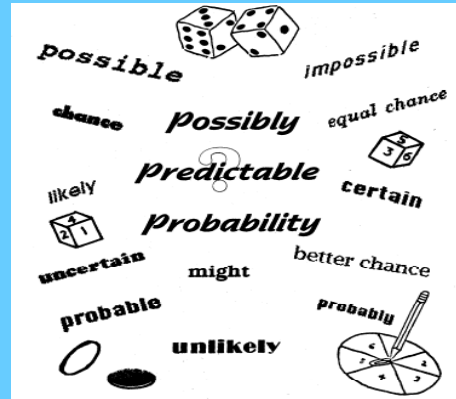


The Education Fund



IMPACT II IDEA PACKETS
Developed by
Dr. Karol L. Yeatts

Barry University
11300 NE 2nd Avenue
Miami Shores, FL 33161
Phone: 305-899-4869
Email: kjyeatts@worldnet.att.net



Overview

- To provide opportunities for students to use their imaginations and real-life experiences when considering the predictability of events.
- Create a learning environment that motivates students by presenting challenges involving predicting outcomes of events.
- Through working with probability concepts, students can build upon their own number sense, use basic numerical reasoning and enhance their critical thinking and problem solving skills.

Goals

- To provide opportunities for students to build their own number sense and to use basic numerical reasoning.
- To provide opportunities for students to use their imaginations and real-life experiences when considering the predictability of events.
- To motivate and enhance students' interest in mathematics through the use of meaningful hands-on materials and activities.
- To reinforce and enhance students' critical thinking and problem solving skills.

Probability Activities

- Probability of an Event
- Events or Outcomes
- Certain/Uncertain
- Impossible
- Likely/Unlikely
- Sample Space
- Randomness
- Fair/Unfair
- Independence of Events

Background Information

- Probability simply stated is the chance of an event occurring.
- Odds is the way of stating probabilities.
- To find the probability of an outcome, write the ratio of favorable/actual outcomes to the total number of outcomes.

$$\frac{\text{Number of actual outcomes}}{\text{Total number of outcomes}}$$

Background Information

For example:

- When tossing a coin, there are two outcomes: heads and tails.
- If the desired outcome is heads, there is one favorable outcome, heads and one unfavorable outcome, tails.

$$\frac{\text{Number of favorable outcomes}}{\text{Total number of outcomes}} = \frac{1}{2}$$

Probability Sense

Judge the following as:

CERTAIN IMPOSSIBLE MAYBE

- It will rain tomorrow.
- Drop a rock in water and it will sink.
- Trees talk to us in the afternoon.
- The sun will rise tomorrow morning.
- Three students will be absent tomorrow.

Investigating the Probability



Mystery Set

Directions:

- Reach into the bag and remove 1 item only.
- Record what you picked.
- Place the item back in the bag.
- Repeat Steps 1-3 for a total of 10 picks.
- Record each item picked.
- After the last pick, predict how many of each item there are in the bag.
- Record your prediction.
- My prediction of what is in the bag:

Recording Sheet

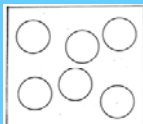
Pick 1 _____	Pick 6 _____
Pick 2 _____	Pick 7 _____
Pick 3 _____	Pick 8 _____
Pick 4 _____	Pick 9 _____
Pick 5 _____	Pick 10 _____

Shake, Spill and Count

- Give each student 6 two-color counters and the Shake, Spill, and Count worksheet.
- Have students place the 6 counters in their hands and shake then up. Let the counters spill on to the table. Have students sort the counters by colors.
- Using tally marks, have the students record how the counters fell next to the appropriate row on their worksheet.
- Have students repeat steps 3-5 for a total of 20 times, recording each "spill".
- Make a class tally of the results. After students have completed their 20 shakes and spills have them record their results on the large class tally chart.
- Discuss the results. Which combination occurred more or less frequently? Remind students that when there are two colors, one color is about as likely to land up as the other color that is why $3R + 3Y$ occurred more often.

