

## **December: Temperature, Graphs and Charts**

### **Read and understand temperature, graphs and charts**

#### **Materials include:**

1. General explanation of unit
2. Terms for curriculum for all levels
3. Goals for each level
4. Suggested schedule for numeracy\*
5. Content for teacher's "mini-lesson" per level
6. Worksheets per level
7. Instructions for class activity per level

#### **General Explanation:**

This month's numeracy lessons provide practice reading and understanding temperature (Fahrenheit only) and some weather-related numbers. They will have practice reading charts and graphs to acquire information, and also to fill out charts and graphs and track current temperature trends.

**\*This month, the 10 minute review will be tracking temperatures and charting them throughout the month. The charts are provided (located after each level schedule for all 4 levels), but you (or students) need to create the graphs.** It will be a richer experience to track the temperatures every day. It is included in the schedule every day, in addition to the regular components. It is only a suggestion, but if you decide to track every day plus maintain the operations box worksheets and computer time, please allow more time for math.

This month is different in that every mini-lesson and worksheet focus on a different graph. If you wanted to stick with one kind of graph, you could work your way through four levels. (Or you could offer that to students who are interested).

Computer suggestions:

Levels 3 and 4: <http://www.beaconlearningcenter.com/weblessons/alltheparts/default.htm>

December: Temperature, Graphs and Charts

### **Terms for Curriculum for All Levels**

Basic Numeracy Schedule: The schedule is designed as a four week unit. The teacher is responsible for configuring the schedule to the current month and year. Reviews, computer slots, and worksheet days are merely a suggestion. Adjust accordingly to meet the needs of your class.

mini-lesson: (ml) : Provided lesson plans for a short introduction to the material.

worksheet: (ws): Provided material for students; 3 per month.

Operation box: (ob): VSS worksheets in addition, subtraction, multiplication, and division\*\*

10 minute review: Teacher picks a regular time every class for ten minutes of numeracy review. It is meant to be a quick practice of numeracy, primarily focused on receptive and expressive language. Teacher/student reads numbers or problems. Students transcribe. Class checks together.

The beginning of class or the end of class can be effective times. The teacher can have students turn to a clean notebook page, use their “math” notebook, or can have pre-cut papers ready to hand out.

Teacher reads: T reads and the class transcribes numbers

Student reads: S reads and the class transcribes (gives students practice speaking)

Checking Review Work: Students check their work. This can be a simple or creative process depending on time availability. Written answers are necessary in checking since the focus of the review is receptive/expressive language. This is also a time for practice with pronunciation or memorization of numbers/concept.

\*\* Operation Boxes: (Continuation of October’s numeracy focus) I recommend that as a program you create four file boxes that contain practice worksheets for each of the functions (addition, subtraction, multiplication, division). It is best to offer a wide range of choices starting at very beginning levels and ending with more advanced worksheets. Students can then self-pace and work their way through the boxes during the year. Worksheets can come from websites offering free printables or workbooks.

December: Temperature, Graphs and Charts

**Level 1**

**L1 Goals:** Read and understand temperature. Read charts and graphs. Fill in temperature highs in a chart and track on a graph throughout month.

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	10 min review: T reads temp high for the day. S writes in chart and graphs.	10 min review: T reads temp high for the day. S writes in chart and graphs.  Computer	10 min review: T reads temp high for the day. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high for the day. S writes in chart and graphs.  ml 1; ws1	10 min review: T reads temp high for the day. S writes in chart and graphs.
Week 2	10 min review: T reads temp high for the day. S writes in chart and graphs.	10 min review: T reads temp high for the day. S writes in chart and graphs.  Computer	10 min review: T reads temp high for the day. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high for the day. S writes in chart and graphs.  ml 2; ws2	10 min review: T reads temp high for the day. S writes in chart and graphs.
Week 3	10 min review: T reads temp high for the day. S writes in chart and graphs.	10 min review: T reads temp high for the day. S writes in chart and graphs.  Computer	10 min review: T reads temp high for the day. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high for the day. S writes in chart and graphs.  ml 3; ws3	10 min review: T reads temp high for the day. S writes in chart and graphs.
Week 4	10 min review: T reads temp high for the day. S writes in chart and graphs.	10 min review: T reads temp high for the day. S writes in chart and graphs.  Computer	10 min review: T reads temp high for the day. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high for the day. S writes in chart and graphs.  activity	10 min review: T reads temp high for the day. S writes in chart and graphs.

**Temperature charting and graphing:** A monthly calendar chart is provided. The graph is provided, but needs to be labeled.

**Example:** Label temperatures on the left column (range 0 to 70 by 10s); label across days of the month (1-25). Students do not have to have every day accounted for—they can track just the days you have available. Plot using the graph lines and then connect the dots day by day to see increases or decreases in temperature.

December: Temperature, Graphs and Charts

Level 1, 10 minute review

Name \_\_\_\_\_

**Temperatures in December**  
**Saint Paul, Minnesota**

Write the temperature for each day.

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				



**Level 1: Mini lesson 1**

**Plan:**

10 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

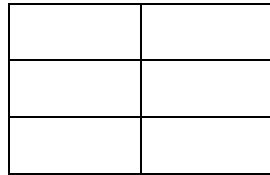
**Materials Needed:**

Whiteboard markers in a variety of colors

**Mini-lesson Content:**

1. The Parts of a graph

- Draw a grid on the board (3 rows down, 2 columns across) in black. A grid will show students exactly where to put the dot.




- Using a different color, highlight the left vertical line. In the same color write “Temperatures.” Then starting at the very bottom, write 20, 25, 30, and 35 degrees at each horizontal line.
- Using a third color, highlight the bottom horizontal line. In the same color under the line write “Months” matching to the vertical lines (so they clearly know where to place their dots). Then write December, January, February.
- Label the whole graph “Winter Temperatures.” These are the average highs for each month. That information is not necessary at this level, but you can answer if questions arise.

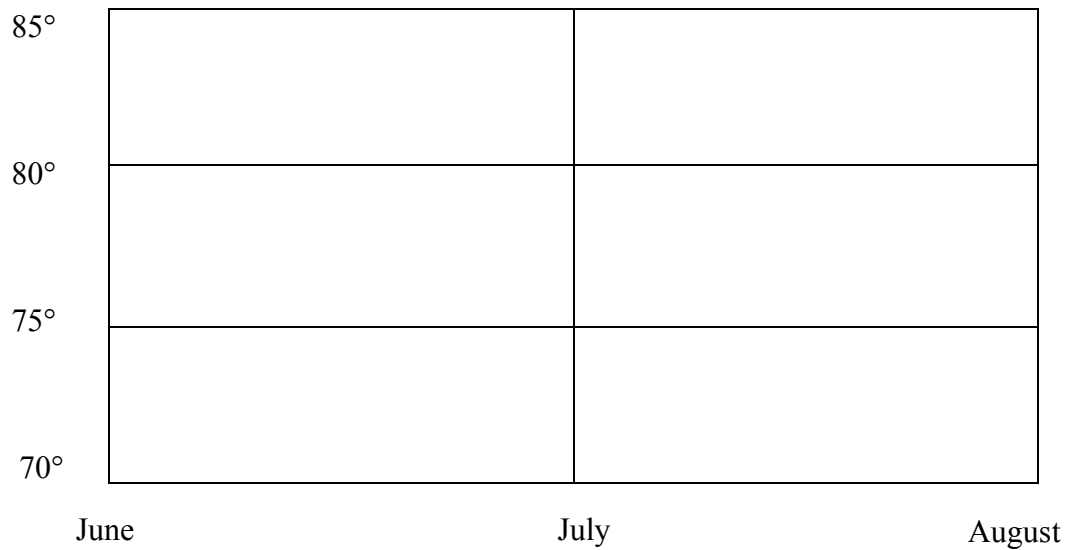
2. Graphing Together

- Write on the board December = 27, January = 24, February = 29
- Talk about what month is colder, warmer, etc. Then, figure out how to graph together. Mark a dot (using the lines!) for each month and then connect the dots to see the trend.

