

# PLANETS

## Science Notebook

Remote Sensing of Mars

Name: \_\_\_\_\_

Ready, S.E.T., Go!

[Content to come]

## Science Activity 2: Landforms on Mars

### Landforms We Notice

Review the images of the landing sites. Circle the landforms you find. If a landform is evidence of water, circle the water droplet.

#### **Gale Crater**

River Valley ☐

Layered Rocks ☐

Alluvial Fan ☐

River Delta ☐

Lava Flows ☐

Sand Dunes ☐

#### **Jezero Crater**

River Valley ☐

Layered Rocks ☐

Alluvial Fan ☐

River Delta ☐

Lava Flows ☐

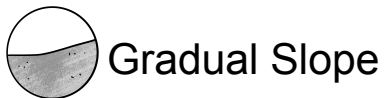
Sand Dunes ☐

## Science Activity 4: Topography on Mars

### Topography We Notice

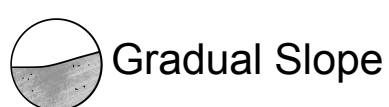
Review the topographic maps of the landing sites. Circle the features you find.

#### **Gale Crater**



Other:

#### **Jezero Crater**



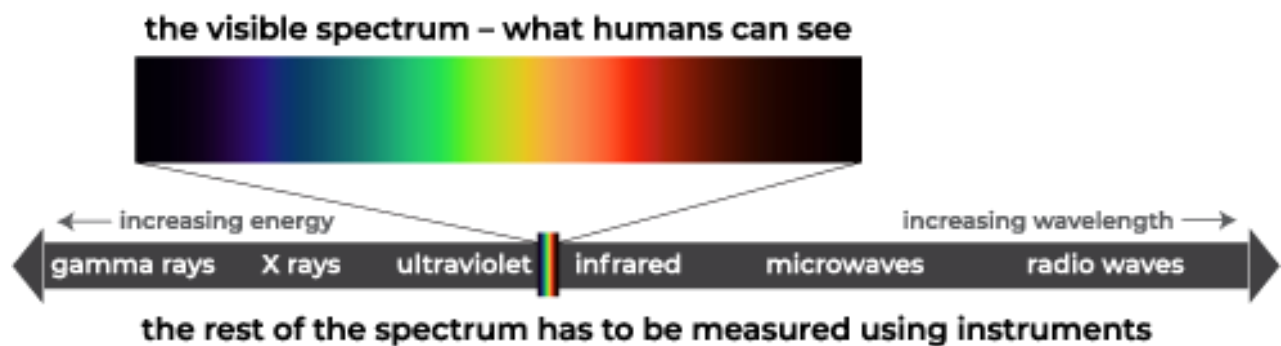
Other:



