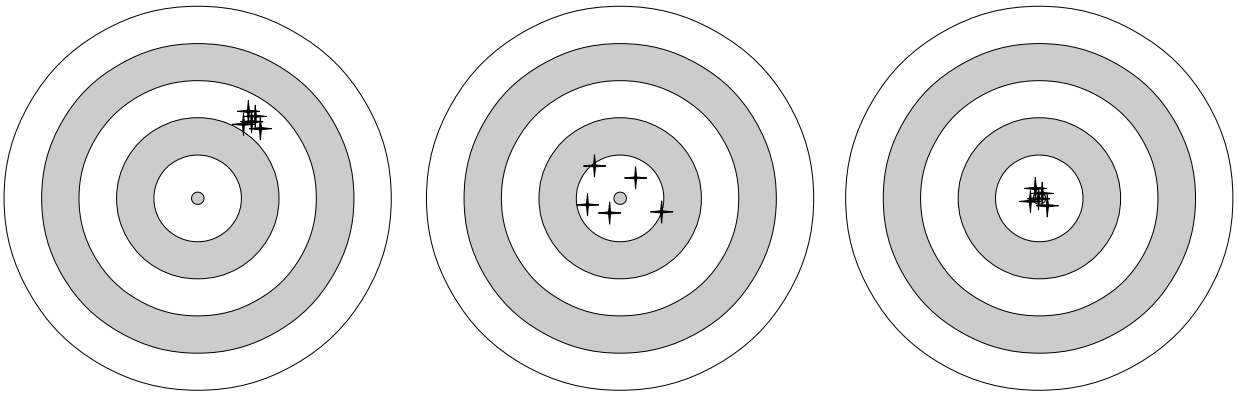
Reference: Precision and Accuracy



Precise. Inaccurate. Imprecise. Accurate. Precise. Accurate.

When **precise** measurements are made over and over again, they are very close to each other. They have a fine or "sharp" attention to detail, so their numbers will have a lot of significant digits. For example:

- "33.224 seconds" is more precise than "2 seconds" because the numbers go down to more decimal places.
- Precise shots at a target would all hit extremely close to each other, but they might not be near the bullseye.

When **accurate** measurements are made over and over again, they cluster around the true or accepted value for a number. They average out to be "correct". For example:

- If you're measuring the number of hours in a day, "23 hours" is a more accurate answer than "26 hours" because it's closer to the real value of "24 hours".
- Accurate shots at a target would all hit in the general area of the bullseye, but they might not be all that close to each other.

Scientists strive to make sure their measurements are as accurate and as precise as possible. Suppose you were asked to measure the number of days in a year. (Remember, it's not exactly 365 days – that's why we have leap years!)

- A measurement of 241.45521 days would be very precise, but not at all accurate. It's over a hundred days too short!
- A measurement of 365 days is not very precise, but it's as accurate as possible at that level of precision. (365 days is closer to "right" than either 364 or 366.)
- Compared to "365 days", a measurement of 365.24 days is both precise and accurate. Going down to the hundredths place means the measurement is more precise than "365". This also means the measurement can get closer to the real length of a year than whole numbers could.