1. What needs to be considered when selecting measurement equipment?   (6 pts)

   Accuracy and precision required
   Cost of equipment
   Specification limits
   Ease of use
   Readability

2. Calculate the following conversions. <u>Show all calculations</u>. (4 pts)
   a. How many grams of meat are in a quarter-pound hamburger? (1 oz = 28.35 g; 1 pound = 16 oz)

   1 pound = 16 oz therefore, ¼ pound = 4 oz

   4 oz x 28.35 g   = 113.4 g
   oz

   b. How many km/second are there in 65 mi/hour?   (1 km = 0.62 mi)
   1hour = 60 minutes   1 minute = 60 seconds

   65 miles x   hour   x   minute   =   0.018 miles
   hour   60 minutes   60 seconds   second

   0.018 miles   x   km   =   0.029 km/second
   Second   0.62 mile

3. Match the measurement error with its definition   (5 pts)

   Random Error   **B**   A) looking down on cylinder (example: liquid meniscus)

   Systematic Error   **D**   B) causes scatter in results (example: noise)

   Environmental Error **E**   C) misuse of equipment (example: drop micrometer)

   Observational Error   **A**   D) average offset from true value (example: excess wear)

   Gross Human Error   **C**   E) location conditions (example: vibration)