty. We would divide each side by two.</p> <p>With our problem, we would divide both sides by the \log of one and four tenths. We can use our calculator to divide.</p> <p>So it looks like in eight and nine tenths months, Live Link Tickets will have twenty thousand members. Looking back to our graph and table, we see that the intersection point is a little less than nine months.</p>
4	<p>Tori: And I think we're almost ready. Travis is set up, the band is tuned, and the membership status for Live Links should be music to their ears.</p> <p>Two, three, four.</p> <p>Sounds like another problem solved.</p>