

Cloudy with a Chance of Science!

Week 3

Day 2: Weather vs. Climate

Teacher/Parent Background:

Although the words *weather* and *climate* are sometimes used interchangeably, weather and climate represent different things about our environments! In science, weather is described as the condition of an environment at a given time and involves factors such as cloud coverage/sun exposure, wind, temperature and precipitation. Climate, however, is described as the average pattern of the weather conditions taken over a period of time. Tracking the weather over time by collecting data can tell us more about the environment we live in and can help us better predict and prepare for upcoming weather.

Overview:

In this activity, students will describe the climate of their environment by interpreting weather patterns over time.

Related Standards:

- Collect, analyze, and interpret data to explain weather and climate patterns.

Key Terms:

- Weather: the condition of an environment at a given time.
- Climate: the average pattern of the weather conditions taken over a period of time.
- UV Index: measurement of the strength of the Sun's radiation at a given place and time.

Materials List:

- Pen/pencil
- *Student Resources - Pages 5-8*
 - *Phoenix Weather Forecast*
 - *Phoenix Data - Part 1*
 - *Phoenix Data - Part 2*
 - *Phoenix Data - Part 3*

- Computer/phone with audio - *optional for Extensions*

Activity Description:

- Ask students to review what they learned about weather during *Day 1: What's the Weather Like Outside?*. Briefly discuss with students:
 - What was the weather like outside your house? Describe the weather using observations from your investigation.
 - Why do you think it is important to know the weather conditions of your environment?
- We have learned that weather tells us about the conditions of our environment at a given time! But, is the weather the same each and every day? Have you ever experienced a change in the weather from day-to-day?
 - Prompt students to discuss and share their experiences.
- Looking at *Phoenix's Weather Forecast* for the week of 4/6-4/12, or the prediction of the week's weather, describe the weather conditions:
 - What changes in temperature were predicted?
 - Temperatures were predicted to start in the 80's, drop to the 70's and then rise back up to mid-80's.
 - What changes in sun exposure/cloud coverage were predicted?
 - The week was predicted to start out mostly sunny, become cloudier with storms/showers and then return to mostly sunny.
 - What changes in precipitation were predicted?
 - The week was predicted to begin with a 0% chance of precipitation, which then rose to a 65% chance of precipitation and ended with a 6% chance of precipitation.
 - **Note:** Although wind is a weather condition, wind is not a condition represented in this particular weather forecast but can be researched as wanted/applicable.
- As we can see, weather can change day-to-day! Since changes in weather happen daily, how do we best predict and prepare for upcoming weather?
 - Just as we observed and collected data about the weather outdoors, meteorologists use tools and their observations to study an environment's *climate*, the average pattern of the weather conditions taken over a period of time...usually over many years!
 - Meteorologists interpret weather patterns over time and make predictions about the upcoming weather of a large area or environment.
- Let's take a look at the average weather patterns of the month of April in Phoenix to learn more about what we can expect and prepare for!
 - Prompt students to observe and interpret the data in the *Phoenix Data Part 1-3*.

- **Note:** Although wind is a weather condition, wind is not a condition represented in this data set but can be researched as wanted/applicable.
- Facilitate a discussion of key ideas:
 - What can we expect in the month of April for high and low temperatures?
 - We can expect a high of about 85 degrees and a low of about 60 degrees Fahrenheit.
 - What can we expect in the month of April for precipitation?
 - We can expect about 2 days of rainfall.
 - What can we expect in the month of April for direct sunlight?
 - We can expect a mid-UV index/direct sunlight.
 - **Note:** In regards to *Phoenix Data Part 3* data, *UV index* is defined as a measurement of the strength of the Sun's radiation at a given place and time. Assist students in interpreting the graph by equating a high UV index number to the strength of sunlight. As appropriate, discuss measures to protect ourselves from the Sun's radiation.
 - Although it is still early in the month, how do the average weather conditions compare to what you have observed/experienced about April's weather so far?
 - The high/low temperatures seem spot on, as last week's weather forecast predicted on the hottest day a high of 84 degrees and a low of 61 degrees Fahrenheit.
 - So far, we have only had one day of rain, similar to the average weather conditions.
 - Looking at the data for the whole year, how would you describe your climate overall? What weather conditions do you experience throughout the year, mostly every year?
 - In my climate, I experience hot summers and cool but not freezing winters, lots of sunlight and little rain.

Closure:

- How do you think knowing more about our environment's climate helps us? How can you use this information in your life?

