**Tools and Equipment, Part I Activity –**

**Inclined Plane Worksheet**



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| **Instructions/Questions** |
| 1. **Measure the length and height of Inclined Plane A (1st station):**

Length: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (c*m*) Height: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (c*m*)1. What is the mechanical advantage based on these measurements? \_\_\_\_\_\_\_\_\_\_\_\_
2. What was the required force to raise the object?

Without the inclined plane: (Output force) \_\_\_\_\_\_\_\_\_ (*g*) With the inclined plane: (Input force) \_\_\_\_\_\_\_\_\_ *(g)*1. What is the mechanical advantage based on these measurements? \_\_\_\_\_\_\_\_\_\_\_\_
2. **Measure the length and height of Inclined Plane B (2nd station):**

Length: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (c*m*)Height: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (c*m*)1. What is the mechanical advantage based on these measurements? \_\_\_\_\_\_\_\_\_\_\_\_
2. What was the required force to raise the object?

Without the inclined plane: (Output force) \_\_\_\_\_\_\_\_\_ (*g*) With the inclined plane: (Input force) \_\_\_\_\_\_\_\_\_ *(g)*1. What is the mechanical advantage based on these measurements? \_\_\_\_\_\_\_\_\_\_\_\_
2. **Measure the length and height of Inclined Plane C (3rd station):**

Length: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (c*m*) Height: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (c*m*)1. What is the mechanical advantage based on these measurements? \_\_\_\_\_\_\_\_\_\_\_\_
2. What was the required force to raise the object?

Without the inclined plane: (Output force) \_\_\_\_\_\_\_\_\_ (*g*) With the inclined plane: (Input force) \_\_\_\_\_\_\_\_\_ *(g)*1. What is the mechanical advantage based on these measurements? \_\_\_\_\_\_\_\_\_\_\_\_
2. **Measure the length and height of Inclined Plane D (4th station):**

Length: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (c*m*) Height: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (c*m*)1. What is the mechanical advantage based on these measurements? \_\_\_\_\_\_\_\_\_\_\_\_
2. What was the required force to raise the object?

Without the inclined plane: (Output force) \_\_\_\_\_\_\_\_\_ (*g*) With the inclined plane: (Input force) \_\_\_\_\_\_\_\_\_ *(g)*1. What is the mechanical advantage based on these measurements? \_\_\_\_\_\_\_\_\_\_\_\_
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| **Results** |
| 1. Did you obtain different mechanical advantages for the different methods of measuring? If so, was the difference large?

  1. Which inclined plane had the greatest mechanical advantage?

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| **Conclusions** |
| 1. Does calculating mechanical advantage just with the dimensions of the inclined plane really work? That is, does the calculation describe what really happens? Write a short paragraph explaining your answer.

     1. If you are the engineer designing a ramp for a construction site to move a wheelbarrow a height of 100 feet, which inclined plane would you use? Why?

     1. What are some possible sources of error in this experiment?

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