

# Meteorite Map Challenge Activity Instructions

**Informal & Formal Educational Settings | Ages: 8+ | Estimated Time: 10-15+ minutes**

*An activity designed to enable learners to build knowledge and awareness of meteorite-related locations around the world.*

**Materials per group of ~2-4 learners:** 1) Meteorite Map Challenge Activity Board (11 X 17" or 22 X 34") 2) Set of Map Numbers (1-8) 3) BONUS CHALLENGE A Fun Fact Cards 4) BONUS CHALLENGE B Cards (print double sided)

## SUGGESTED STEPS TO FACILITATE ACTIVITY:

### 1. Orient Learners to Activity Board and Match Meteorite-related Questions with a Corresponding Map Location

- Depending on your learning environment, provide groups of learners with an activity board and number pieces (1-8) or set up activity boards for learners with the number pieces (1-8) in their respective locations on the map.
- Orient learners to the activity board. Explain that they will learn about eight locations around the world associated with rocks from space (meteorites). Meteorites provide clues about the history and evolution of our solar system.
- Ask learners to share knowledge and observations of the activity board and map.
- Discuss and have learners complete instructions:
  - Read the questions and hints below each image.
  - Find and move the number (1-8) from the location pin on the map to the box on each image.



Where is NASA Johnson Space Center's Antarctic Meteorite Lab located?  
*HINT: A city along the Texas Gulf Coast in North America.*



Where is NASA Johnson Space Center's Antarctic Meteorite Lab located?  
*HINT: A city along the Texas Gulf Coast in North America.*

Example image with question and hint, shown without & with a number piece.

## METEORITE MAP CHALLENGE

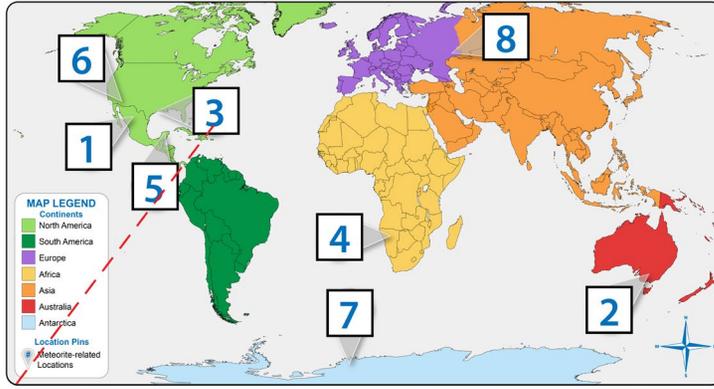
FIND METEORITE-RELATED LOCATIONS AROUND THE WORLD AND LEARN FUN FACTS!

**INSTRUCTIONS:**

- 1) Read the question and hint below each image.
- 2) Find and move the matching number (1-8) from the location pin on the map to the corresponding box on each image.

**CHALLENGES:**

- A) Match Fun Fact Cards
- B) Test Your Geography Knowledge



**MAP LEGEND**

- North America
- South America
- Europe
- Africa
- Asia
- Australia
- Antarctica

Location Pins  
Meteorite-related Locations

Meteorite-related locations around the world help provide clues about the history and evolution of our solar system.



Where have teams of explorers searched for meteorites since 1976?  
*HINT: Earth's southernmost continent.*



Where were the Murchison meteorites, which contain the building blocks of DNA, found?  
*HINT: A town in southeastern Australia.*



Where is NASA Johnson Space Center's Antarctic Meteorite Lab located?  
*HINT: A city along the Texas Gulf Coast in North America.*



Where were the ancient Allende carbonaceous meteorites found in 1989?  
*HINT: A town south of the USA-Mexico border in North America.*



Where was the largest witnessed meteorite fall of this century located?  
*HINT: A city in a country that spans across Europe and Asia.*



Where is one of the best preserved impact craters in the United States?  
*HINT: A town in the Great Canyon state in North America.*



Where is evidence of the impact that contributed to dinosaur extinction found?  
*HINT: A peninsula in southeast Mexico in North America.*



Where were the Gibson iron meteorites found?  
*HINT: A country along southeastern Australia.*

Astromaterials Research and Exploration Science (ARES) at the NASA Johnson Space Center in Houston, TX <https://ares.jsc.nasa.gov>

Example activity board with number pieces in their map locations.