Extensions:

Continue the Investigation!

- Video-chat or email with a family member/friend that lives in a different city. What is their climate like?

- Encourage students to share their climate data and obtain data from a different environment.
 - What is similar about the climates?
 - What is different about the climates?








Watch!

- Crash Course Kids: [Weather vs. Climate](#)

Student Resources

Phoenix Weather Forecast

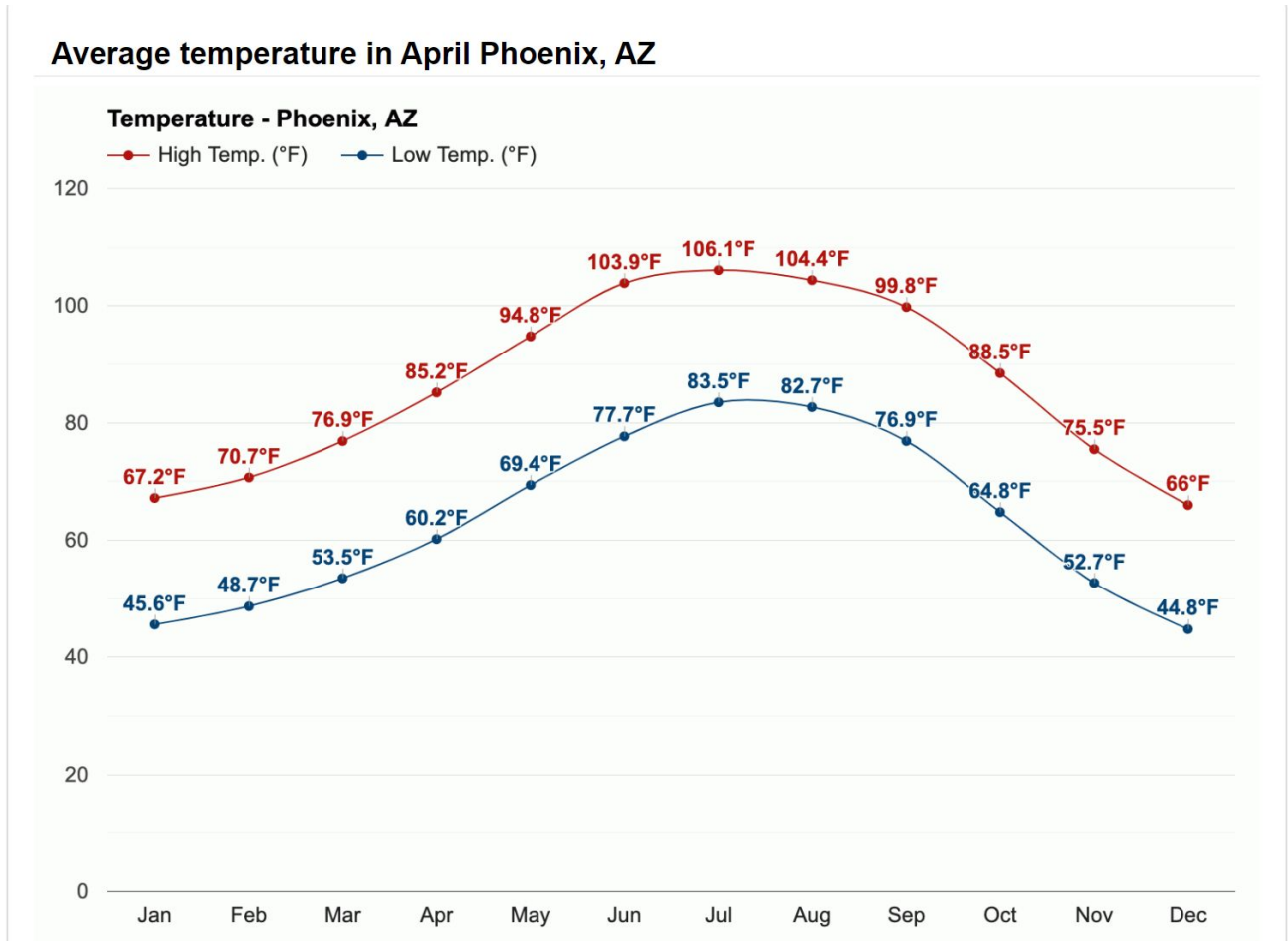
Week of 4/6 - 4/12

Mon 4/6		81° / 55°	Mostly sunny	Precip 0%
Tue 4/7		83° / 56°	Mostly sunny and nice	Precip 1%
Wed 4/8		74° / 49°	A t-storm in the afternoon	Precip 60%
Thu 4/9		70° / 51°	A couple of showers	Precip 65%
Fri 4/10		74° / 54°	Partly sunny, a shower; cool	Precip 40%
Sat 4/11		79° / 61°	Mostly sunny and warmer	Precip 6%
Sun 4/12		84° / 61°	Mostly sunny	Precip 6%

AccuWeather: Phoenix, AZ, Daily - Forecast.