Name \_\_\_\_\_

**Line Graph: Summer Temperatures**

Fill in the graph. Connect the dots.



June = 79°

July = 84°

August = 81°

What is the hottest month? \_\_\_\_\_

**Level 1: Mini lesson 2**

**Plan:**

20 minutes for graph creation together (teacher and students)

10 minutes for review (class, groups, pairs)

**Materials Needed:**

Whiteboard markers in various colors

Ruler

**Mini-lesson Content: \*No Mini lesson today; Co-working on graph**

1. Set up Bar Graph:

- Draw the same graph structure that is on the worksheet page (Level 1, WS 2)
- Explain to students that you are going to work together to create a different kind of graph called a “bar graph.”
- Orient them to the bar graph: title, names of months, and have them guess what is going to go on the left side of the graph (numbers).
- Together, number up 1-10 on the left (y axis). Explain this is going to mean how many inches of snow fall in St. Paul for each month. (Show how big an inch is.)

2. Fill in Bar Graph together:

- For each month, count up the corresponding number of inches and make a little mark. Then show them how to use that to draw a bar.
- For each bar, they can use a different color, or they can fill it in a different way (dots, lines, shading, etc.)

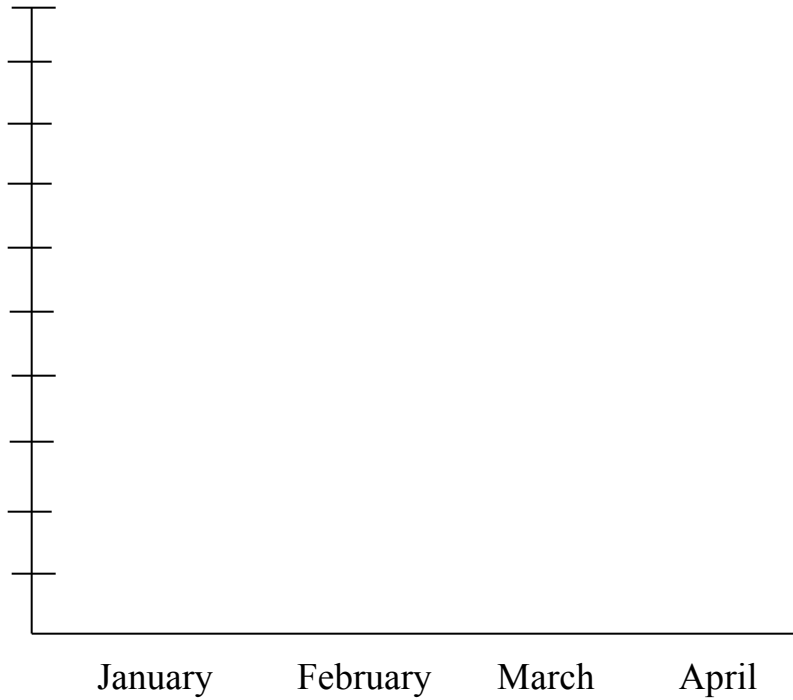
3. Review: Talk about the results together.

- Which month has the most snow? Which month has the least? Has anyone seen more snow than this? Etc.



Name \_\_\_\_\_

**Snow Bar Graph**



January = 10 inches

February = 8 inches

March = 10 inches

April = 3 inches

Which month has the least snow? \_\_\_\_\_

**Level 1: Mini lesson 3**

**Plan:**

20 minutes for lesson together (students and class)

10 minutes for review (class, groups, pairs)

**Materials Needed:**

Whiteboard marker

**Mini-lesson Content: \*No Mini-lesson; only whole class experience**

1. Explain the purpose of a pictograph
  - Draw the same chart as WS 3.
  - Explain the two sides of the chart: one side is for temperatures; the other side is for counting how many people like that kind of temperature.
  - Instead of a bar, you will draw small pictures to represent people.
2. Graph together as a class
  - Decide what picture you want to use to count people (a person's head, a stick figure, a sun, a cloud, etc)
  - Make a key at the bottom of the graph: (pict) = 1 person
  - Ask the question, explain if necessary, and then ask students to raise hands. You can count, or ask a volunteer to count.
  - All students draw their own pictures on their graphs.
  - Students can raise their hands as many times as they choose.
3. Review results
  - What is the most popular temperature? Why?
  - What is the least popular temperature? Why?

Name \_\_\_\_\_

**Who Likes Different Temperatures?**

**Pictograph**

Very cold 0°	
Cold °35	
Warm 70°	
Hot 95°	

Key:                    = 1 person

1. How many people like very cold weather? \_\_\_\_\_
2. How many people like hot weather? \_\_\_\_\_

December: Temperature, Graphs and Charts

**Level 1: Culminating Group Activity**

**Plan:**

10 minutes for warm up and directions (teacher led instruction)

10-15 minutes for race (student only)

5-10 minutes for review (class, groups, pairs)\*

**Materials Needed:**

Markers, colored pencils, etc.

**Activity Goal:** Students will be required to show their numeracy skills from the month without the help of a teacher. They will work together in pairs to finish labeling the graph, and then complete the graph.

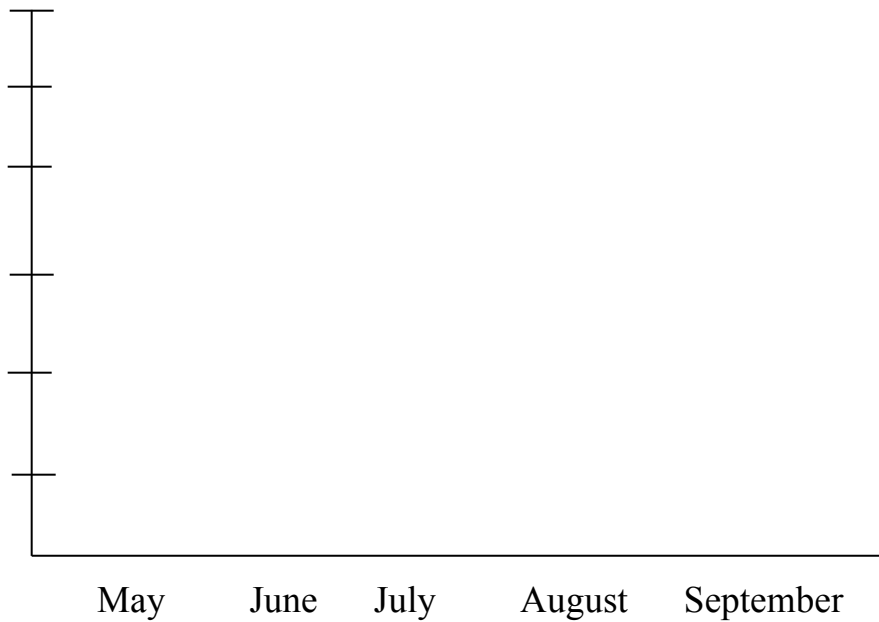
**Activity Description:** Students will pairs to label the graph and complete the graph. The fun part is the style competition of 'bar designs' between pairs. Encourage creative decoration of bars in the graph. Compare and review to end the class.

