



GRADE 6



COAST ^{TO} CACTUS

IN SOUTHERN CALIFORNIA

Curriculum and Lesson Plan Resource Guide



theNAT
SAN DIEGO NATURAL HISTORY MUSEUM



Grade 6

Measuring Rainfall

Essential Question

How much rainfall does southern California get?

Climate conditions in the San Diego area are characteristically Mediterranean along the coast, with mild temperatures year-round. More than 80 percent of the region's rainfall occurs between December and March. San Diego County's semiarid climate means that truly wet years are few and far between, and dry years are very common. Runoff from local rainwater that flows into reservoirs, commonly called surface water, represents a vital but small portion of San Diego County's water supply needs.



Activity: Rainfall Calculation

In this activity students use San Diego historical rainfall data to identify periods of drought and make long-term predictions based on their findings.

Materials

- Printed data sheet
- Graph paper
- Notebook
- Calculator
- Writing tools

This activity is best done by students working individually before or after a visit to the *Coast to Cactus in Southern California* exhibition. (See page 2 for activity instructions.)

Rainfall Calculation

Advance Preparation

- Read through the activity instructions.
- Print data sheets, one for each student.

Activity

1. Begin by giving your students an introduction to the southern California climate and pressure on water resources. The climate type in much of southern California is described as Mediterranean climate, with winter rains and dry, hot summers. Mediterranean climates are found in only a few places in the world. The growing population in southern California cities continues to put pressure on water resources. Runoff from local rainwater that flows into reservoirs, commonly called surface water, represents a vital but small portion of San Diego County's water supply needs.
2. Pass out the data sheet. Let your students know that the information presented shows historical annual rainfall totals going back to 1965. These totals were measured at the San Diego International Airport.
3. Have your students start by creating an average amount of rainfall for each decade. They should calculate averages for 1965–1969, 1970–1979, 1980–1989, 1990–1999, 2000–2009, and 2010–2015.
4. Ask your students: **Which decade had the highest average rainfall? Which decade had the lowest?** Have them record their answers.
5. Next, have your students calculate the average for all years (1965–2015) represented in the data set.

NGSS Alignment for Grade 6

Performance expectation: MS-ESS3-2

Science & Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
Asking Questions and Defining Problems Analyzing and Interpreting Data Constructing Explanations and Designing Solutions Engaging in Argument from Evidence	ESS3.A: Natural Resources ESS3.B: Natural Hazards	Patterns Cause and Effect Stability and Change

Interdisciplinary Common Core Connections: RST.6-8.1, RST.6-8.7, MP.2, 7.EE.B.4

6. Ask your students: **Which year had the highest rainfall total compared to the average for 1965–2015? Which year had the lowest rainfall compared to the average for 1965–2015?**
7. Have your students create a bar graph for the data set using graph paper. The Y-axis should be labeled “Amount of Rain in Inches.” The X-axis should be labeled with each year.
8. After their graphs are finished, have your students find periods of drought. They should look for series of consecutive years when the total rainfall was below the average. Have them highlight the period of drought on their bar graphs.
9. Have a discussion with your students about their findings.
Did any year stand out for being particularly dry or rainy?
10. Have your students write down their predictions for future rainfall patterns.

Key words

Average

A number that is calculated by adding quantities together and then dividing the total by the number of quantities.

Drought

A long period of time during which there is very little or no rain.

Decade

A period of 10 years.

Semiarid

A climate or place that is partially arid, or semi-dry, having less than 20 inches of rain each year.



Extension

- Have your students research other historical data sets. ***Can they find information about rainfall in San Diego County's mountains? How does the rainfall in the mountains compare to the rainfall in the city?***
- Have your students research the relationship between rainfall and wildfires. Students can research historical data sets for wildfires, and compare them side-by-side with the rainfall data.

What will they learn?

During this activity students learn that southern California rainfall varies from year to year. San Diego County's semiarid climate means that truly wet years are few and far between, and dry years are very common. Students calculate average rainfall for each decade using data going back to 1965 and identify periods of drought using a graph.

Additional Resources

- Visit the *Explore the Region from Coast to Cactus* website to learn more about the different habitats in the southern California region. You can find more information at **coasttocactus.sdnhm.org**.
- Check out a specimen from our Nature to You Loan Library. For more information visit **sdnat.org/specimenssearch** or contact the Loan Library at **loanprogram@sdnhm.org** or 619.255.0236.
- Visit the San Diego Natural History Museum and explore our *Coast to Cactus in Southern California* exhibition. San Diego is known for its incredibly diverse terrain, ranging from the beaches and chaparral near the coast, to the mountains and the desert farther afield. Using specimens from the Museum's scientific collections, alongside immersive environments, hands-on exhibits, live animals, and innovative media, *Coast to Cactus in Southern California* illustrates that richness by taking visitors on a journey through these habitats to explore the plants and animals that live in them.

Rainfall

Name: _____

Water Year (Oct–Sep)	Actual Rainfall (inches)	Water Year (Oct–Sep)	Actual Rainfall (inches)	Water Year (Oct–Sep)	Actual Rainfall (inches)
1965	8.81	1988	12.44	2011	12.70
1966	14.76	1989	5.88	2012	7.90
1967	10.86	1990	7.62	2013	6.55
1968	7.86	1991	12.31	2014	5.09
1969	11.48	1992	12.48	2015	11.91
1970	6.33	1993	18.26		
1971	8.03	1994	9.93		
1972	6.12	1995	17.13		
1973	10.99	1996	5.18		
1974	6.59	1997	7.73		
1975	10.64	1998	17.16		
1976	10.14	1999	6.50		
1977	9.18	2000	5.75		
1978	17.30	2001	8.57		
1979	14.93	2002	3.30		
1980	15.62	2003	10.31		
1981	8.13	2004	5.18		
1982	11.85	2005	22.60		
1983	18.49	2006	5.36		
1984	5.37	2007	3.85		
1985	9.60	2008	7.20		
1986	14.95	2009	9.15		
1987	9.30	2010	10.6		