Planets Science Series:

Remote Sensing of Mars

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NAME: --

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Activity 1 What Else Do We Need to Know?

Write your questions about Mars in the chart below. Think about the information you would need to help answer each question, and record it below.

What questions do you have about Mars?	What information would you need to find out the answer?

Map of Possible Mars Landing Sites

Nili Fossae

Jezero Crater

Gale Crater

Iani Chaos

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Activity 1 What Else Do We Need to Know?

Look at the CTX and HiRISE images of the landing sites. On the lines below, record which landforms you see at each site, and why you think those landforms are significant. Then, decide which site you think would be the most scientifically interesting to explore.

Rank the sites based on how scientifically interesting you think they are (1 = most interesting, 4 = least interesting).

Mars Site	Landforms	Significance	Ranking
Gale Crater			
Iani Chaos			
Jezero Crater			
Nili Fossae			

Which site do you think is the most interesting? Why do you think so?

_____

_____

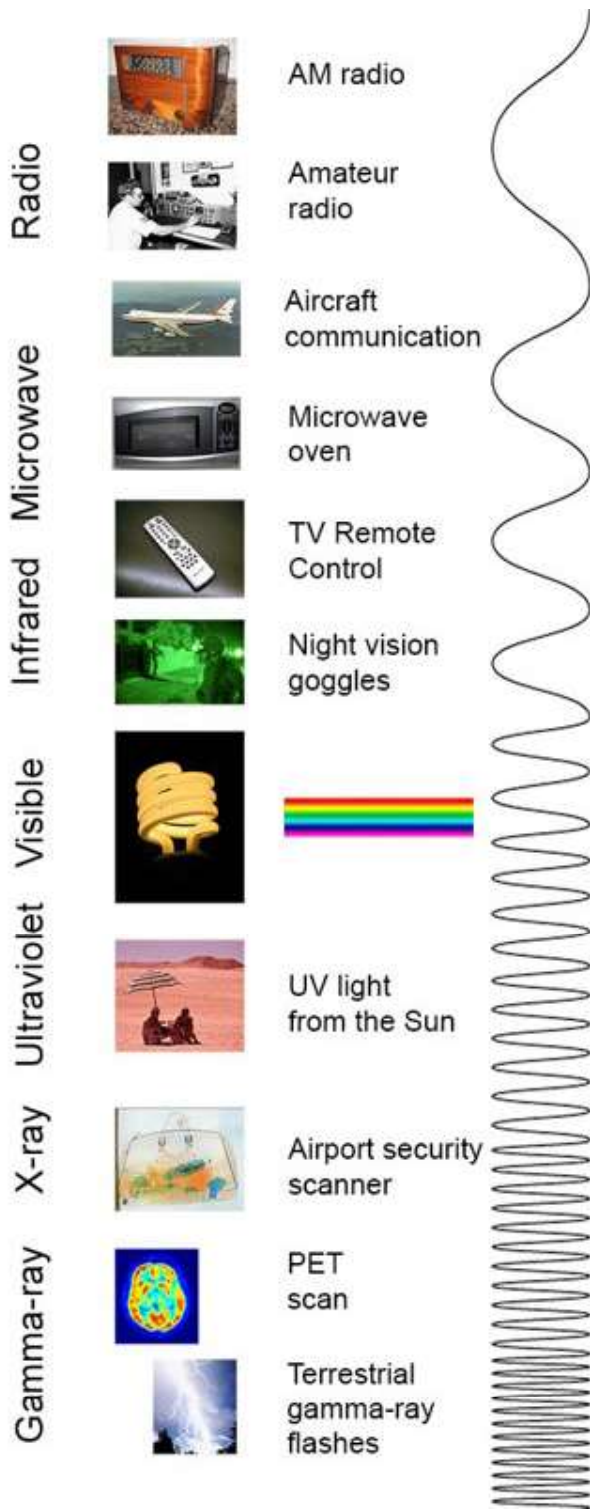# SCIENCE *NOTEBOOK*

Activity 2 Safe Landing Sites

For each Mars site, look at the MOLA topography data on pp. 11-14 in the Data Packet. Record the topography of each location in the chart below using terms like: flat, smooth, hilly, rocky, or cratered. Rank the sites in order of how safe it would be to land a rover there, based on the topography that you see (1 = Safest, 4 = Least Safe).

