

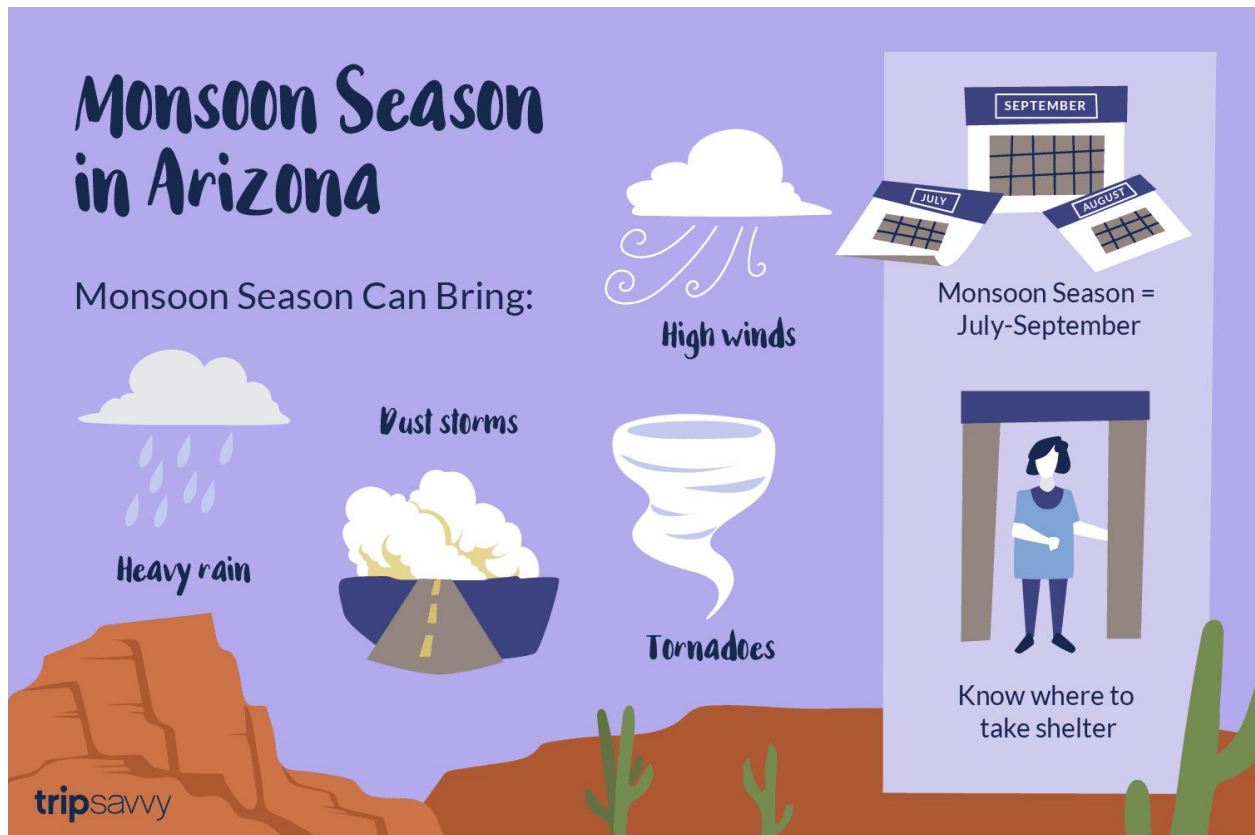
Cloudy with a Chance of Science!

Week 3: Grades K-2

Day 5: Monsoon!

Teacher/Parent Background

Arizona's monsoon season begins in June and continues through September. With it comes higher humidity, which can lead to thunderstorms, heavy rain, lightning, hail, high winds, flash flooding, dust storms and extreme heat.



Overview

In this activity, young learners will apply their understanding of weather and engineering concepts to propose and implement improvements to a shelter for Peep that provides him shelter during Arizona's monsoon season.

Related Standards

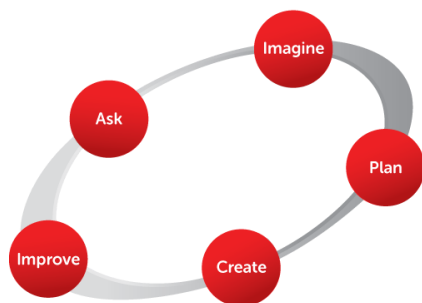
- **Observe, describe, ask questions and predict** seasonal weather patterns

and how those patterns impact plants and animals (including humans).

- **Analyze patterns** in weather conditions of various regions of the world and **design, test and refine solutions** to protect humans from severe weather conditions.

