

Biometry - Clex 1 - solutions

1. a) Eye color: Blue, Green, Brown, Hazel
b) Amount of pain on a scale of 1 to 10
c) Antler length
2. a) A measurement of blood pressure with an well calibrated cuff
b) Measuring temperature with miscalibrated thermometer.

| 3. Value | Implied limits | Rounded | Implied limits |
|----------|-----------------------|---------|----------------|
| 106.55 | 106.545 - 106.555 | 107 | 106.5 - 107.5 |
| 3.0495 | 3.04945 - 3.04955 | 3.05 | 3.045 - 3.055 |
| 17815.02 | 17815.015 - 17815.025 | 17800 | 17750 - 17850 |
| 20.1500 | 20.14995 - 20.15005 | 20.2 | 20.15 - 20.25 |

4. Measure with precision 0.01

$$(3.5 - 2.8) / (0.01) = 70$$

5. $\text{Error}_1 = (0.165 - 0.16) / 0.16 = 0.031 = 3.1\%$

$$\text{Error}_2 = (0.125 - 0.12) / 0.12 = 0.042 = 4.2\%$$

$$\text{Ratio} = \frac{0.16}{0.12} = 1.333, \quad \text{Max ratio} = \frac{0.165}{0.115} = 1.435$$

$$\text{Error} = (1.435 - 1.333) / 1.333 = 0.076 = 7.6\%$$