Recording Sheet

#R	
5R + Y	
4R + 2Y	
3R + 3Y	
2R + 4Y	
1R + 5Y	
6Y	



Color Probability

Directions:

PREDICT

- Which color do you think you will roll most often?
- Which color do you think you will roll the least?

ROLL

- Roll the color cube 25 times.

RECORD

- Using tally marks, record the color that you roll.

CONCLUSION

- What color did you roll most often?
- What color did you roll the least?

EXPLAIN YOUR THINKING

Recording Sheet

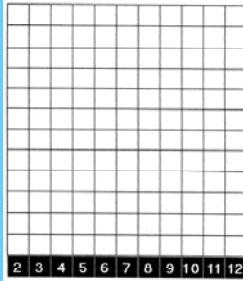
COLOR	TALLY	TOTAL ROLLS
Red		
Orange		
Yellow		
Green		
Blue		
Purple		

Probability Roll

Directions:

- Give each student 11 counters, the Probability Roll number line and worksheet. Have students arrange their 11 counters on the number line any way they choose.
- The teacher rolls the 2 number cubes. Students add the numbers together. If they placed a counter on the sum rolled they remove that counter (only one counter can be removed at a time) from their number line.
- Repeat step 4 until someone removes all 11 counters.
- Ask how and why that student won? Discuss where the student placed the counters?
- Next, have students complete the Probability Roll worksheet.
- Discuss the results on the chart. Which number reached the top first? Why? There are more ways to make 6, 7, and 8 than there are for 2, 3, 4, 5, 10, 11 and 12. List the possible combinations on a chart.
- Try the Probability Roll activity again. Have students try a new strategy to win? Will it succeed?

Recording Sheet



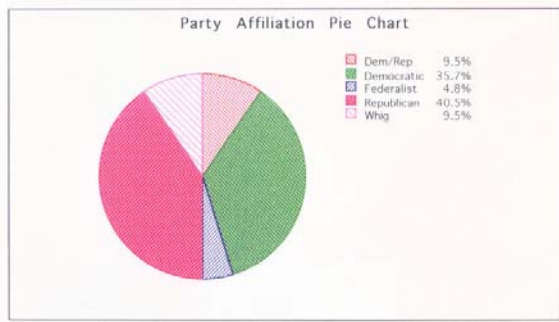
Presidential Predictions

- **Collect Data**
 - Students selected a President to research
 - Students gathered Data on the President
- **Display Data**
 - Students imported the data into Spreadsheet
 - Graphs were created from the data
- **Interpret Data**
 - Students discussed the graphed data
- **Make Predictions Based on Data**
 - Students made predictions about the characteristics the next President may have based on the collected data.

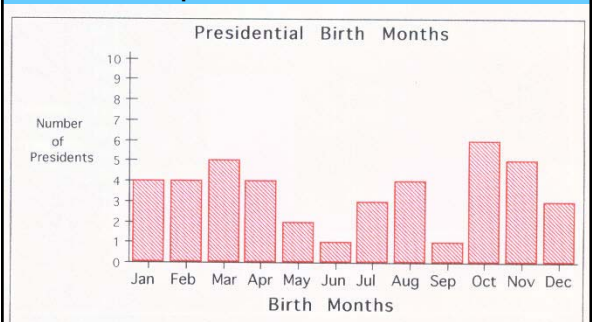
Presidential Facts		Presidential Facts	
1. President's Name	<u>George Washington</u>	1. President's Name	<u>Bill Clinton</u>
2. Birth Month	<u>February</u>	2. Birth Month	<u>August</u>
3. Political Party	<u>Federalist</u>	3. Political Party	<u>Democratic Party</u>
4. Age in Office	<u>57</u>	4. Age in Office	<u>46</u>
5. Years served	<u>7 years 308 Days</u>	5. Years served	<u>2 years so far</u>
6. Served as Vice President	<u>No</u>	6. Served as Vice President	<u>Has not served</u>
7. Family - married	<u>Yes Martha Curtis</u>	7. Family - married	<u>yes Hillary Rodham Clinton</u>
8. Children	<u>No direct descendants Martha had 4 children</u>	8. Children	<u>One daughter</u>
Sons	<u>0</u>	Sons	<u>Had none</u>
Daughters	<u>0</u>	Daughters	<u>Chelsea Clinton</u>
9. Previous profession	<u>Surveyor, planter, army gen</u>	9. Previous profession	<u>Lawyer, had a job as a lobbyist, gov official and governor of Arkansas</u>
10. Age at death	<u>67</u>	10. Age at death	<u>Has not died yet!!</u>