Names \_\_\_\_\_

\_\_\_\_\_

### Rain Bar Graph

1. Write numbers.
2. Complete the bar graph.



May = 2 inches

June = 3 inches

July = 4 inches

August = 4 inches

September = 3 inches

Which month has the least rain? \_\_\_\_\_

December: Temperature, Graphs and Charts

**Level 2**

**L2 Goals:** Read and understand temperature. Read charts and graphs. Fill in temperature highs and lows in a chart and track on a graph throughout month.

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	10 min review: T reads temp high and low for the day. S writes in chart and graphs.	10 min review: T reads temp high and low for the day. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high and low for the day. S writes in chart and graphs.  computer	10 min review: T reads temp high and low for the day. S writes in chart and graphs.  ml 1, ws1	10 min review: T reads temp high and low for the day. S writes in chart and graphs.
Week 2	10 min review: T reads temp high and low for the day. S writes in chart and graphs.	10 min review: T reads temp high and low for the day. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high and low for the day. S writes in chart and graphs.  computer	10 min review: T reads temp high and low for the day. S writes in chart and graphs.  ml 2, ws2	10 min review: T reads temp high and low for the day. S writes in chart and graphs.
Week 3	10 min review: T reads temp high and low for the day. S writes in chart and graphs.	10 min review: T reads temp high and low for the day. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high and low for the day. S writes in chart and graphs.  computer	10 min review: T reads temp high and low for the day. S writes in chart and graphs.  ml 3, ws3	10 min review: T reads temp high and low for the day. S writes in chart and graphs.
Week 4	10 min review: T reads temp high and low for the day. S writes in chart and graphs.	10 min review: T reads temp high and low for the day. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high and low for the day. S writes in chart and graphs.  computer	10 min review: T reads temp high and low for the day. S writes in chart and graphs.  activity	10 min review: T reads temp high and low for the day. S writes in chart and graphs.

**Temperature charting and graphing:** A monthly calendar chart is provided. The graph is provided, but needs to be labeled.

**Example:** Label temperatures on the left column (range 0 to 70 by 10s); label across days of the month (1-25). Students do not have to have every day accounted for—they can track just the days you have available. Plot using the graph lines and then connect the dots day by day to see increases or decreases in temperature. Use different colors for the highs and lows.

December: Temperature, Graphs and Charts

Level 2, 10 minute review

Name \_\_\_\_\_

**Temperatures in December**  
**Saint Paul, Minnesota**

Write the temperature high and low for each day.

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				





**Level 2: Mini lesson 1**

**Plan:**

10 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

**Materials Needed:**

Whiteboard markers in a variety of colors

**Mini-lesson Content:**

1. The Parts of a graph

- Draw a grid on the board (5 rows down, 3 columns across) in black


- Using a different color, highlight the left vertical line. In the same color write “Temperatures.” Then starting at the very bottom, write 20, 25, 30, and 35 degrees at each horizontal line. (Talk about counting by 5s—and what numbers are represented in between).
- Using a third color, highlight the bottom horizontal line. In the same color under the line write “Months” matching to the vertical lines (so they clearly know where to place their dots). Then write December, January, February.
- Label the whole graph “Winter Temperatures.” These are the average highs for each month. That information is not necessary at this level, but you can answer if questions arise.

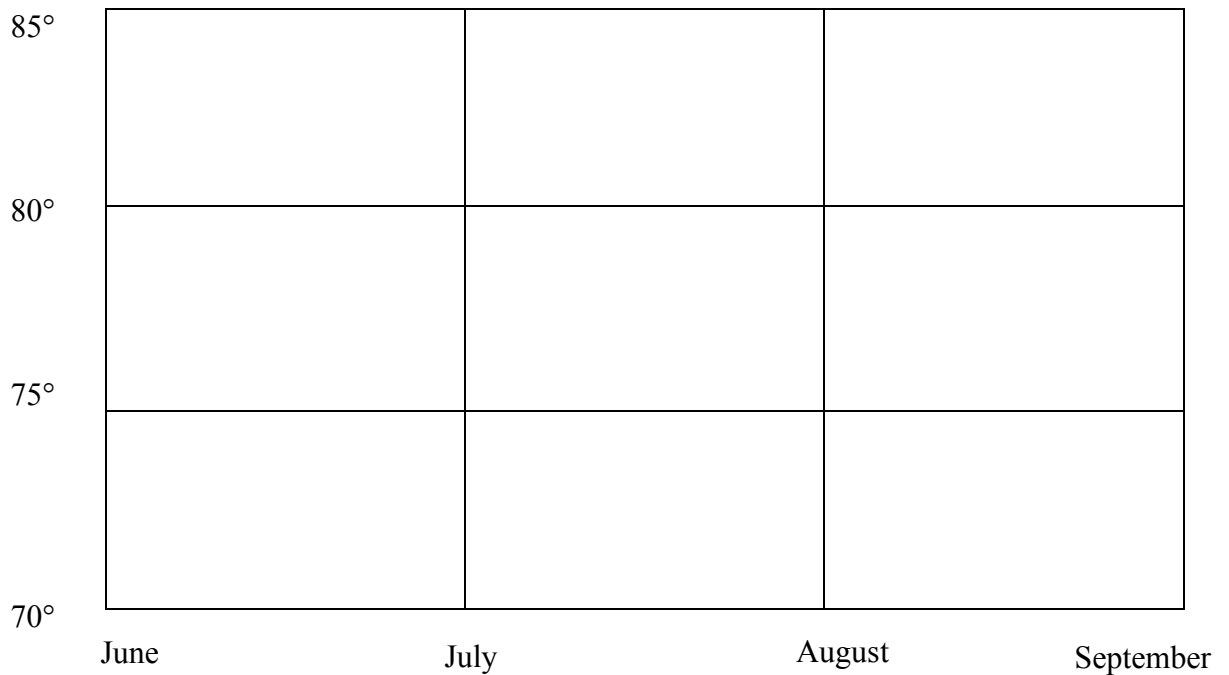
2. Graphing Together

- Write on the board December = 27, January = 24, February = 29
- Talk about what month is colder, warmer, etc. Then, figure out how to graph together. Mark a dot (using the lines!) for each month and then connect the dots to see the trend

Name \_\_\_\_\_

**Line Graph: Summer Temperatures in Minnesota**

Fill in the graph. Connect the dots.