## Science Activity 5: Introducing Spectroscopy

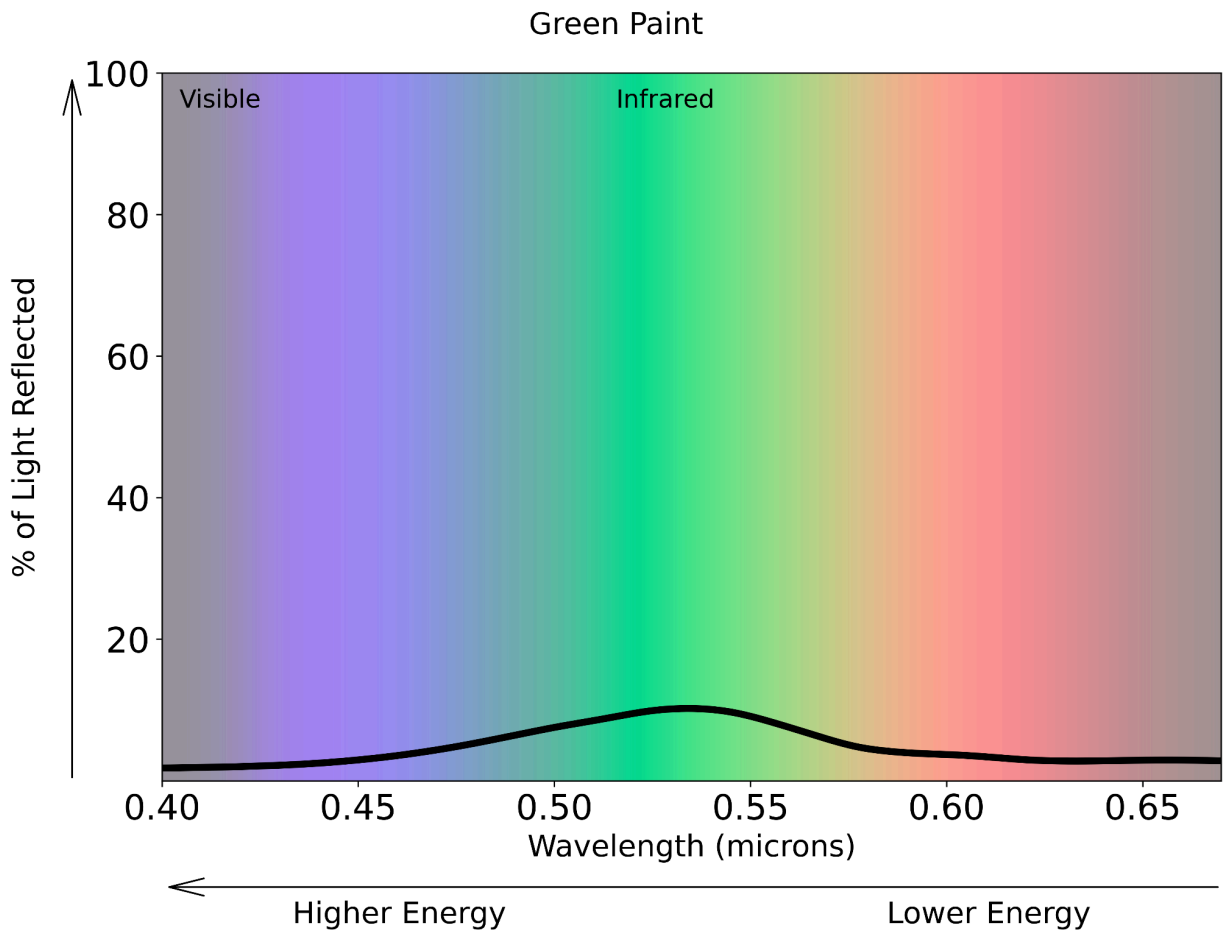
### Electromagnetic Spectrum

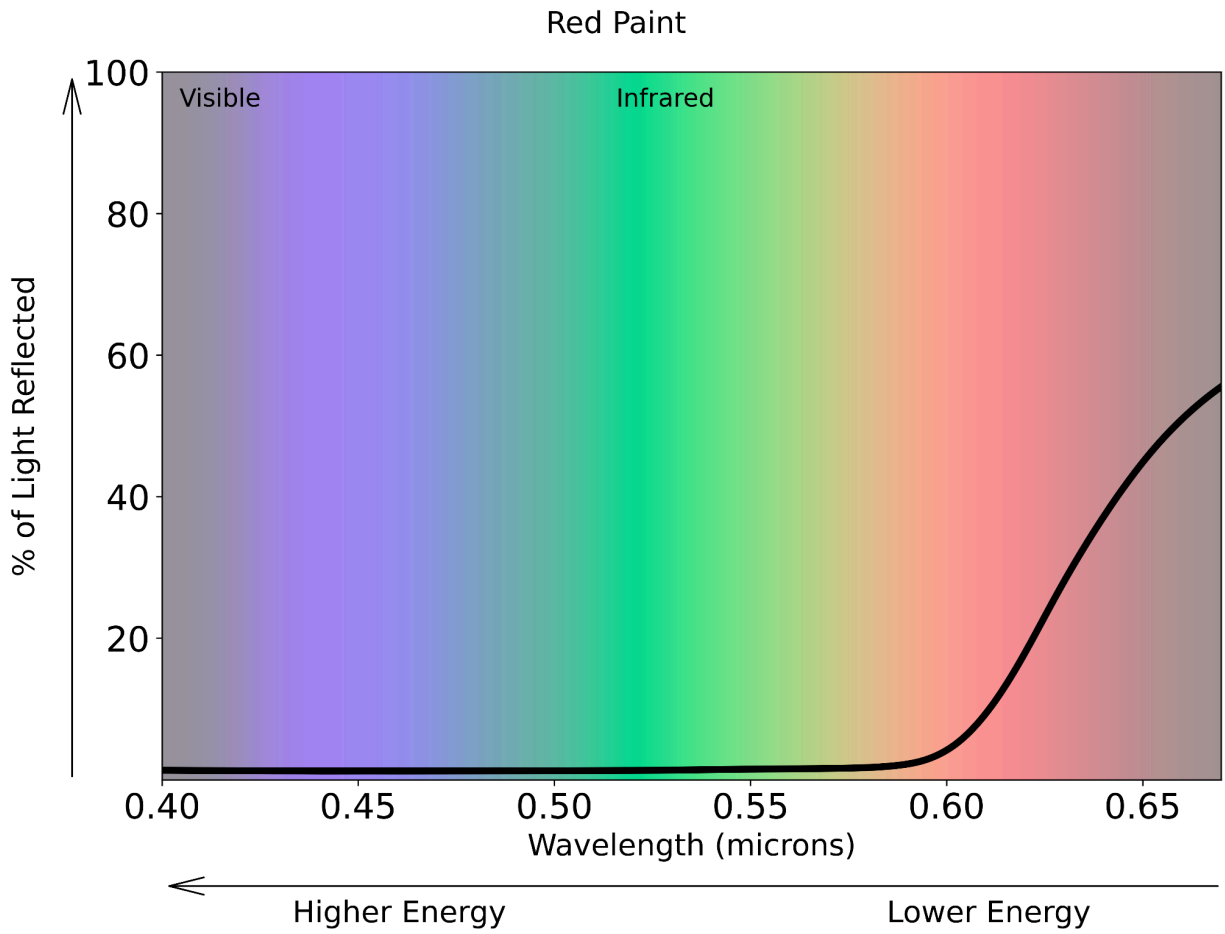
You might know more about the electromagnetic spectrum than you think! Different parts of the spectrum have different names, including gamma rays, X rays, ultraviolet (UV) rays, visible light, infrared (IR) waves, microwaves, and radio waves.



