Student Worksheet: M.A.R.S. Math Tasks

Name: _____

Date: _____

Grade level: _____

Task 1: Measuring the Fuel Cost

Example 1 - Part 1: Amount of Fuel Used

Fuel Cost = Distance × Fuel Cost Rate   **OR**   **F = D × C**

- For the first leg of your flight, the distance (D) between site *p* and site *a* is 362 kilometers.

- The fuel cost rate (C) is .02 kilograms per kilometer (kg/km).

- Calculate the fuel cost (F) of flying from site p to site a using the formula:

   F = D × C Be sure to show your work!

   F = _____ km × _____ kg/km

   F = _____ kg/km

Example 1 - Part 2: Percentage of Initial Fuel

- Now that you know the fuel cost (F) of flying from site p to site *a*, you need to calculate what percentage of your total fuel was used.

- To calculate what percentage of the fuel tank has been used with this leg of the flight, you will use the following equation:

   Percentage of Fuel Tank = $\dfrac{F\ kg}{20\ Kg} * 100\%$

   $\dfrac{\rule{1cm}{0.4pt}\ kg}{20\ Kg} * 100\%$ = _____ %

- What percentage of your fuel tank did you use?
   _____ %

Example 2

- For the next leg of your flight, the distance (D) will be 347 km. The fuel cost rate (C) will be .02 kg.

- Calculate the fuel cost for the next leg of your flight using the equation:
   F = D × C

With this equation now calculate what percentage of your total fuel would be used:

Percentage of Fuel Tank = $\dfrac{F\ kg}{20\ Kg} * 100\%$

- What percentage of your fuel tank did you use?
   _____ %
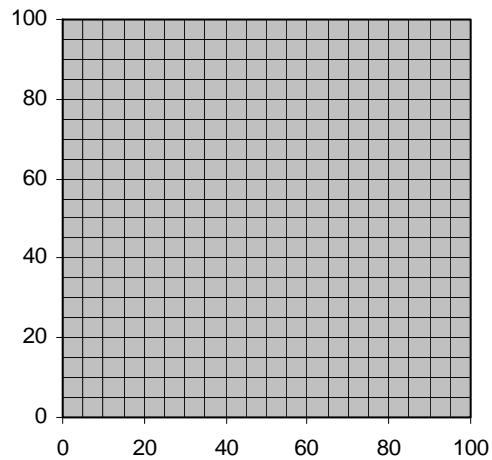
Task 2: Deciding Which Site to Visit

Example 1

Data set :   Coordinates of site a : (36%, 51%)

Coordinates of site b : (35%, 62%)

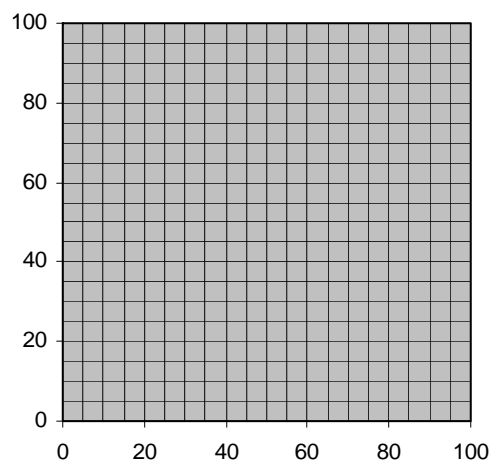Coordinates of site c : (41%, 82%)

Decision-making Graph

Example 2

Data set :   Coordinates of site a : (6%, 45%)

Coordinates of site b : (26%, 77%)

Coordinates of site c : (8%, 95%)

Decision-making Graph

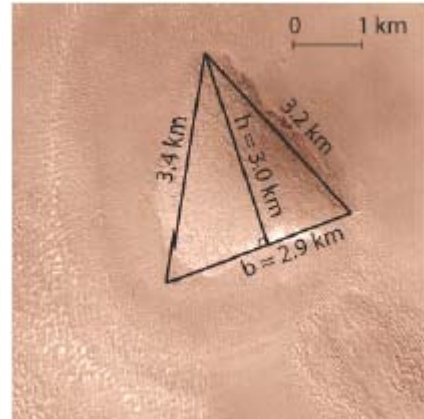# Task 3: Calculating the Area of the Site

Example 1

Which formula will you need?.

Area of a triangle $\quad = \dfrac{B \; x \; H}{2}$

Area of a rectangle $\quad = B \; x \; H$

Area of a circle $\quad = \pi \times r^2 \qquad (\pi = 3.14)$

Area of a quadrilateral $\quad = \dfrac{B \; x \left(H_1 + H_2 \right)}{2}$

Now calculate the area of the site using the measurements from the picture. Be sure to show your work!
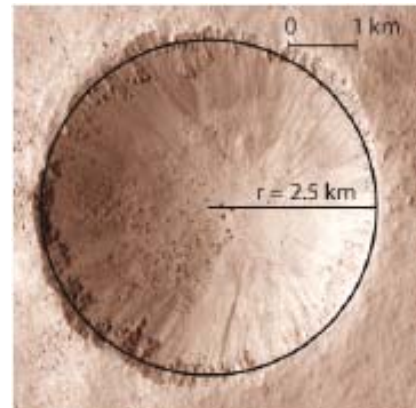
Example 2

Choose your formula:

Area of a triangle $\quad = \dfrac{B \; x \; H}{2}$

Area of a rectangle $\quad = B \; x \; H$

Area of a circle $\quad = \pi \times r^2 \qquad (\pi = 3.14)$

Area of a quadrilateral $\quad = \dfrac{B \; x \left(H_1 + H_2 \right)}{2}$

Now calculate the area of site 2. Be sure to show your work!

Task 4: Calculating the Amount of Minerals

Example 1

Site area = 4.35 km²

Site mineral density = 50 kg/km²

Mineral quantity = density (kg/km²) * site area (km²)

- The mineral density of hematite contained at the site is 50 kg/km².
- Use the formula to calculate the mineral quantity for this site.

Mineral quantity = _____kg/km² * _____ (km²)

Mineral quantity = _____ kg

Example 2

Site area = 19.625 km2

Site mineral density = 75 kg/km²

- Find the mineral quantity for this site using the mineral quantity formula.

Mineral quantity = density (kg/km²) * site area (km²)

Mineral quantity = _____ kg/km² *_____ km²

Mineral quantity = _____ kg

Congratulations! You did it!