Phoenix Data - Part 1

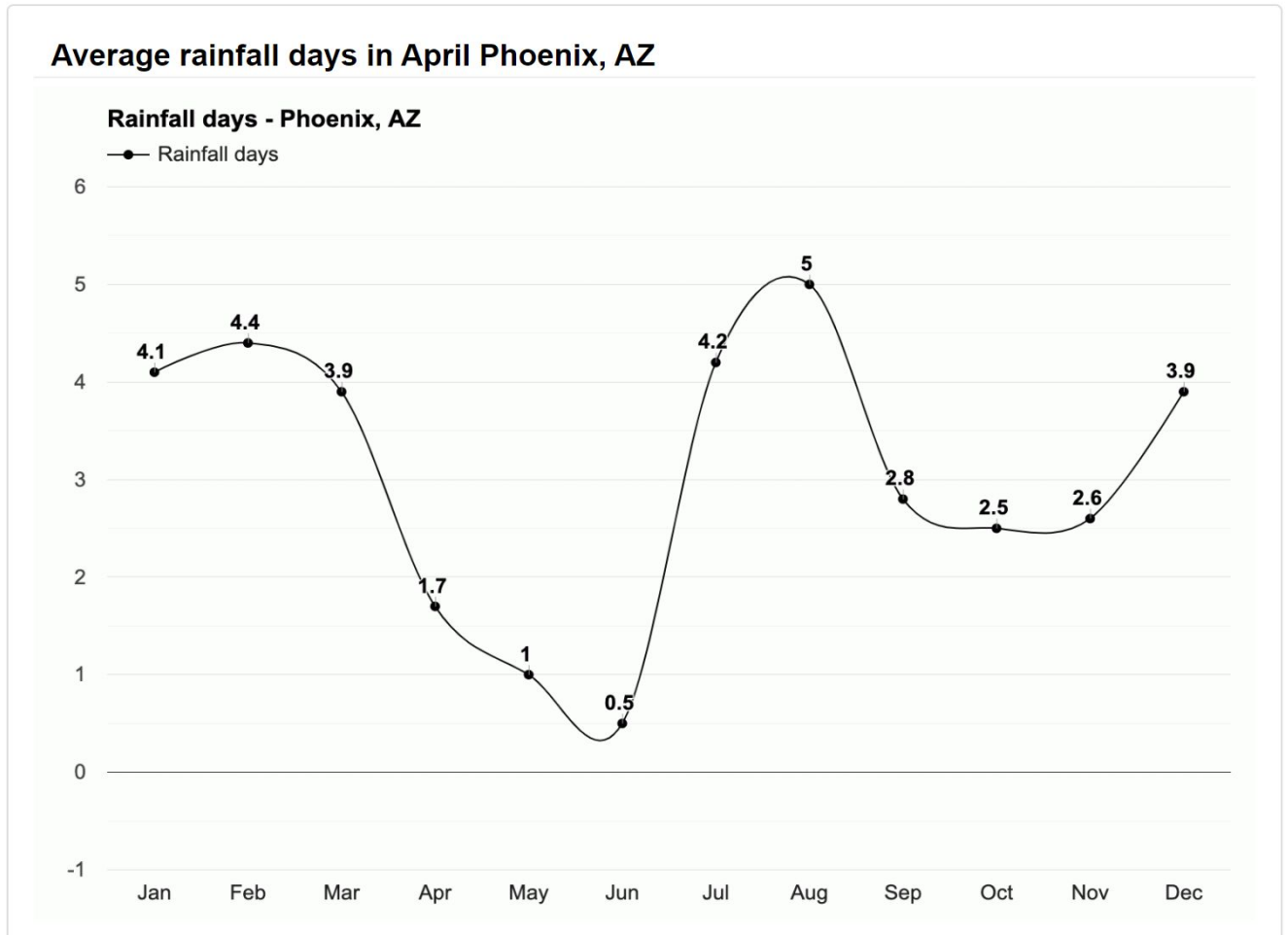
Average Temperature



Weather Atlas: April weather forecast and climate, Phoenix, AZ - Average temperature.