## Science Activity 5

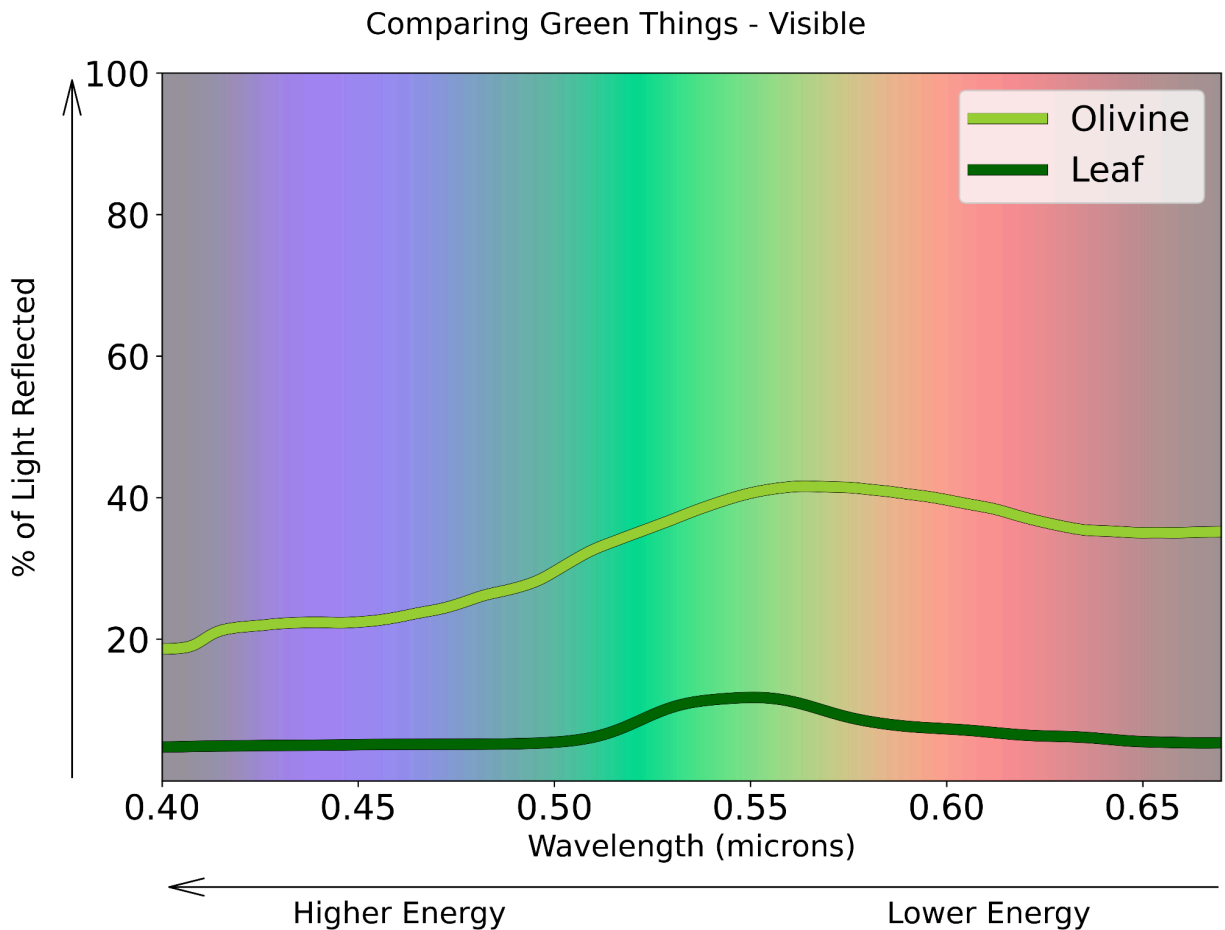
### Paint Colors Spectra



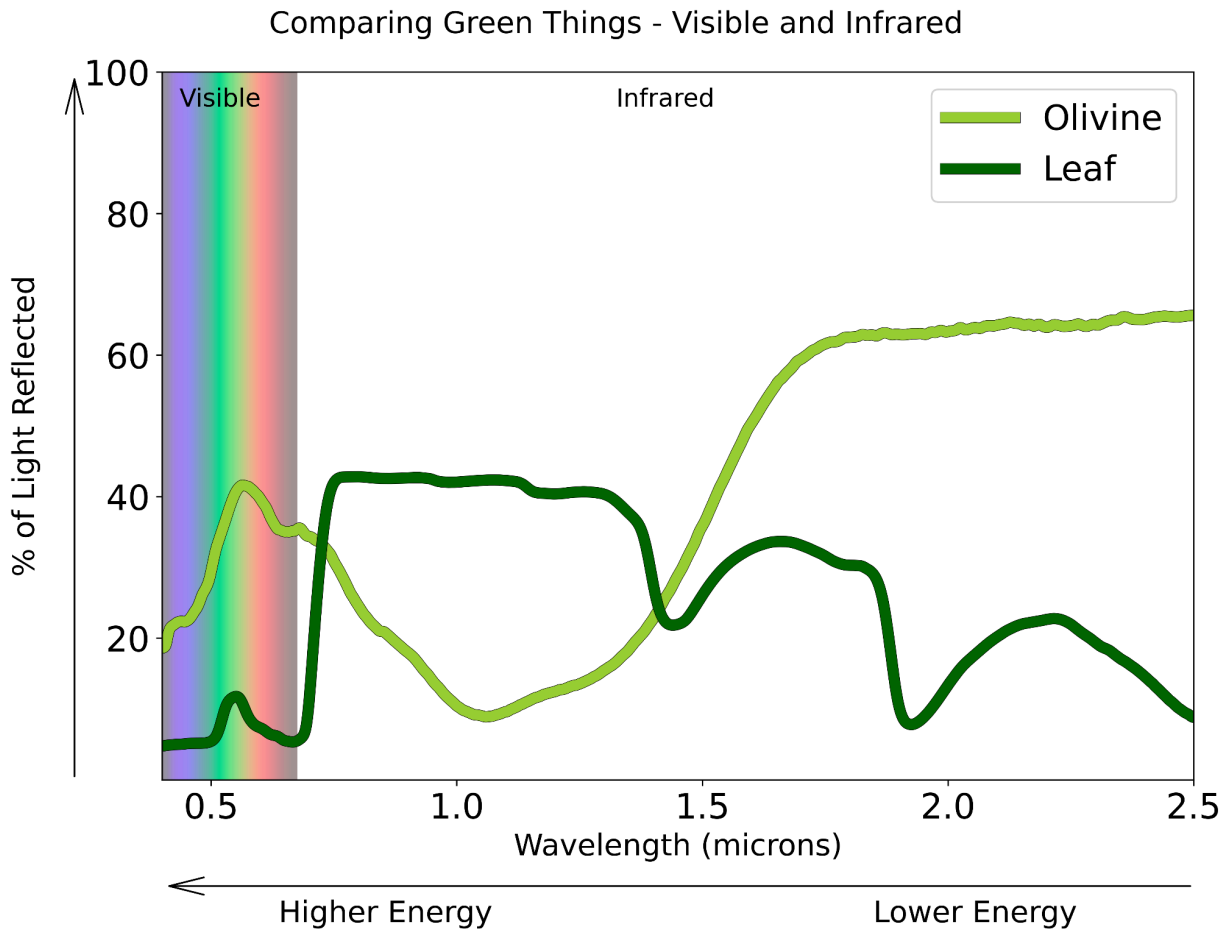


## Science Activity 5

### What Color Is Olivine?



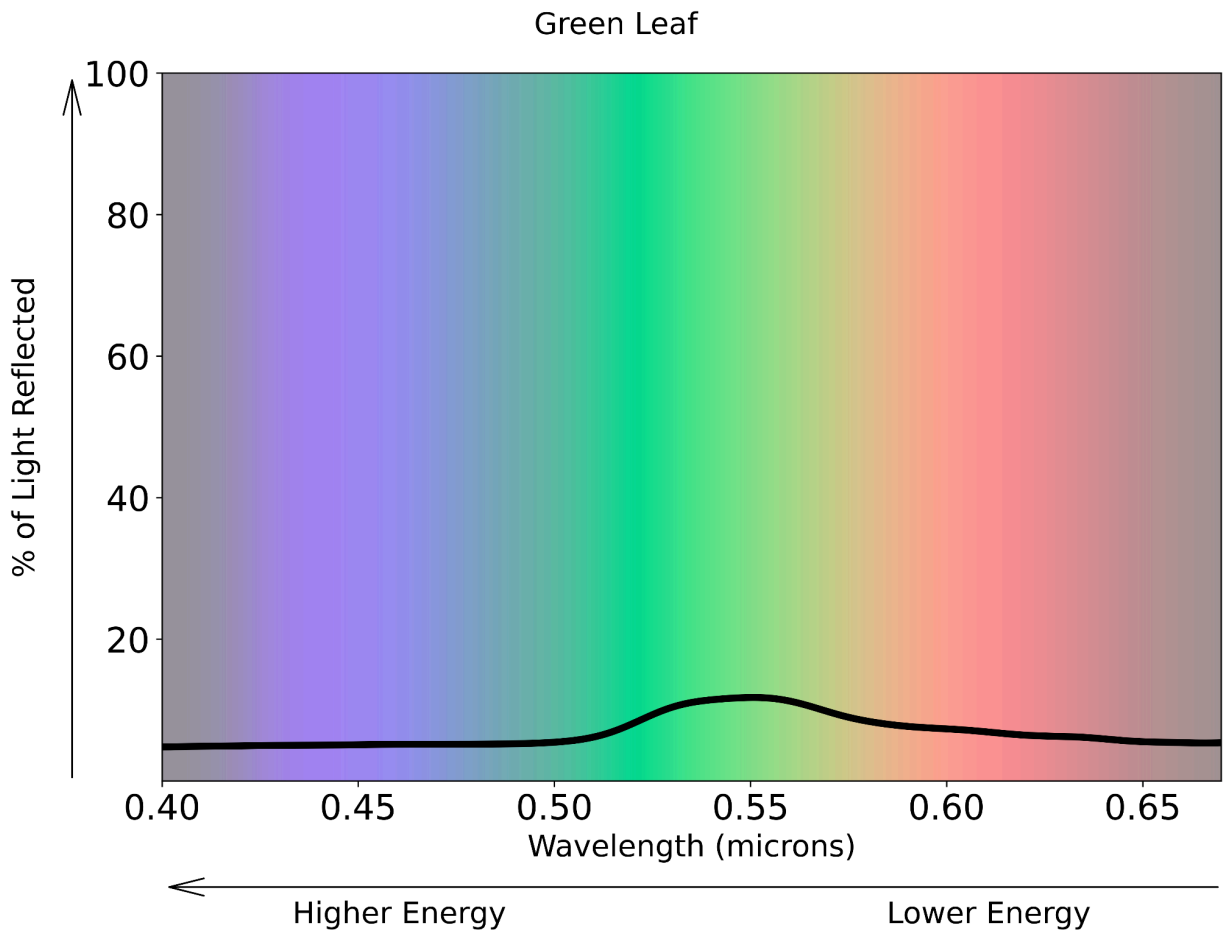
A graph of the reflectance spectra of the volcanic mineral olivine and a green maple leaf. Both have similar spectra, with a peak of reflectance in the green part of the visible spectrum. If you just had spectra and no images or other information, they would be difficult to tell apart using just visible light!