June = 79°

July = 84°

August = 81°

September = 72°

What is the hottest month? \_\_\_\_\_

What is the coldest month? \_\_\_\_\_

December: Temperature, Graphs and Charts

### **Level 2: Mini lesson 2**

#### **Plan:**

20 minutes for graph creation together (teacher and students)

10 minutes for review (class, groups, pairs)

#### **Materials Needed:**

Whiteboard markers in various colors

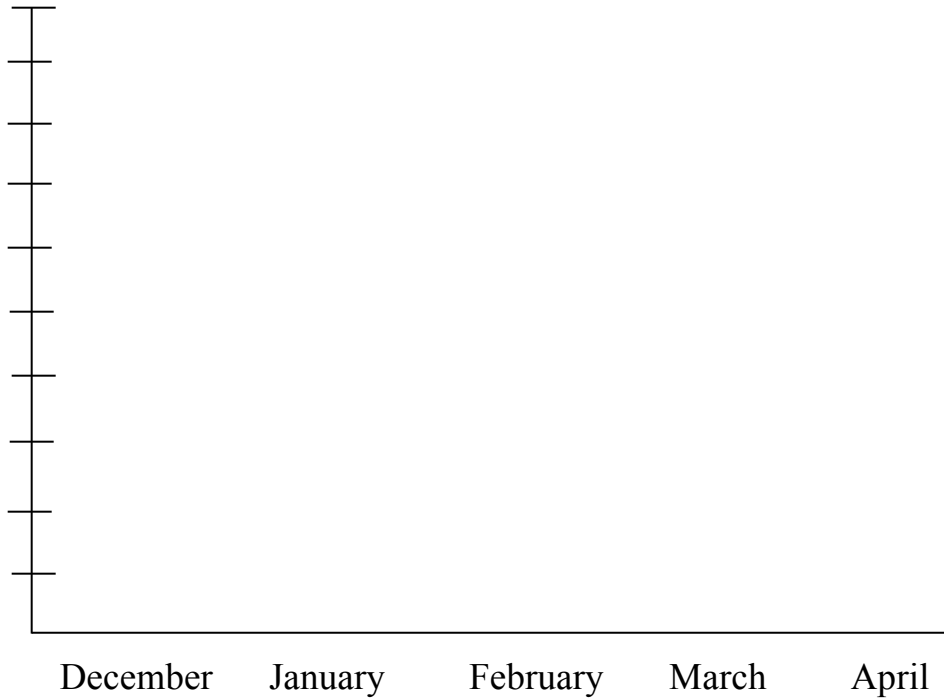
Ruler

#### **Mini-lesson Content: \*No Mini lesson today; Co-working on graph**

1. Set up Bar Graph:
  - Draw the same graph structure that is on the worksheet page (Level 2, WS 2)
  - Explain to students that you are going to work together to create a different kind of graph called a “bar graph.”
  - Orient them to the bar graph: title, names of months, and have them guess what is going to go on the left side of the graph (numbers).
  - Together, number up 1-10 on the left (y axis). Explain this is going to mean how many inches of snow fall in St. Paul for each month. (Show how big an inch is.)
2. Fill in Bar Graph together:
  - For each month, count up the corresponding number of inches and make a little mark. Then show them how to use that to draw a bar.
  - For each bar, they can use a different color, or they can fill it in a different way (dots, lines, shading, etc.)
3. Review: Talk about the results together.
  - Which month has the most snow? Which month has the least? Has anyone seen more snow than this? Etc.
  - Answer questions (together or separately and then review).

Name \_\_\_\_\_

### Snow Bar Graph



December = 10 inches
January = 10 inches
February = 8 inches
March = 10 inches
April = 3 inches

Circle the correct answer.

**1. Which three months have the same amount of snow?**

- A. December, January, February
- B. December, February, March
- C. December, January, March
- D. February, March, April

**2. Which month has the least snow?**

- A. December
- B. February
- C. March
- D. April

**Level 2: Mini lesson 3**

**Plan:**

20 minutes for lesson together (students and class)

10 minutes for review (class, groups, pairs)

**Materials Needed:**

Whiteboard marker

**Mini-lesson Content: \*No Mini-lesson; only whole class experience**

1. Explain the purpose of a pictograph
  - Draw the same chart as WS 3.
  - Explain the two sides of the chart: one side is for temperatures; the other side is for counting how many people like that kind of temperature.
  - Instead of a bar, you will draw small pictures to represent people.
2. Graph together as a class
  - Decide what picture you want to use to count people (a person's head, a stick figure, a sun, a cloud, etc)
  - Make a key at the bottom of the graph: (pict) = 1 person
  - Ask the question, explain if necessary, and then ask students to raise hands. You can count, or ask a volunteer to count.
  - All students draw their own pictures on their graphs.
  - Students can raise their hands as many times as they choose.
3. Review results
  - What is the most popular temperature? Why?
  - What is the least popular temperature? Why?

Name \_\_\_\_\_

## Who Likes Different Temperatures?

### Pictograph

Very cold 0°	
Cold °35	
Cool 50°	
Warm 70°	
Hot 85°	
Very Hot 100°	

Key:                    = 1 person

1. What temperature do the most people like? \_\_\_\_\_
2. What temperature do the least people like? \_\_\_\_\_

December: Temperature, Graphs and Charts

**Level 2: Culminating Group Activity**

**Plan:**

10 minutes for warm up and directions (teacher led instruction)

10-15 minutes for race (student only)

5-10 minutes for review (class, groups, pairs)

**Materials Needed:**

Markers, colored pencils, etc.

**Activity Goal:** Students will be required to show their numeracy skills from the month without the help of a teacher. They will work together in pairs to finish labeling the graph, and then complete the graph.

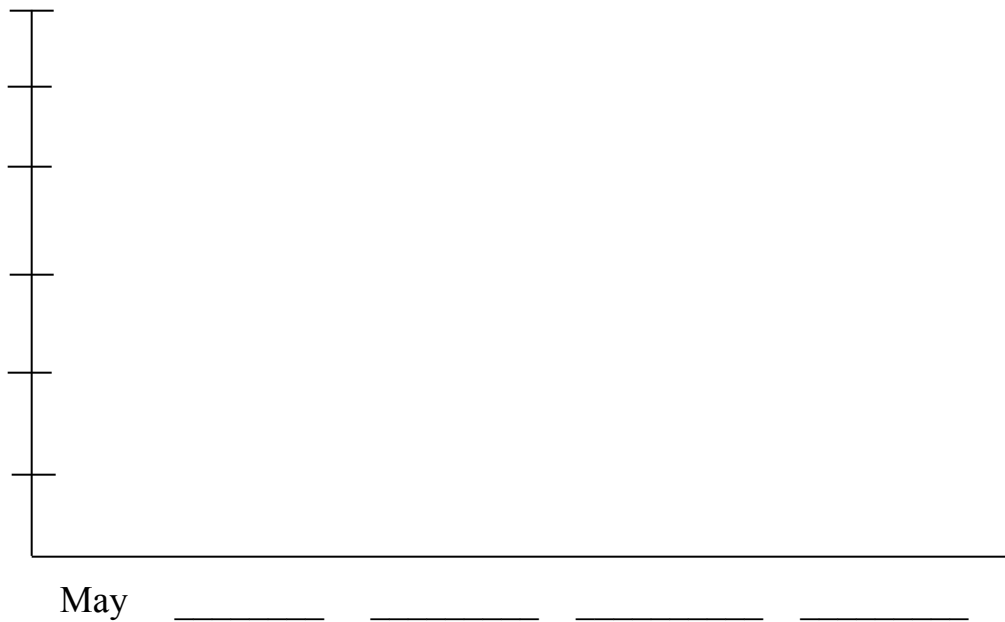
**Activity Description:** Students will pairs to label the graph and complete the graph. The fun part is the style competition of 'bar designs' between pairs. Encourage creative decoration of bars in the graph. Compare and review to end the class.

