**SPH3U: Friction Lab**

1. First measure the mass of your wooden board, by suspending it from your spring scale and measuring the spring force holding it up.

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| --- | --- | --- | --- |
| **Draw a FBD** | **Fx Spring Force (N)** | **Fg (N)** | **Mass (kg)** |
|  |  |  |  |

1. Now you will measure different forces of friction, to find the coefficients of friction (µ) for different objects. Remember:

**FSmax:** Maximum static friction. This is the maximum force before it starts moving.

**FK:** Kinetic friction. This is the force to keep it moving at a constant speed.

Write the equations to get µS and µK from FSmax and FK:

µS =

µK =

**Board on table:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Added Mass (kg)** | **Total Mass (kg)** | **FN (N)** | **FSmax (N)** | **FK (N)** | **µS** | **µK** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Coefficients of friction for board on table:** | | | | |  |  |

**Board on carpet:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Added Mass (kg)** | **Total Mass (kg)** | **FN (N)** | **FSmax (N)** | **FK (N)** | **µS** | **µK** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Coefficients of friction for board on carpet:** | | | | |  |  |

**Board on wood:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Added Mass (kg)** | **Total Mass (kg)** | **FN (N)** | **FSmax (N)** | **FK (N)** | **µS** | **µK** |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
| **Coefficients of friction for board on wood:** | | | | |  |  |

1. Are the coefficients of friction the same for all three surfaces?

Did the coefficients of friction change with different amounts of mass?

Was the coefficient of static friction the same as the coefficient of kinetic friction for any materials?