**Rover Scientific Instrumentation**

**Options – Math Worksheet**

**Instructions**

The Mars rover’s scientific instrumentation is used to take samples. NASA has given you a budget of $1,350,000 to build your rover. You are required to have all of the parts listed in Table 1; however, you are unable to afford all of the Scientific Instrumentation listed in Table 2. You and your engineering partner must decide what instruments you would like to include on your rover and still remain within given budget.

**Table 1: Required Parts**

|  |  |
| --- | --- |
| **Part** | **Cost** |
| Mars Rover Body | $125,854 |
| Robotic Arm | $55,612 |
| Solar Panels | $62,780 |
| Batteries | $30,492 |
| Wheels | $42,543 |
| Antennas | $87,345 |
| Temperature Controls | $103,980 |

**Table 2: Optional Scientific Instrumentation**

|  |  |
| --- | --- |
| **Part** | **Cost** |
| Pancam (Panoramic Camera located on the head of the Mars rover) | $182,850 |
| Hazcam (Camera located on the front or back of the Mars rover for navigation) | $152,850 |
| Navcam (Camera located on the of the head of Mars rover for navigation) | $152,850 |
| Rock Abrasion Tool | $189,732 |
| Mössbauer Spectrometer | $218,256 |
| X-Ray Spectrometer | $226,456 |
| Microscopic Imager | $175,463 |

**Budget Worksheet**

**Required Body Parts**

1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

$\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Total Cost of Required Parts** $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Optional Scientific Instrumentation**

1.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 5.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

6.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

$\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Total Cost Optional Scientific** $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Instrumentation**

**Total Budget for Rover Project**

Total Cost of Required Parts $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Total Cost Optional Scientific $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Instrumentation

**Total Budget** $\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Is your Total Budget less than the budget given to you for the rover project?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_