

# Problem-Based Learning

## Prediction: Sunny Today

**Eighth Grade**

**Math**

**MA12815**



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**Math**

**Overview**

You've landed a job as the summer intern for a local news station and are asked to create a special weather report. Students will explore concepts related to statistics and probability.

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## PBL Problem Guide

FOR FACILITATOR USE ONLY

### Timeframe

This lesson plan will take approximately 2 hours.

### Step-by-step guide

- Put students into teams of three to five members.
- Ask for a volunteer to read the STUDENT PROBLEM aloud [page 6].
- As a whole group, ask students to list What We Know [FACTS, page 7].
- Have each team create a list of What We Need to Know [NEED TO KNOWS & LEARNING ISSUES, page 8].
- Have each team begin a list of POSSIBLE HYPOTHESES [page 9].
- Allow teams to research LEARNING ISSUES [pages 8 & 10].
- Teams re-evaluate POSSIBLE HYPOTHESES [page 9] and determine one DEFENDABLE SOLUTION for Final Product [page 11].
- Teams create and present DEFENDABLE SOLUTION and individual students write ACTION PLAN [page 11].

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## PBL Resources

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### Resources provided

Included with this case are:

- Top 100 Biggest Cities website
- Stem and Leaf Plot website
- The Weather Channel™ website

### Resources to assemble

You may wish to assemble the following resources ahead of time:

- Calculators

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## Student Problem

FOR STUDENT USE

You are a junior in college majoring in meteorology. You have been hired by a local news station as the summer weather intern. Your internship project is to create a special report comparing the weather in your area to ten major cities in the U.S. This should include a 12 week comparison of the highs and lows, appropriate charts and graphs, and averages. The comparison for each city will run in a one-minute segment over ten days.

### Consider:

- What cities will you use?
- How do you best represent the data?

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## Key Facts

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- You are a junior in college majoring in meteorology and have been hired by a local news station as a summer weather intern.
- Your internship project is to create a special report comparing the weather in your area to ten major cities in the U.S.
- You should include a 12 week comparison of the highs and lows, appropriate charts and graphs, and averages.
- The comparison for each city will run in a one-minute segment over ten days.

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## Need-to-knows / Learning Issues

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### NEED TO KNOWS

- What cities will we use?

### LEARNING ISSUES

- How do we create box plots, stem and leaf plots, and histograms?
- What are the temperatures for my area?
- What are the temperatures for the 10 cities?

### NEED TO KNOW ANSWERS

- Teams will select the cities.

### LEARNING ISSUE RESOURCES

- Students will investigate using the Learning Issue Resource Guide, page 10.



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## Hypotheses

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- Hypotheses will vary by the cities chosen.
- Hypotheses will vary by how students choose to present the data.

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## Learning Issue Resource Guide

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### WEBSITES

Top 100 Biggest Cities

[www.city-data.com/top1.html](http://www.city-data.com/top1.html)

Stem and Leaf Plot

[www.mathsisfun.com/data/stem-leaf-plots.html](http://www.mathsisfun.com/data/stem-leaf-plots.html)

The Weather Channel™

[www.weather.com/](http://www.weather.com/)

### MANIPULATIVES

Calculators

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## Final Product and Writing Guide

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### Team

- Each team will create ten one-minute segments comparing their weather to each of the selected cities. The facilitators may choose for teams to create a final segment that compiles all the data and would run for 3 - 5 minutes.

### Individual

- Each student will write a report to their internship supervisor describing their experience and the project in detail.

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**Rubric****FOR FACILITATOR USE ONLY**

AREA	ABOVE AVERAGE Three points each	AVERAGE Two points each	BELOW AVERAGE One point each	NO EVIDENCE Zero points each	POINTS
Final Product	<ul style="list-style-type: none"> <li>All Learning Issues addressed</li> <li>Three or more hypotheses present</li> <li>High quality final product</li> </ul>	<ul style="list-style-type: none"> <li>Most Learning Issues addressed</li> <li>Two hypotheses present</li> <li>Roles somewhat defined</li> <li>Fair quality final product</li> </ul>	<ul style="list-style-type: none"> <li>Few learning issues addressed</li> <li>One hypothesis present</li> <li>Low quality final product</li> </ul>	<ul style="list-style-type: none"> <li>No learning issues addressed</li> <li>No hypotheses present</li> <li>No final product</li> </ul>	
Writing Assessment	<ul style="list-style-type: none"> <li>Problem Summary, Learning Issues/New Information Integrated well presented</li> <li>Hypotheses well presented</li> <li>Solution and Defense well presented</li> </ul>	<ul style="list-style-type: none"> <li>Problem Summary, Learning Issues/New Information Integrated presented</li> <li>Hypotheses presented</li> <li>Solution and Defense presented</li> </ul>	<ul style="list-style-type: none"> <li>Problem Summary, Learning Issues/New Information Integrated poorly presented</li> <li>Hypotheses poorly presented</li> <li>Solution and Defense poorly presented</li> </ul>	<ul style="list-style-type: none"> <li>Problem Summary, Learning Issues/New Information Integrated not presented</li> <li>Hypotheses not presented</li> <li>Solution and Defense not presented</li> </ul>	
Collaboration	<ul style="list-style-type: none"> <li>Individual works well with group members</li> <li>Individual communicates well with group members</li> <li>Individual carries out their individual responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>Individual works acceptably with group members</li> <li>Individual communicates acceptably with group</li> <li>Individual mostly carries out their individual responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>Individual does not work well with group members</li> <li>Individual does not communicate well with group members</li> <li>Individual attempts but fails to carry out their individual responsibilities</li> </ul>	<ul style="list-style-type: none"> <li>Individual interferes with group members</li> <li>Individual does not communicate at all</li> <li>Individual does not attempt to carry out their individual responsibilities</li> </ul>	

24 – 27 Points = Above Average

15 – 23 = Average

6 – 14 = Below Average

0 – 6 = Failing

# Wake Forest School of Medicine Problem-Based Learning

## Wake Forest School of Medicine Problem-Based Learning

provides essential case studies to K–12 teachers across the United States. Access useful and easy-to implement case studies on Math, English Language and other STEM topics online at [www.wakeproblembasedlearning.com](http://www.wakeproblembasedlearning.com).



**Problem Based Learning**  
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