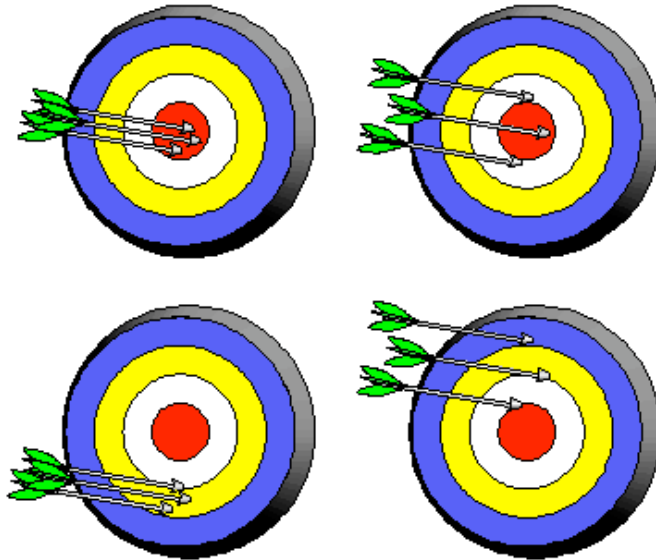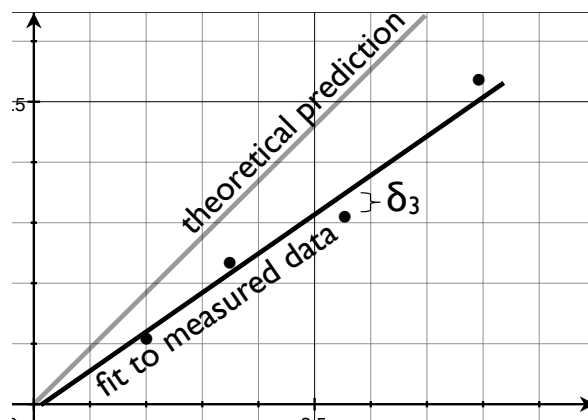# Precision and Accuracy

Which of these targets was hit with good precision, which was hit with good accuracy?

Accuracy is a measure of how close to the theoretical prediction the measured data is and is identified by the percent error

Precision is a measure of how well your measured data can be fit and is quantified by δ_{rms}, the root-mean-square deviation, i.e. how far from the best fit line a typical data point is.

$$\delta_{rms} = \frac{\sqrt{\sum_{i=1}^{N} \delta_i^2}}{N}$$

Free-Fall

Don't count these points because they were made before the mass was in free-fall (i.e. before you let go)

Label your first clear point as 0, and call this location x=0 and time t=0.

Measure all distances from point 0!

Look for "missing points" that may not have shown up clearly on the strip. When no points are missing the interval between successive points should be steadily increasing

Average velocity in this range is

$$v_4 = \frac{x_5 - x_3}{t_5 - t_3}$$

From equation $v(t) = v_0 + gt$ the slope of v(t) versus t curve will be g, the acceleration due to gravity.