Accuracy and Precision

You're building a dog house. You've measured and cut the lumber. Now you begin building the frame. Oh no! It's totally crooked. The left side is shorter than the right side. What happened? Obviously, the measurements weren't made accurately, . . . or maybe the problem is they weren't made precisely. It really doesn't matter that much whether the length of the timbers is the same as the length specified on the blueprint. What makes the frame crooked is the fact that the timbers are not the ***same*** length. That is the difference between accuracy and precision.

Accuracy is how close a measurement is to an actual or accepted value. **Precision** refers to the repeatability of a measurement. It also refers to the number of decimal places of a measurement. The difference is well illustrated by the table below, which shows the possible outcomes when trying to shoot a bulls-eye with an arrow.

	Accurate	Not Accurate
Precise		
Not Precise		

For each example below, state whether the measurements given are *accurate, precise, both,* or *neither*. Then explain your reasoning.

1. Your schedule says class is over at 10:15 am. According to your watch, the bell rings everyday at 10:31 am. _____

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2. You have a container 1 cm on a side. 1 cm^3 is 1 mL. You fill the container with water and pour it into a graduated cylinder three times. You get the following: 1.01 mL; 0.99 mL; and 1.00 mL. _____

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3. You bring home custom made shades to put in your windows. One of them is 3 cm too narrow and 20 cm too long, one of them is the right length but it is 5 cm too wide, and a third is the right width but it is 6 cm too short. _____

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