Scale Factor
Video Script

Scene		Full Transcript
1	**Erika:**	Hey, it's Erika, and I'm out shopping with my friend Sara. She needs to get a gift for her nephew's birthday, but she's in a bit of a spot. Andy is seven, and he is fascinated with Humvees. You know, the military vehicles.
	Voice-Over Erika:	She kind of promised that she would get him one of his own. Yeah, I know; lucky for her, she never told him what size of Humvee he would get.
	Erika:	Why don't we spend a little time with scale factor and proportional reasoning to get another *Problem Solved* and get Andy the present of his dreams?
2	**Erika:**	Here is what we found. This is a replica of an actual Humvee, just a bit smaller. It says right here on the package that the scale is 1 to 18.
3	**Voice Over Erika:**	That means the size of the replica is 1/18 the size of a real Humvee. Or, you could say that the dimensions of the real Humvee are 18 times larger than the dimensions of the replica.
4	**Erika:**	I've got an idea. After we make our purchase, let's take a little road trip, and I will show you something that might help make scale factor a little clearer. He's gonna love this.
5	**Erika:**	Here's the replica, and here's the real thing. You didn't think I could find one, did you? With scale factor and proportional reasoning, we can determine the dimensions of the real vehicle using the dimensions of the replica.
6	**Voice-Over Erika:**	I measured and found that the diameter of the replica's front tire is 2 inches, the length of the front bumper is 4½ inches, and the overall length is 10 inches. Since the scale is 1 to 18, we simply multiply each of the measurements by 18. So, the real tire is 18 times 2 inches or 36 inches in diameter. The real bumper is 18 times 4½ inches or 81 inches long and the overall length is 18 times 10 inches or 180 inches long.
7	**Erika:**	Sure enough, 36 inches. This thing is big! Scale factor works both ways; we can also use it to calculate the height of the replica if we know the height of the real Humvee.

8	**Voice-Over Erika :**	The real vehicle is 72 inches tall. Remember, the replica is 1/18 of the actual size. Therefore, we divide 72 by 18. The replica should be 4 inches tall.
9	**Erika:**	Four inches exactly. Proportional reasoning saves the day anytime you are examining scale factor, like when dealing with replicas, maps, or blueprints. It doesn't matter if you measure in inches, feet, or centimeters, the scale factor doesn't change. Andy can now say he has a real Humvee, just a smaller one. *Problem Solved*! That would have taken a lot of wrapping paper!