A graph of the reflectance spectra of the volcanic mineral olivine and a green maple leaf, but now showing the amount of both visible light and invisible infrared light reflected. The spectra of olivine and a green maple leaf are very different in the infrared, even though they are similar in the visible range. Measuring the infrared light makes it easy to tell them apart!

## Science Activity 6: Spectroscopy on Mars

### Green Leaf



## Minerals We Notice

Review the spectra from the landing sites. Circle the minerals you find. If a mineral is evidence of water, circle the water droplet.

### Gale Crater

Olivine ☐

Pyroxene ☐

Kaolinite ☐

Nontronite ☐

Kieserite ☐

Gypsum ☐

### Jezero Crater

Olivine ☐

Pyroxene ☐

Kaolinite ☐

Nontronite ☐

Kieserite ☐

Gypsum ☐

## Science Activity 7: Choose a Landing Site and Prepare for Science Showcase

### Make the Case for Your Site

Share the evidence you collected. Explain why NASA should send a rover to your top site. Record your response.

We think NASA should send a rover to

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We have chosen this site because

(1)

(2)

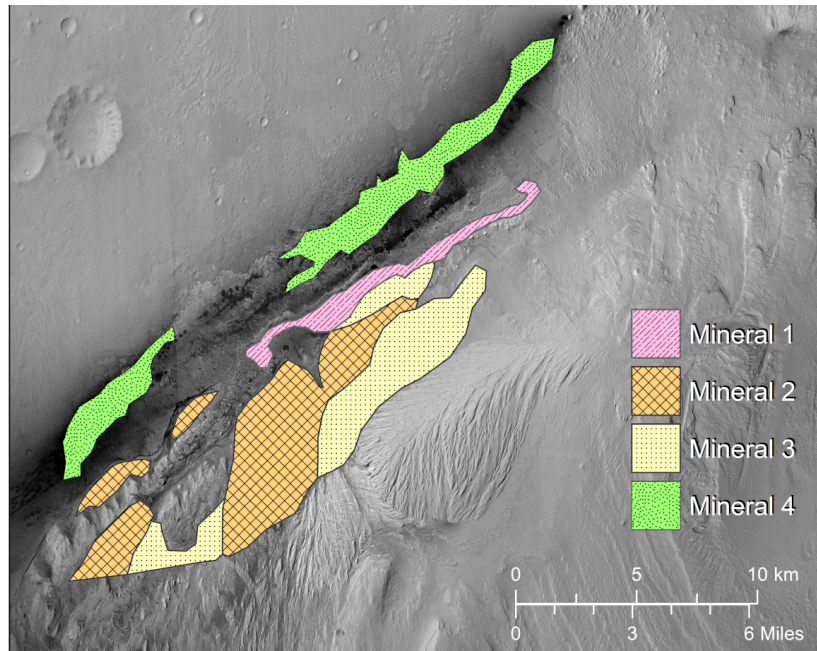
(3)



