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**Introduction to Measurement**

Purpose: Familiarize yourself with the measurement tools available and with using precision

* For each part show any calculations used
* Show units and correct precision on all measurements

**Part I – Big table**

1. Measure and calculate the surface area of your table
2. Diagram all measured quantities
3. State all assumptions and specifications

Assuming the edges of the desks are equivalently curved, they can all be combined to create a circle. The area of the circle can then be calculated and subtracted from the square that is made by connecting the center of the circle and 2 points 90 degrees distant from each other. This final value can then be subtracted from the whole desk’s area.

Distance lengthwise: 47.00 cm

Distance widthwise: 62.00 cm

Area of desk if it were a perfect rectangle: 2914cm2

Radius of circle created by corners: 4.50 cm

Area of circle created by corners:

Area of square around circle:

Missing area at the corners of the desk:

Area of desk minus the missing corners: cm2

1. The surface area of your table is 2896cm2\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part II – Heavy pockets**

1. Determine the mass of one-third (1/3) of 1 US dollar (in change)
2. State all your assumptions and specifications
3. The mass of one-third (1/3) of 1 US dollar (in change) is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Part III – Fast money**

1. Measure the time needed for a penny to drop fifty (50) cm from rest
2. State your assumptions and specifications

Assuming that the penny is held flat against a wall at 50 cm off the ground and dropped as the stopwatch is started, and that the watch is stopped based on the sound of the penny hitting the ground.

1. You must have five (5) trials where you are the timer and record your data below

|  |  |
| --- | --- |
| Trial | Time |
| 1 | 0.24 sec |
| 2 | 0.27 sec |
| 3 | 0.33 sec |
| 4 | 0.20 sec |
| 5 | 0.24 sec |
| average | 0.26 sec |

**Part IV –Time needed for twenty-five (25) mL of water to flow from the faucet**

1. Measure to determine the time needed for **exactly twenty-five (25) mL** of water to flow out of the cold faucet **on full**
2. State all your assumptions and specifications

Use a measuring cup and wait until it fills halfway to the 50 ml line. Start with the tap already on and start the timer while moving the measuring cup under the water.

1. The time needed is 0.22 Sec.

**Part V — Estimation**

Without getting up from your seat determine

1. The surface area of the room in square feet.

200 m2

1. The distance between degrees longitude on Earth.

300 km