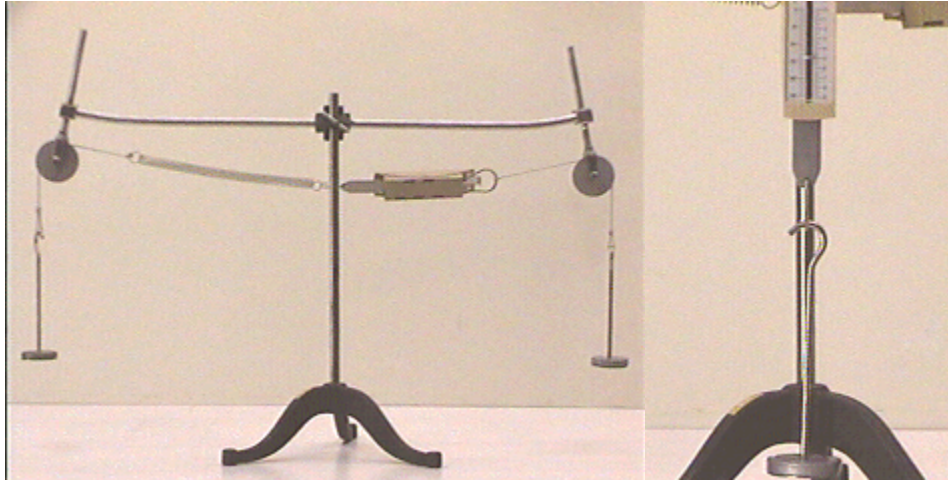# Question #72

When a 150-gram mass is supported from a 300-gram spring scale, the "weight" of the 150-gram mass is measured as 150 grams. The units of these scales are unusual for a physics discussion, but shucks, that's the way they work. This is seen in the photograph at the right below.

Now suppose that an identical 150-gram mass is supported from strings passing over pulleys, with an identical scale and a spring connected to the strings between the pulleys. This situation is seen in the photograph at the left above.

Notice that the face of the spring scale has been purposely positioned so that you cannot see it in the photograph. The question is what that scale will read. It might read zero, because the spring absorbs all of the force when it is elongated. On the other hand, it might read 300 grams, because each weight pulls with a force of 150 grams, but from opposite directions. Or it might read 150, because although each weight pulls with150 grams, for a total of 300 grams, only 150 grams of this force is absorbed by the spring.

In the configuration in the photograph at the left above, the reading of the spring scale will be:

- (a) 0.
- (b) 150 grams.
- (c) 300 grams.

Click here for <u>Answer #72</u> July 9, 2001.

For questions and comments regarding the *Question of the Week* contact
Dr. Richard E. Berg by e-mail or using phone number or regular mail address
given on the Lecture-Demonstration Home Page.