Mars Site	Topography	Ranking
Gale Crater		
Iani Chaos		
Jezero Crater		
Nili Fossae		

Which site do you think is the safest? Why do you think so?

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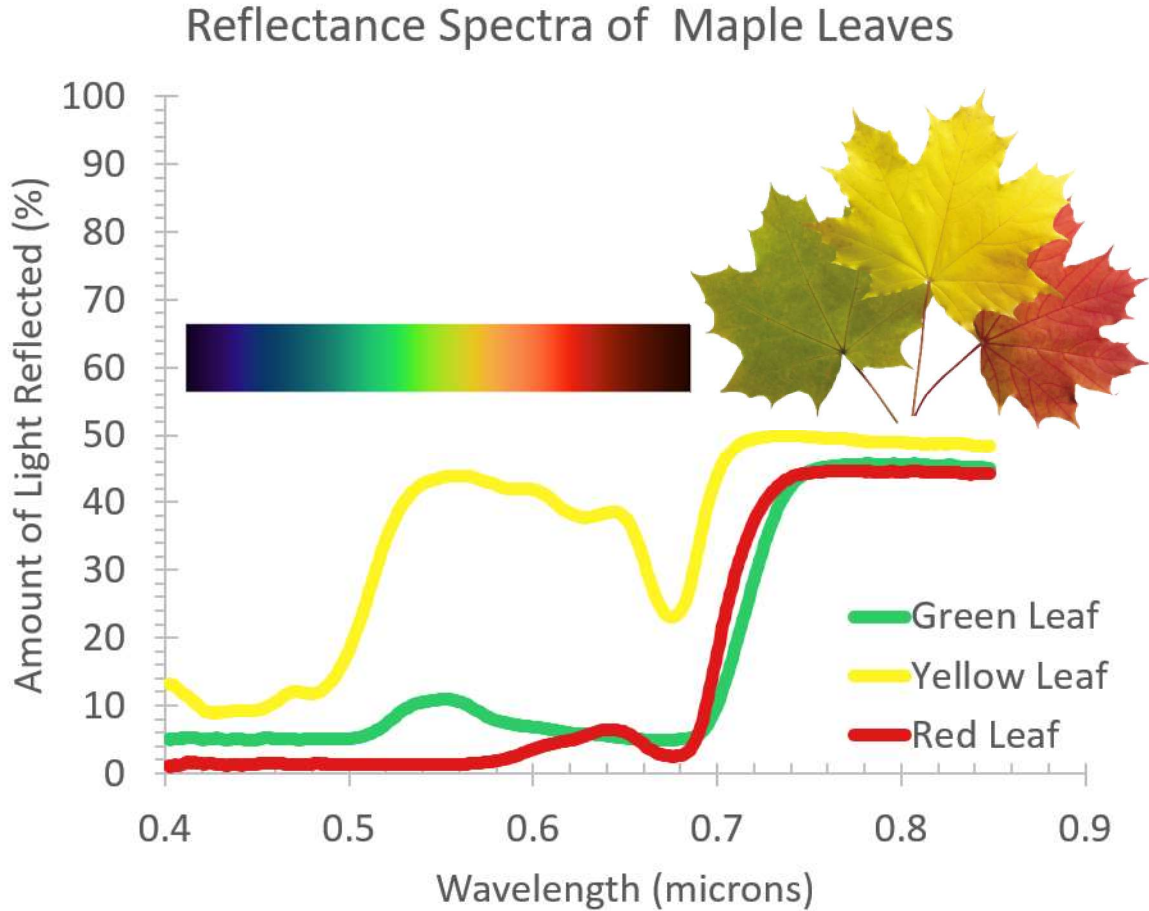## Activity 3 Electromagnetic Spectrum

Note: You might know more about the electromagnetic spectrum than you think! This image shows some of the ways that people use or experience different waves in the electromagnetic spectrum.