## Glossary

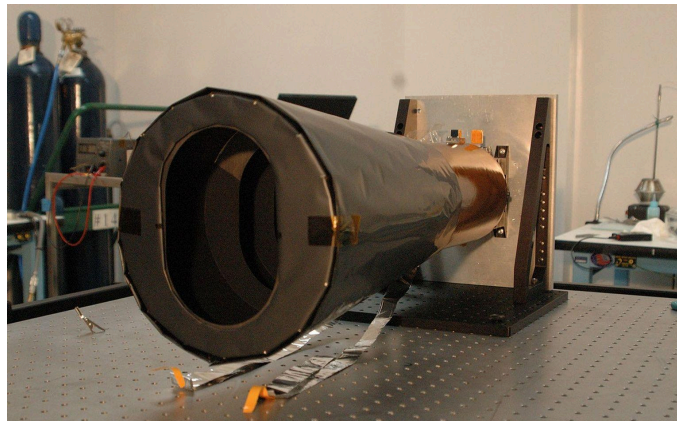
You can add drawings and notes under the words to help remember their meanings.

**Composition:** what a surface is made of

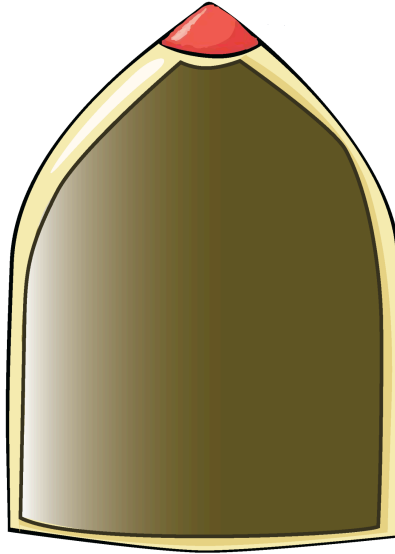


Source: Compact Reconnaissance Imaging Spectrometer for Mars (CRISM)

**CTX:** Context Camera, a camera on the Mars Reconnaissance Orbiter



**Fairing:** the part that sits on top of the rocket and protects a spacecraft during launch



**Habitable:** able to support some form of life



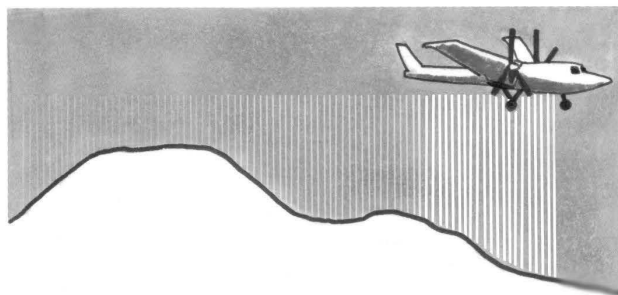
**HiRISE:** High Resolution Imaging Science Experiment, a camera on the Mars Reconnaissance Orbiter



