Similarity: Using Proportions
Video Script

Scene		Full Transcript
1	**Erika:**	Hi! It's Erika. I'm here at Poster King. I never knew how cool making posters could be. They have the latest technology to make anything you need in the way of posters, signs, graphics, lettering, logos. You name it! I am having this picture enlarged as a poster for my room. It needs to be just the right size. Let's expand our knowledge of proportions to make sure it's picture perfect and get another *Problem Solved*.
2	**Erika:**	While Jordan gets ready to print my poster, let's discuss some of the basics of setting up and solving proportions. I want my poster to be the same shape as the original, just bigger. That means the picture and the poster will be similar.
	Voice-Over Erika:	The word similar has a very specific meaning in mathematics. Similar shapes have equal angles and proportional corresponding sides. So, they are the same shape but different sizes. Like all of Jordan's customers, I want the poster to be mathematically similar to the picture. If the poster is not mathematically similar to the picture, it will be distorted.
3	**Voice-Over Erika:**	The picture is 4 inches wide by 6 inches long. I need the poster to be 20 inches wide to fit on my door. What we don't know is how long the poster will be. Let's set up a proportion to solve this problem. The ratio of width to length of my picture is 4 inches to 6 inches We know that the width of the poster will be 20 inches. We don't know the length of the poster so we will represent that with "l".
4	**Voice-Over Erika:**	What number times 4 equals 20? Five. So, each dimension of the poster will be 5 times as large as the dimensions of the picture. Five times 6 inches is 30 inches, so the poster must be 30 inches long. In this problem, 5 is the scale factor. The scale factor lets you know that every dimension of the poster is 5 times larger than the corresponding dimension of the original picture. Notice that the scale factor reflects the relationship **between** two equal ratios.
5	**Erika:**	It's looking good!

		We can also solve our proportion problem by looking at the relationship between the width and the length of the picture and the width and length of the poster.
6	**Voice-Over Erika:**	The length of the picture is 1½ times the width. So, 1½ is the constant of proportionality. The constant of proportionality. Yeah, I know, let me say that again, constant of proportionality. It reflects the relationship **within** a ratio. The relationship is that the length is 1½ times the width. Once we know the constant of proportionality of the picture, we can use it to determine the length of the poster. One and one half times 4 equals 6, and 1½ times 20 equals 30. So, the length of the poster must be 30 inches!
7	**Erika:**	Beautiful; 20 by 30. After spending a little time with similarity and setting up and solving proportions, we've expanded our mathematical knowledge and our picture! *Problem Solved*.