**Paying (and getting paid) for asteroid mining**

Preliminary investors have offered you $100,000,000 to test the feasibility of asteroid mining. You and your team will need to use that money to pay for prospecting, harvesting, and processing ore from an asteroid. Balance your choices carefully.

There are two goals:

1. Spend as little money as you can and make as much as you can.
2. Convince future investors that your goals, strategies, results, and intended next steps are worth additional investment.

Of the two, the second goal is by far more important.

Review the price for prospecting, harvesting, and processing ore.

**Prospecting**

The cost and benefit for different prospecting methods in our model are shown in the table below:

|  |  |  |
| --- | --- | --- |
| **Prospecting** | **Cost** | **Benefit** |
| Map | $60,000,000 | 3 scoops |
| Spectroscopy | $30,000,000 | 2 scoops |
| Probe | $10,000,000/ scoop | 1 scoop during harvesting |

**Note:**

If you picked the same asteroid as another group, you have three options:

1. Mine the same asteroid.
   1. The team whose processor is done first gets to mine the asteroid first. They will keep the ore they processed, but return the byproduct (including unfiltered ore).
2. Change course.
   1. For $20M, you can select a different asteroid using the information that you have available to you.
3. Buy a faster rocket.
   1. For $20M, you can get to the asteroid faster.
   2. In our model, this purchase gives you an additional 10 minutes to finish designing and constructing your processor.

**Harvesting**

The cost and benefit for different harvesting methods in our model are shown in the table below:

|  |  |
| --- | --- |
| **Harvester size** | **Cost** |
| Small (1/4 cup) | $5,000,000 |
| Medium (1/2 cup) | $8,000,000 |
| Large (1 cup) | $10,000,000 |

If you want to add a camera to help guide your harvesting, you may add one to your harvester for $15M. In our model: a team member may provide verbal guidance to the team member harvesting ore.

**Processor Building Materials**

The table below shows materials available for building your processor and their current costs. Costs are subject to change.

|  |  |
| --- | --- |
| **Material** | **Cost** |
| Copy paper (per sheet) | $1,000,000 |
| Cardstock/Tag Board (per sheet) | $5,000,000 |
| Rubber Band | $1,000,000 |
| 20 cm Tape (Masking) | $1,000,000 |
| 6 cm Tape (Duct) | $5,000,000 |
| Dowel | $1,500,000 |
| Popsicle Stick | $1,000,000 |
| Plastic Spoon | $2,000,000 |
| Wax paper (12in x 8in) | $1,000,000 |
| Toothpick | $500,000 |
| Magnet | $10,000,000 |
| Pipe Cleaner (each single) | $500,000 |
| Twine (20 cm) | $500,000 |
| Straw | $500,000 |
| Paper bowl | $1,000,000 |
| Balloon | $1,000,000 |
| Tissue paper (per piece) | $500,000 |
| Cardboard tube | $1,000,000 |
| Unfolded paperclip | $250,000 |
| Hot glue (per minute) | $200,000 |
| Cardboard plank (~20 cm x 30 cm) | $2,000,000 |

If you want to test your prototype prior to launch, you may test it on a sample asteroid. The cost is $3,000,000 / 3 minutes.

If you want to buy extra time to harvest / process, you may do so for $5 M / min

**Value of Processed Ore**

The table below shows the value of processed ore, current 8 March 2016 2100 UTC (1300 PDT). Values are subject to change.

|  |  |  |  |
| --- | --- | --- | --- |
| **Material** | **price per kg in space** | **simulated by** | **price per unit in our model** |
| Iron | $4,000 | rubber bands | $20,000 |
| Nickel | $8,710 | macaroni | $20,420 |
| Cobalt | $20,420 | paper clips | $102,100 |
| Ice | $3,800,000 | ¼ packing peanut | $19,000,000 |
| Platinum | $29,900,000 | BBs | $149,500,000 |

**NOTE:**

For every mL of waste substrate in the processed ore, your team will be fined $500,000 as an impurity penalty.