## 2. BONUS CHALLENGE A: Match Fun Fact Cards with Meteorite-related Questions

- AFTER learners have matched each map location to an image, acknowledge (but don't correct) answers.
- Provide learners with "Fun Fact" CHALLENGE A Cards. Have them read and place each matching card next to or under each corresponding meteorite-related image. They should adjust (self-correct) answers as necessary.

### METEORITE MAP BONUS CHALLENGE A

*Match Fun Fact Cards*

Place each Fun Fact Card under or next to the matching images around the map.

This lab has curated Antarctic Search for Meteorite (ANSMET) samples since 1978. Weighing about 110 kg (~243 pounds) "Big LEW" is one of the largest.

"CHALLENGE A" Instruction and example Fun Fact Card.

## METEORITE MAP CHALLENGE

FIND METEORITE-RELATED LOCATIONS AROUND THE WORLD AND LEARN FUN FACTS!

**INSTRUCTIONS:**

- Read the question and hot water each image.
- Find and stick the matching number (1-8) from the location pin on the map to the corresponding box on each image.

**CHALLENGES:**

- Match Fun Fact Cards
- Test Your Geography Knowledge

Meteorite-related locations around the world help provide clues about the history and evolution of our solar system.

**MAP LEGEND**

- North America
- South America
- Europe
- Africa
- Asia
- Australia
- Antarctica

Location Pins  
Meteorite-related Locations

**3**

ANTARCTIC METEORITE PROCESSING LAB  
NASA Johnson Space Center

This lab has curated Antarctic Search for Meteorite (ANSMET) samples since 1978. Weighing about 110 kg (~243 pounds) "Big LEW" is one of the largest.

**1**

In February 1969, a fireball was seen over northern Mexico. This meteorite fall resulted in the recovery of the Allende carbonaceous chondrites estimated to be ~4.567 billion years old.

**8**

In February 2013, a meteor about the size of a school bus passed through Earth's atmosphere and exploded (airburst explosion) over Russia, a reminder of the importance of planetary defense.

**6**

Barringer Meteor Crater, a geology training site for astronauts, is about 1200 meters (~4000 feet) in diameter. It formed from the impact of an iron-nickel space rock ~50,000 years ago.

**5**

Chicxulub, an impact site partially hidden under the Yucatan Peninsula, was formed about 66 million years ago by an asteroid ~10 km (~6-miles) in diameter that struck the Earth.

**4**

In 1836, these iron-rich rocks, initially discovered by the Nama people in Namibia, were determined to be iron meteorites. They were named Gibeon after the town closest to where they were found.

Activity board with Fun Fact Cards placed next to or under each meteorite-related image.

## 3. BONUS CHALLENGE B: Test Your Geography Knowledge

AFTER learners have matched map locations, have them test their geography skills by answering each question with a corresponding name for its location. *[Encourage learners to provide any or all parts of an answer: Houston or Texas, or Houston, Texas]*

For each question, consider asking learners to:

- Orally share their answers
- Write answers on an index card or dry erase board and hold it up
- Independently check answers with a set of CHALLENGE B cards

Optional Extention: Have learners investigate other meteorite-related locations (i.e. impact craters), add location pins on map, and create their own questions, hints, and fun fact cards.

### ANTARCTIC METEORITE PROCESSING LAB

NASA Johnson Space Center

**Where is NASA Johnson Space Center's Antarctic Meteorite Lab located?**

*HINT: A city along the Texas Gulf Coast in North America.*

3

ANSWER: Houston, Texas

**FUN FACT:** This lab has curated Antarctic Search for Meteorite (ANSMET) samples since 1978. Weighing about 110 kg (~243 pounds) "Big LEW" is one of the largest.

View "Big LEW" in NASA's Antarctic Meteorite Lab on this meteorite infographic.

View (front & back) of example 'CHALLENGE B' Card. Learners can check answers & learn more through QR codes.