Image credit: NASA

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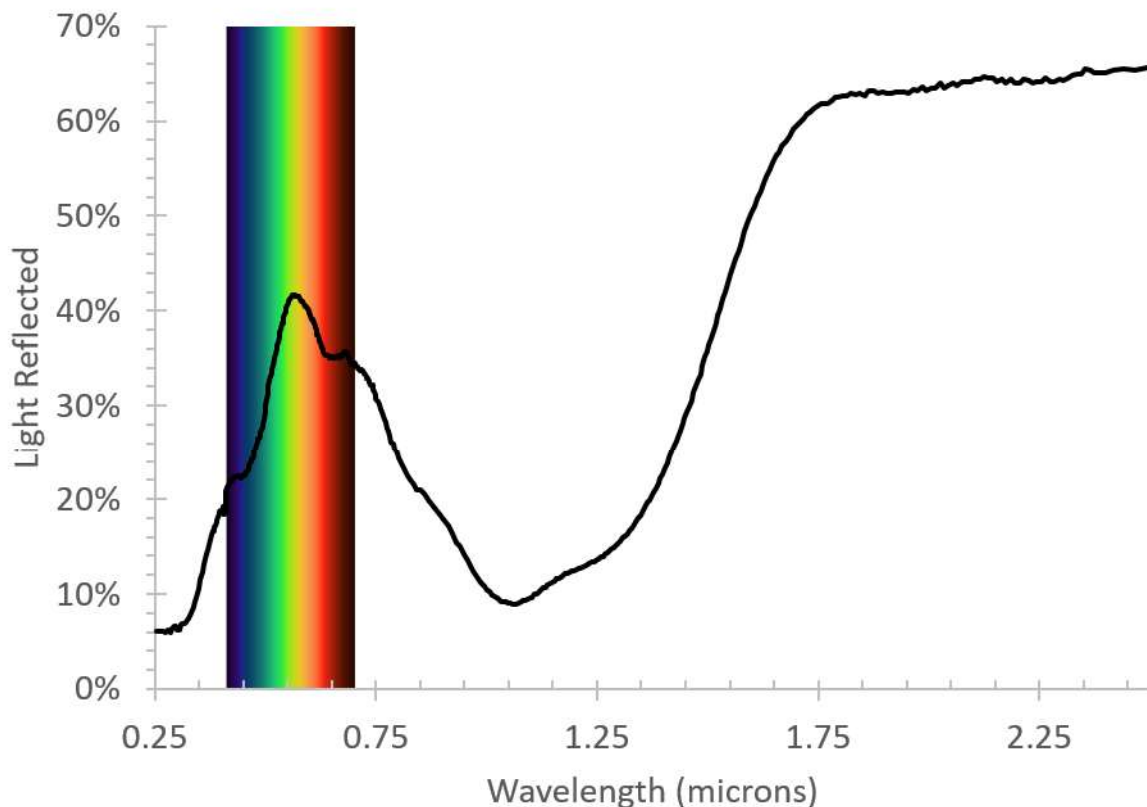
Activity 3 Maple Leaf Spectra

The image above shows reflectance spectra for red, yellow, and green maple leaves.

Do you think you could tell which line represents the data for each leaf, even without the pictures and labels, just by looking at the spectra? How would you know?

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Activity 3 What Color is Olivine?

The image above shows the reflectance spectrum of a mineral called olivine. Compare the data you see here to the reflectance spectra of maple leaves on the previous page.

Based on what you know about light and color and the data you see here, what color do you think the mineral olivine is? Why?

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Activity 3 Sites With Minerals

Compare the spectra for each site to the Mineral Fingerprinting Data Sheet. Write the names of the minerals found at each site in the chart below. Then, rank the sites based on the number of water-related minerals the rover could access (1 = most minerals, 4 = fewest minerals).

Mars Site	Minerals Found	Ranking
Gale Crater		
Iani Chaos		
Jezero Crater		
Nili Fossae		

Which site do you think has the most minerals? Why do you think so?

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Activity 4 Putting the Data Together

Now consider the image data, mineral data, and topographic data together and choose three sites you would recommend to NASA to land a rover on Mars. Remember, NASA is looking for scientifically interesting sites that have evidence of water-related minerals, and are also safe to land. Make sure to note the evidence you find to support your ranking for each site.

Site 1: Why do you think this is the best site to explore?

Site 2: Why do you think this is a good site to explore?

Site 3: Why do you think this is a good site to explore?

Activity 4 Make the Case for Your Site

Use the evidence you collected to prepare an argument for NASA, convincing them why they should send the rover to explore your top site. Use the space below to write or draw your response.