Names \_\_\_\_\_

\_\_\_\_\_

### Rain Bar Graph

1. Fill in the months and numbers.
2. Complete the bar graph.



May = 2 inches

June = 3 inches

July = 4 inches

August = 4 inches

September = 3 inches

Which month has the least rain? \_\_\_\_\_

Which months have the most rain? \_\_\_\_\_



December: Temperature, Graphs and Charts

**Level 3**

**L3 Goals:** Read and understand temperature. Read charts and graphs. Fill in temperature highs and lows for two cities in a chart and track on a graph throughout month.

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.  computer	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.  ml 1, ws1	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.
Week 2	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.  computer	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.  ml 2, ws2	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.
Week 3	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.  computer	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.  ml 3, ws3	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.
Week 4	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.  computer	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.  activity	10 min review: T reads temp high and low for two cities for the day. S writes in chart and graphs.

**Temperature charting and graphing:** A monthly calendar chart is provided. The graph is provided, but needs to be labeled.

**Example:** label temperatures on the left column (range 0 to 70 by 10s); label across days of the month (1-25). Students do not have to have every day accounted for –they can track just the days you have available. Plot using the graph lines and then connect the dots day by day to see increases or decreases in temperature. Use different colors to track different cities. Students can draw a darker line for the high and a lighter line for the low using the same color for each city.

December: Temperature, Graphs and Charts

Level 1, 10 minute review

Name \_\_\_\_\_

**Temperatures in December**  
**Saint Paul, Minnesota**

Write the highs and lows for two cities each day.

City 1: \_\_\_\_\_ Color for tracking: \_\_\_\_\_

City 2: \_\_\_\_\_ Color for tracking: \_\_\_\_\_

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				



**Level 3: Mini lesson 1**

**Plan:**

10 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

**Materials Needed:**

Whiteboard markers in various colors

**Mini-lesson Content:**

1. The Parts of a graph

- Draw a grid on the board (5 rows down, 3 columns across) in black


- Using a different color, highlight the left vertical line: the “y axis.” In the same color write “Temperatures.” Then starting at the very bottom, write 20, 25, 30, and 35 degrees at each horizontal line. (Talk about counting by 5s—and what numbers are represented in between).
- Using a third color, highlight the bottom horizontal line: the “x axis”. In the same color under the line write “Months” matching to the vertical lines (so they clearly know where to place their dots). Then write December, January, February.
- Label the whole graph “Winter Temperatures.” These are the average highs for each month.

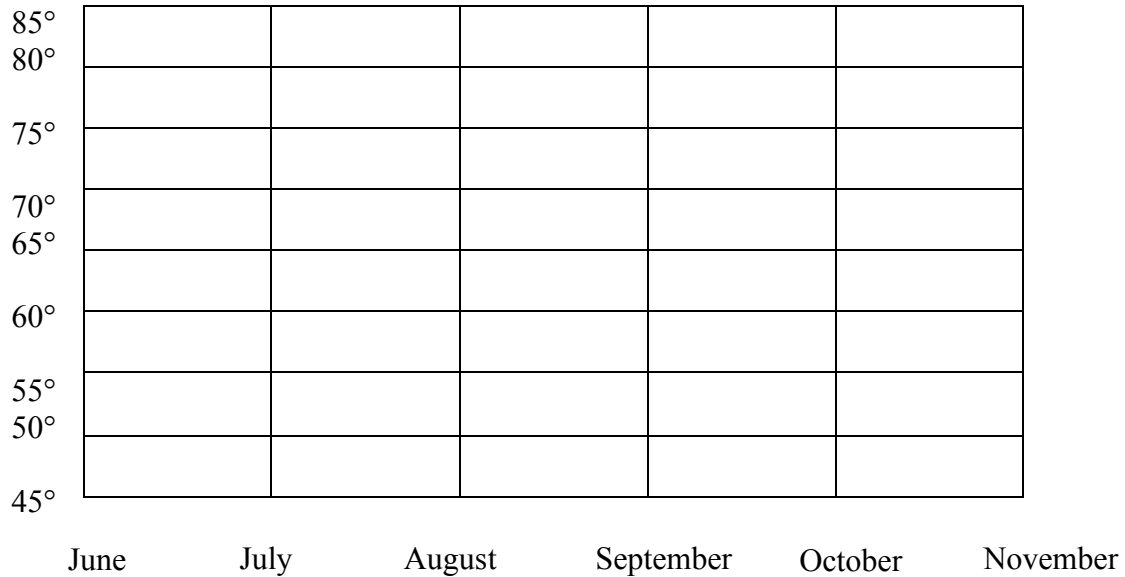
2. Graphing Together

- Write on the board December = 27, January = 24, February = 29
- Talk about what month is colder, warmer, etc. Then, figure out how to graph together. Mark a dot (using the lines!) for each month and then connect the dots to see the trend.

Name \_\_\_\_\_

### Summer and Autumn Temperature Line Graph

Fill in the graph. Connect the dots.



June = 79°, July = 84°, August = 81°, September = 72°, October = 58°, November = 47°

Circle the correct answer.

1. What does the line look like on the graph?
  - A. It goes straight across.
  - B. It points up.
  - C. It points down.
  - D. It goes up and down, up and down.
2. What is the hottest temperature available on the graph?
  - A. 81°
  - B. 84°
  - C. 85°
  - D. 90°
3. What is the temperature difference between July and November?
  - A. 37°
  - B. 131°
  - C. 77°
  - D. 47°

**Level 3: Mini lesson 2**

**Plan:**

20 minutes for graph creation together (teacher and students)

10 minutes for review (class, groups, pairs)