**Landform:** a shape on the surface of a planetary body



**LiDAR:** light detection and ranging, a technique using lasers to measure distance



**Physical properties:** the shape and texture of a surface

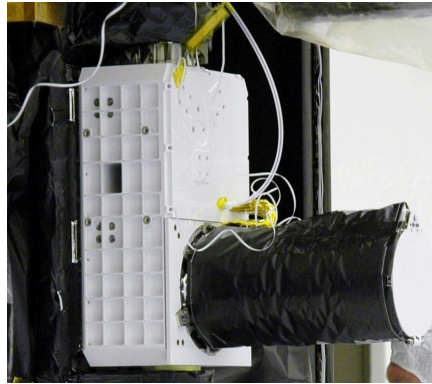


**Resolution:** The amount of detail in an image

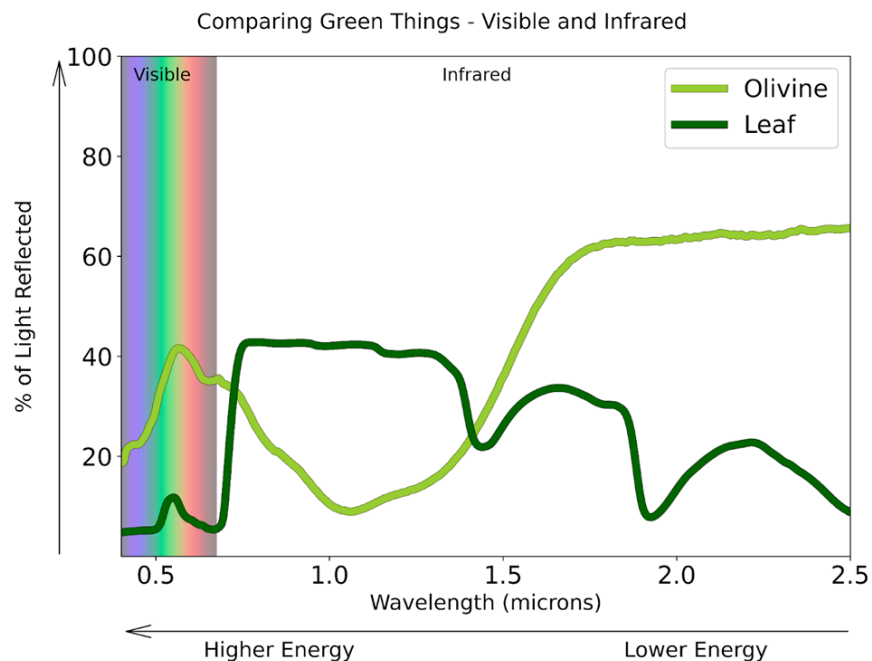




**Spectrometer:** a technology that measures the amount of light reflected from an object at many different colors (wavelengths).



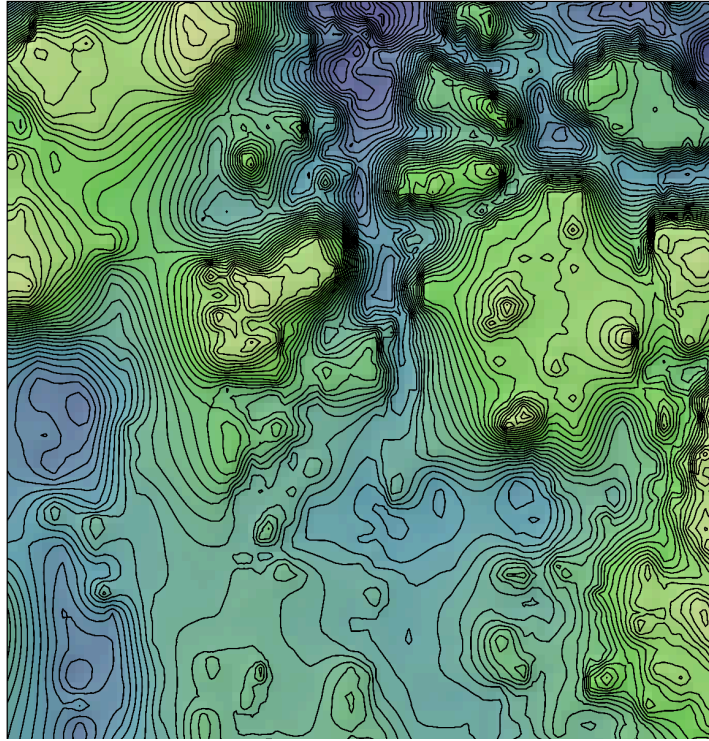
**Spectroscopy:** the study of how light of different colors behaves when it touches something



**Spectrum:** a range of colors



**Topographic map:** a representation of the shape of land in an area



**Topography:** the shape of land in an area