Key Terms

- weather - a mix of sunlight and clouds, wind, precipitation and temperature happening in a certain place at a certain time
- precipitation - any form of water that falls to Earth's surface such as rain, snow, hail and sleet
- monsoon - a prevailing wind, blowing from the southwest between May and September and bringing rain
- season - a part of the year marked by particular weather patterns and daylight hours
- humidity - the amount of water (vapor) in the air
- haboob - a violet wind blowing in summer bringing sand from the desert
- engineers - people who design and/or build things to solve problems
- engineering design process - a set of steps engineers use to propose solutions to problems



Engineering Design Process

- blueprint - a design plan
- shelter - a place that protects you from bad weather or danger

Materials List

- crayons/pencils
- shelter from Day 4
- objects to represent Peep, Chirp and Quack (i.e., stuffed animals, toy animals, blocks, etc.)
- building materials (tape, scissors, glue, etc.)
- shelter supplies (popsicle sticks, straws, cardboard, paper, pipe cleaners, cardboard tubes, empty containers, etc.)
- *Monsoon Season in Arizona* image
- *Planning for Monsoon Weather* handout

- hairdryer or fan

Activity Description

1. Revisit the student's improved shelter design from Day 4. Review the test results and student's reflections on the experience:
 - Yesterday, you made some improvements to your shelter for Peep.
 - Were Peep and his friends able to fit comfortably in your shelter?
 - How do you think they would have felt during the thunderstorm if they could have waited in the shelter you designed? Why?
2. Share the *Monsoon Season in Arizona* image:
 - Peep and his friends experienced a type of weather called a thunderstorm.
 - During some seasons of the year in Arizona, thunderstorms happen often/a lot.
 - Other times of year, or seasons, there are hardly any thunderstorms in Arizona.
 - Most of the thunderstorms we experience in Arizona happen during what is called monsoon season.
 - Monsoon season happens mostly during the summer months.
 - The air around us, which is usually dry, becomes more humid. That means there is more moisture or water in the air. This causes clouds to form and rain to fall.
 - It is also more windy during the monsoon season in Arizona. Sometimes the wind blows when it is not raining. This causes dust and dirt to get into the air and form a dust storm called a haboob.
 - Imagine if, instead of a thunderstorm, Peep and his friends needed shelter during a haboob. How might your shelter design change? Why?
3. Revisit the student's shelter design using the *Planning for Monsoon Weather* handout. Guide the student in determining which changes he/she wants to make.
 - What might you change about your shelter design so it will protect Peep and his friends from the strong winds and dust that happen during a haboob? How do you think this will improve your shelter?
 - Explain that a hairdryer/fan will be used to test the shelter's response to strong winds.
 - The student should record (if able) his/her idea on the *Planning for Monsoon Weather* handout using words, phrases and/or pictures.
4. Once the student has communicated and recorded all of his/her proposed changes, provide the student with time, space, additional materials and adult support (as needed) to recreate his/her shelter based on his/her revised plan.
 - **Reminder you can:**

- build only what you drew (i.e., If the plan shows a rectangular structure, then the structure should resemble a rectangle).
- use only the materials labeled in the plan (i.e., if the side of the shelter is labeled as popsicle sticks then straws or other material cannot be used).
- build for _____ minutes (time allotment is flexible to your schedule/student's attention span).

Closure

Once the student has finished recreating or the allotted time has elapsed, provide the student with time to test the shelter using a hairdryer or fan to simulate strong winds. Assist him/her in recording the results (i.e., video record using a phone, record on paper, etc.) on the *Planning for Monsoon Weather* handout. Then discuss successes and struggles that he/she experienced during the engineering design process:

- How well did your shelter protect Peep and his friends from the wind?
- If you had more time/materials/space, what would you improve?
- Were there any materials you wish you had but didn't? Why?
- Do you have any new advice to give another student who is trying to design and create a shelter? If so, what would you tell him/her?

Extension

Learn More About Monsoons

- Read [Hip, Hip, Hooray, It's Monsoon Day!;/¡Ajúa, ya llegó el chubasco!](#) by Arizona-Sonora Desert Museum
- Watch [The 2013 Arizona Monsoon](#) by Mike Olbinski

Planning for Monsoon Weather Handout

Proposed Changes	What Problem It Solves
<p style="text-align: center;">Revised Plan</p>	
<p style="text-align: center;">Results</p>	

**Monsoon Season
in Arizona**

Monsoon Season Can Bring:

- Heavy rain
- Dust storms
- Tornadoes
- High winds

Monsoon Season =
July-September

Know where to
take shelter

trip Savvy

The infographic features a purple background with a desert landscape at the bottom, including red rock formations and green saguaro cacti. On the left, the title 'Monsoon Season in Arizona' is written in a large, dark blue, cursive font. Below the title, the text 'Monsoon Season Can Bring:' is followed by four weather-related icons: a grey cloud with raindrops, a yellow dust cloud with a blue and grey funnel, a white and blue tornado, and a white cloud with three curved lines representing wind. On the right side, there is a section with a light purple background. At the top of this section, three calendar pages for July, August, and September are shown, with the text 'Monsoon Season = July-September' below them. Further down, an illustration of a person in a blue shirt and dark pants standing in a doorway is shown, with the text 'Know where to take shelter' to its right. The 'trip Savvy' logo is located at the bottom right of the infographic.