**Materials Needed:**

Whiteboard markers in various colors

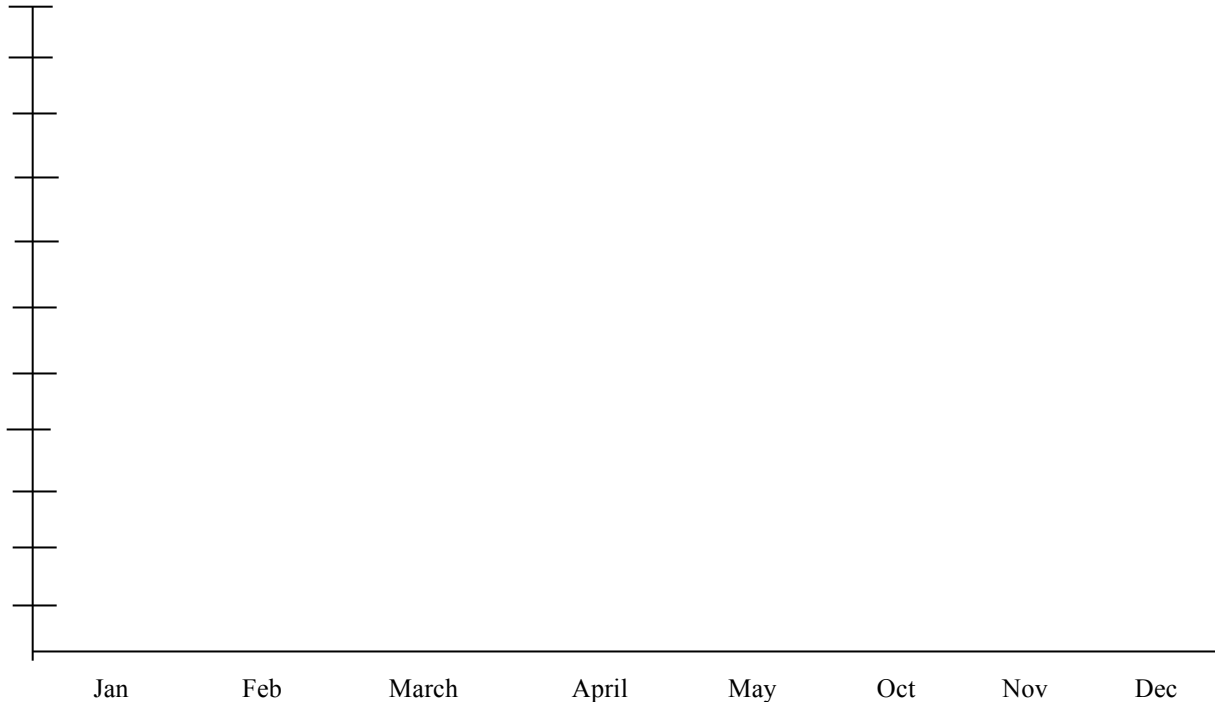
Ruler

**Mini-lesson Content: \*No Mini lesson today; Co-working on graph**

1. Set up Bar Graph:
  - Draw the same graph structure that is on the worksheet page (Level 3, WS 2)
  - Explain to students that you are going to work together to create a different kind of graph called a “bar graph.”
  - Orient them to the bar graph: title, names of months, and have them guess what is going to go on the left side of the graph (numbers).
  - Together, number up 1-11 on the left (y axis). Explain this is going to mean how many inches of snow fall in St. Paul for each month. (Show how big an inch is.)
  - Introduce decimals using the ruler: Show them how a little bit of an inch can be written with a (point . and then the number).
2. Fill in Bar Graph together: (\*Higher level students can do this independently)
  - For each month, count up the corresponding number of inches and make a little mark. Then show them how to use that to draw a bar. Emphasize the decimals and correct placement.
  - For each bar, they can use a different color, or they can fill it in a different way (dots, lines, shading, etc.)
3. Review: Talk about the results together.
  - Which month has the most snow? Which month has the least? Has anyone seen more snow than this? Etc.
  - Answer questions (together or separately and then review).

Name \_\_\_\_\_

**Average Snow Fall in St. Paul Bar Graph**



January = 10.1 inches, February = 7.6 inches, March = 9.9 inches, April = 3.0 inches, May = 0.0, October = 0.4, November = 9.6, December 10.0

- 1. Which three months have almost the same amount of snow fall?**
  - A. December, January, February
  - B. December, February, March
  - C. December, January, March
  - D. February, March, April
  
- 2. Why are only eight months included in this bar chart?**
  - A. There is limited room
  - B. No snow falls during the summer months
  - C. There is only weather in the winter months
  - D. It is a mistake

**Level 2: Mini lesson 3**

**Plan:**

20 minutes for lesson together (students and class)

10 minutes for review (class, groups, pairs)

**Materials Needed:**

Whiteboard marker

**Mini-lesson Content: \*No Mini-lesson; only whole class experience**

1. Explain the purpose of a pictograph
  - Draw the same chart as WS 3.
  - Explain the two sides of the chart: one side is for temperatures; the other side is for counting how many people like that kind of temperature.
  - Instead of a bar, you will draw small pictures to represent people.
2. Graph together as a class
  - Decide what picture you want to use to count people (a person's head, a stick figure, a sun, a cloud, etc)
  - Make a key at the bottom of the graph: (pict) = \_ people. Fill in the picture, but wait until you read the paragraph to decide on the number to fill in.
  - Read the paragraph or have a volunteer read the paragraph.
  - Work through the paragraph together to decide how many pictures to draw for each category. All students draw their own pictures on their graphs.
3. Review results
  - What is the most popular temperature? Why?
  - What is the least popular temperature? Why?



Name \_\_\_\_\_

**Who Likes Different Temperatures?**

**Pictograph**

One hundred new workers were hired at The Gardening Center. Some of the gardening work is inside and some outside. The managers first want to know the general temperature preferences of the group before they assign jobs. This is what they learn. 5 people like very cold temperatures. 15 people like cold temperatures. 65 people like cool temperatures. 90 people like warm temperatures. 85 people like hot temperatures. 50 people like very hot temperatures.

Very cold 0°	
Cold °35	
Cool 50°	
Warm 70°	
Hot 85°	
Very Hot 100°	

Key:                    = ___ people
--------------------------------------

1. What temperature do the most people like? \_\_\_\_\_
2. What temperature do the least people like? \_\_\_\_\_

December: Temperature, Graphs and Charts

### **Level 3: Culminating Group Activity**

**Plan:**

10 minutes for warm up and directions (teacher led instruction)

10-15 minutes for race (student only)

5-10 minutes for review (class, groups, pairs)

**Materials Needed:**

Markers, colored pencils, etc.

**Activity Goal:** Students will be required to show their numeracy skills from the month without the help of a teacher. They will work together in pairs to finish labeling the graph, and then complete the graph.

**Activity Description:** Students will pairs to label the graph and complete the graph. The fun part is the style competition of 'bar designs' between pairs. Encourage creative decoration of bars in the graph. Compare and review to end the class.

Names \_\_\_\_\_

\_\_\_\_\_

### Rain Bar Graph

1. Fill in the months and numbers.
2. Complete the bar graph.



May = 3.0 inches

June = 3.7 inches

July = 4.5 inches

August = 4.2 inches

September = 3.4 inches

Which month has the least rain? \_\_\_\_\_

Which month has the most rain? \_\_\_\_\_

December: Temperature, Graphs and Charts

**Level 4**

**L4 Goals:** Read and understand temperature. Read charts and graphs. Fill in temperature highs and lows for three cities in a chart and track on a graph throughout month.

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.  ml 1, ws1	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.  computer	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.
Week 2	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.  ml 2, ws2	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.  computer	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.
Week 3	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.  ml 3, ws3	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.  computer	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.
Week 4	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.  activity	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.  operations box worksheet	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.  computer	10 min review: T reads temp high and low for the day for 3 cities. S writes in chart and graphs.

**Temperature charting and graphing:** A monthly calendar chart is provided. The graph is provided, but needs to be labeled.

**Example:** label temperatures on the left column (range 0 to 70 by 10s); label across days of the month (1-25). Students do not have to have every day accounted for –they can track just the days you have available. Plot using the graph lines and then connect the dots day by day to see increases or decreases in temperature. Use different colors to track different cities. Students can draw a darker line for the high and a lighter line for the low using the same color for each city. Vote on the 3 cities of the class’s choice.