Phoenix Data - Part 2

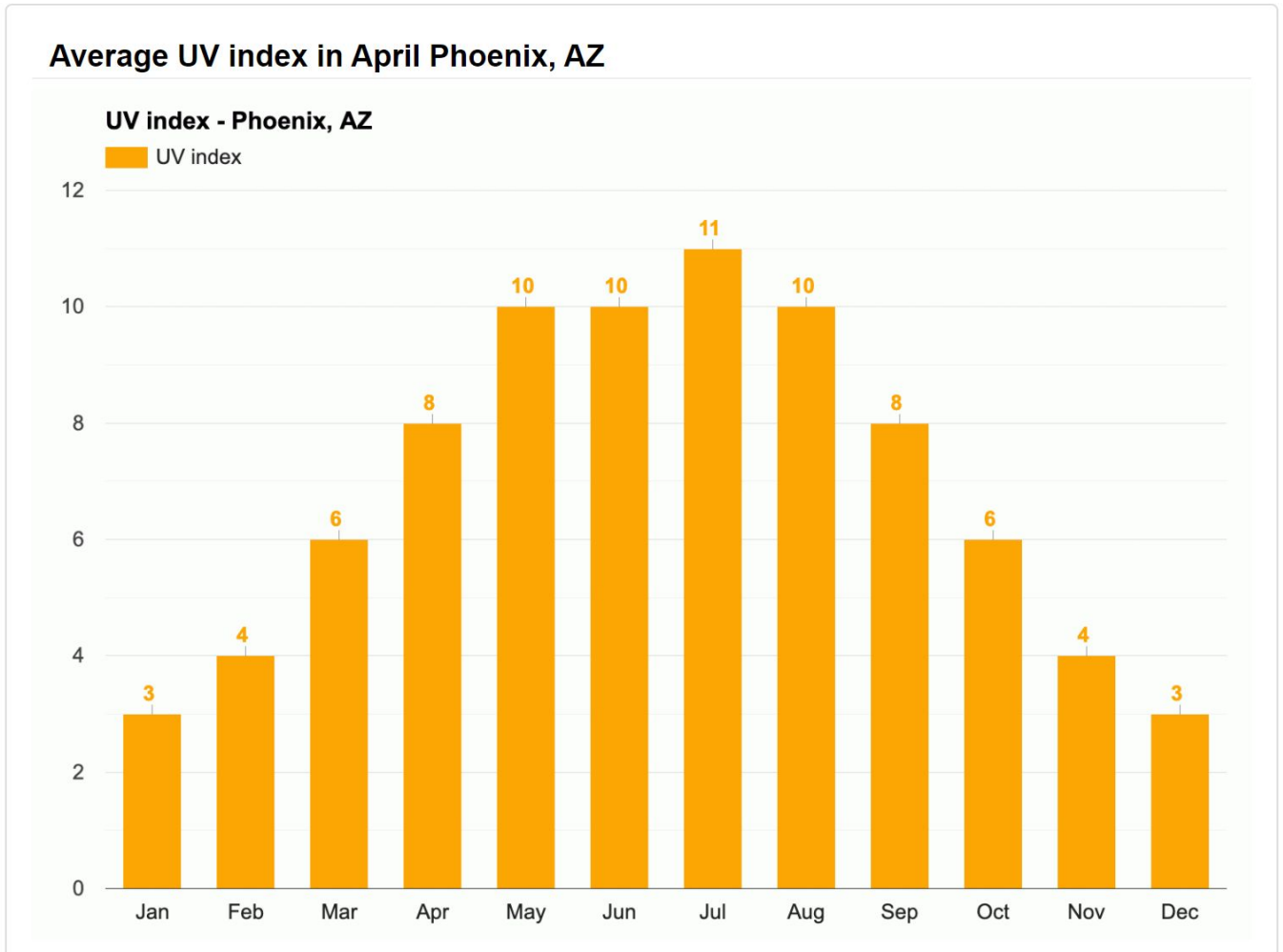
Average Precipitation



Weather Atlas: April weather forecast and climate, Phoenix, AZ - Average rainfall.

Phoenix Data - Part 3

Average UV Index/Strength of Sunlight



Weather Atlas: April weather forecast and climate, Phoenix, AZ - Average UV index.