December: Temperature, Graphs and Charts

Level 4, 10 minute review

Name \_\_\_\_\_

**Temperatures in December**  
**Saint Paul, Minnesota**

Write the highs and lows for two cities each day.

City 1: \_\_\_\_\_ Color for tracking: \_\_\_\_\_

City 2: \_\_\_\_\_ Color for tracking: \_\_\_\_\_

City 3: \_\_\_\_\_ Color for tracking: \_\_\_\_\_

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				



**Level 4: Mini lesson 1**

**Plan:**

10 minutes for mini lesson (teacher led instruction)

10 minutes for individual work (student only)

10 minutes for review (class, groups, pairs)

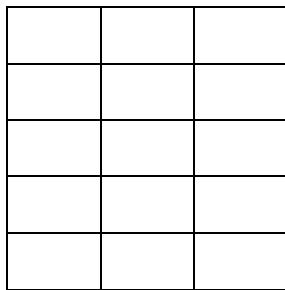
**Materials Needed:**

Whiteboard markers in various colors

**Mini-lesson Content:**

1. The Parts of a graph

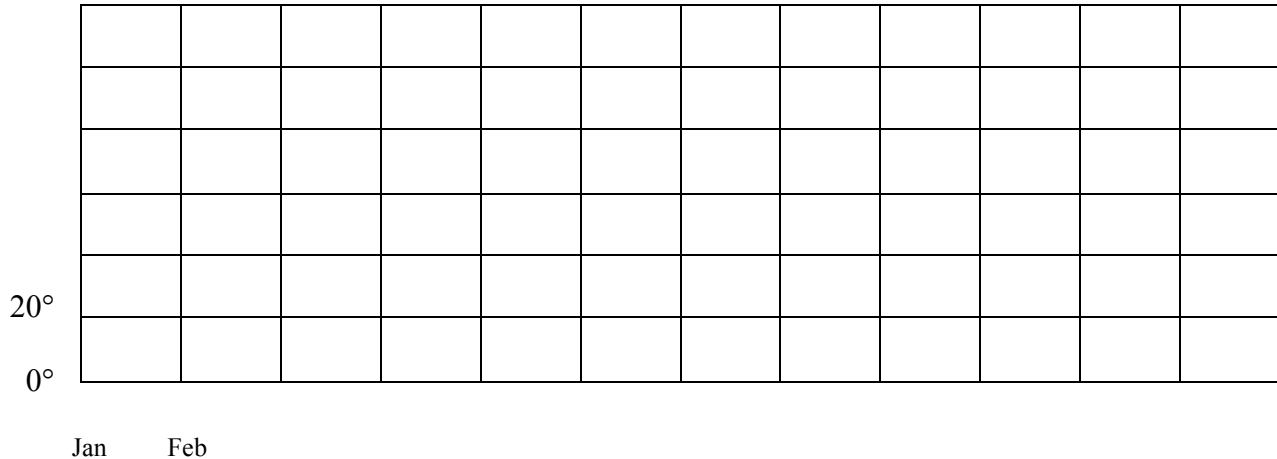
- Draw a grid on the board (5 rows down, 3 columns across) in black




- Using a different color, highlight the left vertical line: the “y axis”. In the same color write “Temperatures.” Then starting at the very bottom, write 20, 25, 30, and 35 degrees at each horizontal line. (Talk about counting by 5s—and what numbers are represented in between).
  - Using a third color, highlight the bottom horizontal line: “the x axis”. In the same color under the line write “Months” matching to the vertical lines (so they clearly know where to place their dots). Then write December, January, February.
  - Label the whole graph “Winter Temperatures.” These are the average highs for each month. That information is not necessary at this level, but you can answer if questions arise.
2. Graphing Together
- Write on the board December = 21, January = 32, February = 27
  - Talk about what month is colder, warmer, etc. Then, figure out how to graph together. Mark a dot (using the lines!) for each month and then connect the dots to see the trend.

Name \_\_\_\_\_

**Yearly Average Temperatures in Minnesota Line Graph**



1. Finish labeling all of the months of the year on the x axis.
2. Finish labeling the temperatures in increments of  $20^\circ$  on the y axis.
3. Plot the temperatures for each month on the graph. Connect the dots.

January =  $24^\circ$ , February =  $29^\circ$ , March =  $41^\circ$ , April =  $58^\circ$ , May =  $69^\circ$ , June =  $79^\circ$ ,  
July =  $84^\circ$ , August =  $81^\circ$ , September =  $72^\circ$ , October =  $58^\circ$ , November =  $47^\circ$ , December =  $27^\circ$

Circle the correct answer.

1. What does the line look like on the graph?
  - A. A "U".
  - B. It points up.
  - C. It points down.
  - D. A rainbow.
2. What is the highest temperature on the y axis?
  - A.  $81^\circ$
  - B.  $0^\circ$
  - C.  $100^\circ$
  - D.  $84^\circ$
3. What is the temperature difference between January and July?
  - A.  $84^\circ$
  - B.  $24^\circ$
  - C.  $60^\circ$
  - D.  $40^\circ$



December: Temperature, Graphs and Charts

### **Level 4: Mini lesson 2**

#### **Plan:**

10 minutes for mini-lesson (class and teacher)

10 minutes for individual work (student)

10 minutes for review (class, groups, pairs)

#### **Materials Needed:**

Whiteboard markers in various colors

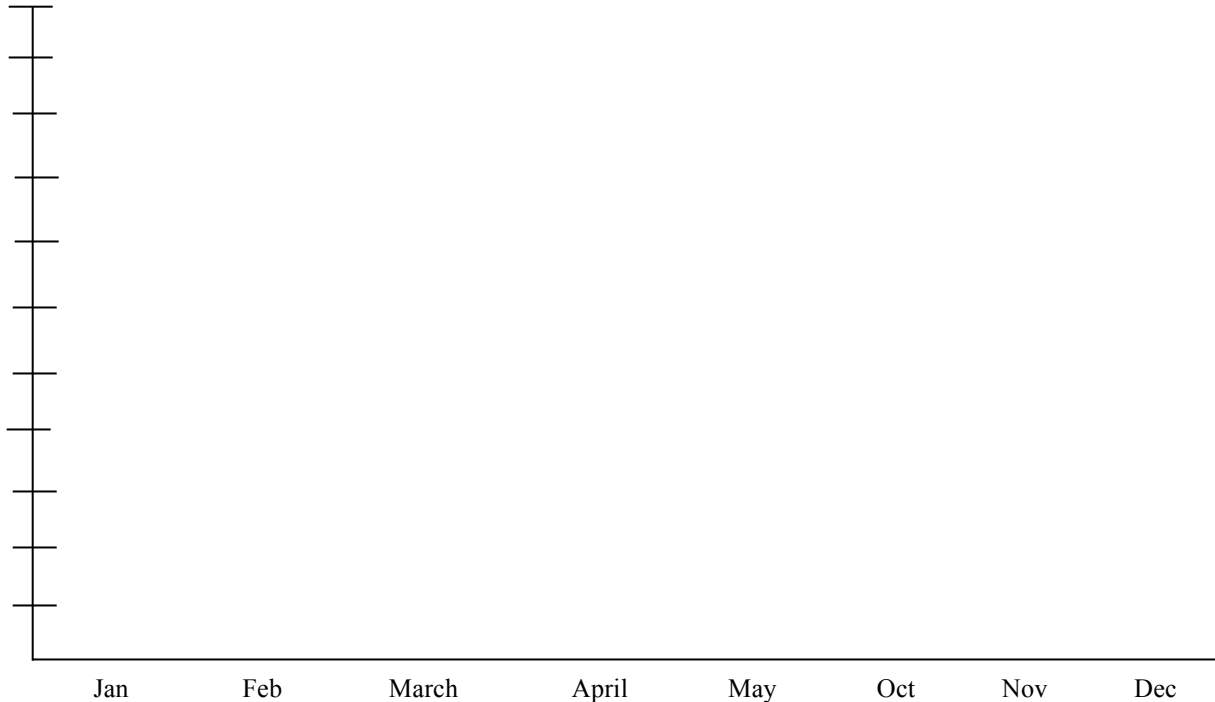
Ruler

#### **Mini-lesson Content:**

1. Set up Bar Graph:
  - Draw an abbreviated version of the bar graph they will be working on (graph men and women in the class).
  - Explain to students that you are going to work together to create a different kind of graph called a “bar graph.”
  - Orient them to the bar graph: title (Men and Women in the Class), gender titles (men and women), and have them guess what is going to go on the left side of the graph (numbers).
  - Together, number up 1-10 on the left (y axis). Explain this is going to represent how many of each gender are in the class. Graph it together, showing them how to draw the bars.
2. Orientation to their own graph
  - Introduce the graph measuring average snow fall in St. Paul.
  - Introduce decimals using the ruler: Show them how a little bit of an inch can be written with a (point . and then the number. Show how big an inch is.)
  - Explain that for each month, they must graph the number of inches of snow above the month. Emphasize the decimals and correct placement.
  - For each bar, they can use a different color, or they can fill it in a different way (dots, lines, shading, etc.)
3. Review: Talk about the results together.

Name \_\_\_\_\_

**Average Snow Fall in St. Paul Bar Graph**



January = 10.1 inches, February = 7.6 inches, March = 9.9 inches, April = 3.0 inches, May = 0.0, October = 0.4, November = 9.6, December 10.0

**1. Which month has one-tenth of an inch below December?**

- A. January
- B. March
- C. November
- D. February

**2. Which month has almost a half-inch of snow?**

- A. May
- B. April
- C. October
- D. None

**Level 4: Mini lesson 3**

**Plan:**

5 minutes for mini lesson (teacher led instruction)

15 minutes for individual work (student only)

5 minutes for review (class, groups, pairs)

**Materials Needed:**

Whiteboard marker

**Mini-lesson Content:**

1. Explain the purpose of a pictograph
  - Draw the same chart as WS 3.
  - Explain the two sides of the chart: one side is for temperatures; the other side is for counting how many people like that kind of temperature.
  - Instead of a bar, you will draw small pictures to represent people.
2. Set up the Graph as a class
  - Tell students they need to decide what picture they want to use to count people (a person's head, a stick figure, a sun, a cloud, etc)
  - Make a key at the bottom of the graph: (pict) = \_\_ people
  - \*Advanced level: Tell students to read the paragraph. Decide on how many people one picture will represent. Then fill in the chart with the information from the paragraph.
  - If students need more help, read the paragraph together and decide together how many people each picture should represent.
  - All students draw their own pictures on their graphs.
3. Review results
  - What picture did everyone choose to draw? Why?
  - How many people were represented with one picture? Why?

Name \_\_\_\_\_

**Who Likes Different Temperatures?****Pictograph**

One hundred new workers were hired at The Gardening Center. Some of the gardening work is inside and some outside. The managers first want to know the general temperature preferences of the group before they assign jobs. This is what they learn. Five people like very cold temperatures. Fifteen people like cold temperatures. Sixty-five people like cool temperatures. Ninety people like warm temperatures. Eighty-five people like hot temperatures. Fifty people like very hot temperatures.

Very cold 0°	
Cold °35	
Cool 50°	
Warm 70°	
Hot 85°	
Very Hot 100°	

Key:            = ___ people
------------------------------

1. What temperature do the most people like? \_\_\_\_\_
2. What temperature do the least people like? \_\_\_\_\_

December: Temperature, Graphs and Charts

#### **Level 4: Culminating Group Activity**

**Plan:**

10 minutes for warm up and directions (teacher led instruction)

10-15 minutes for race (student only)

5-10 minutes for review (class, groups, pairs)

**Materials Needed:**

Markers, colored pencils, etc.

**Activity Goal:** Students will be required to show their numeracy skills from the month without the help of a teacher: They will work together in pairs to finish labeling the graph, and then complete the graph. They will also write three questions based on the bar graph for another group to answer.

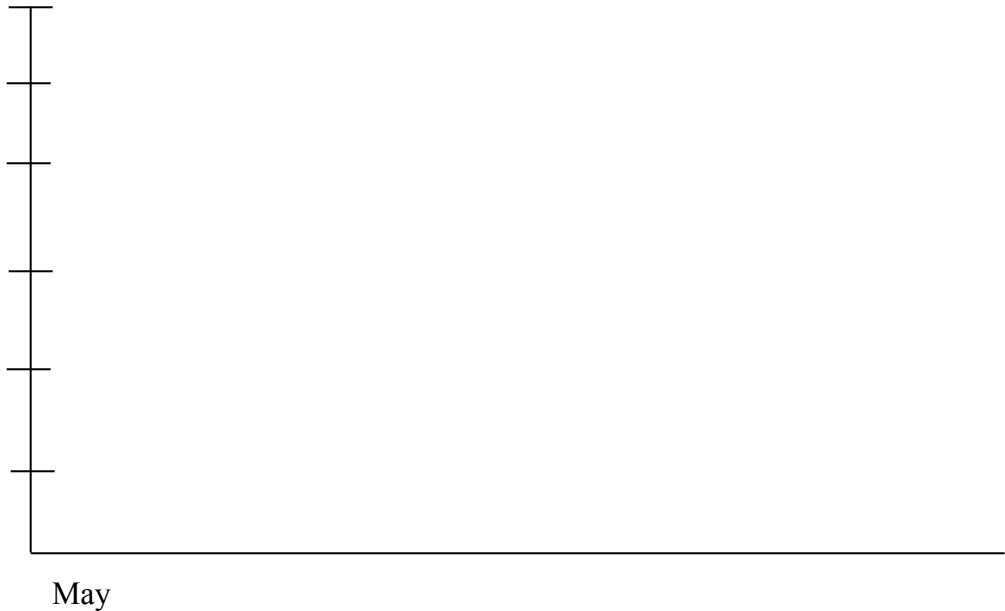
**Activity Description:** Students will pairs to label the graph and complete the graph. The fun part is the style competition of 'bar designs' between pairs. Encourage creative decoration of bars in the graph. Review different questions/answers. Compare and review graphs to end the class.

Names \_\_\_\_\_

\_\_\_\_\_

### Rain Bar Graph

1. Fill in the months on the x axis and numbers on the y axis.
2. Complete the bar graph.



May = 3.08 inches

June = 3.75 inches

July = 4.46 inches

August = 4.2 inches

September = 3.45 inches

Write three questions for another group to answer.

1.

2.

3.