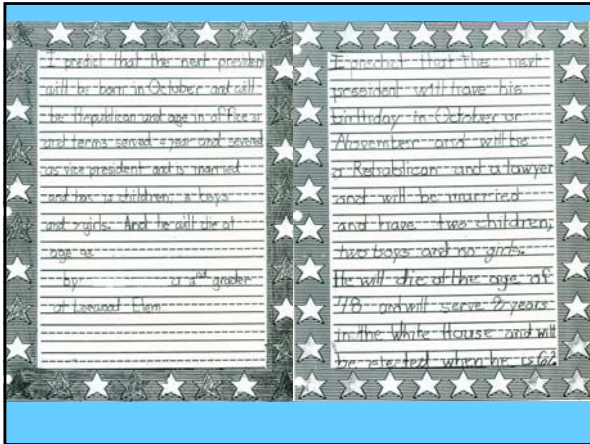
President	Birth	Party	Age elected	Years served	Was a VP	Married
1 Washington, George	Feb	Federalist	57	7 years 308 days	no	yes
2 Adams, John	Oct	Federalist	61	8 years	yes	yes
3 Jefferson, Thomas	Apr	Dem/Rep	57	8 years	no	yes
4 Madison, James	Mar	Dem/Rep	57	8 years	no	yes
5 Monroe, James	Apr	Dem/Rep	58	8 years	no	yes
6 Adams, John Quincy	Jan	Dem/Rep	57	4 years	no	yes
7 Jackson, Andrew	Mar	Democratic	61	8 years	no	yes
8 Van Buren, Martin	Dec	Democratic	54	4 years	no	yes
9 Harrison, William	Feb	Whig	68	0 years and 32 days	yes	yes
10 Tyler, John	Mar	Whig	51	4 years	yes	yes
11 Polk, James	Nov	Democratic	49	4 years	no	yes
12 Taylor, Zachary	Nov	Whig	64	1 year and 127 days	no	yes
13 Fillmore, Millard	Jan	Whig	50	2 years and 236 days	yes	yes
14 Pierce, Franklin	Nov	Democratic	48	4 years	no	yes
15 Buchanan, James	Apr	Democratic	65	4 years	no	no
16 Lincoln, Abraham	Feb	Republican	52	4 years and 42 days	yes	yes
17 Johnson, Andrew	Dec	Democratic	56	3 years and 323 days	no	yes
18 Grant, Ulysses S.	Apr	Republican	46	8 years	no	yes
19 Hayes, Rutherford	Oct	Republican	54	4 years	no	yes
20 Garfield, James	Nov	Republican	49	0 years and 199 days	no	yes
21 Arthur, Chester A.	Oct	Republican	51	3 years	yes	yes
22 Cleveland, Grover	Mar	Democratic	47	4 years	no	yes
23 Harrison, Benjamin	Aug	Republican	55	4 years	no	yes
24 Cleveland, Grover	Mar	Democratic	55	4 years	no	yes
25 McKinley, William	Jan	Republican	54	4 years and 194 days	no	yes
26 Roosevelt, Theodore	Oct	Republican	42	7 years and 171 days	yes	yes
27 Taft, William	Sept	Republican	51	4 years	no	yes
28 Wilson, Woodrow	Dec	Democratic	56	8 years	no	yes
29 Harding, Warren G.	Nov	Republican	55	2 years and 151 days	yes	yes
30 Coolidge, Calvin	Jul	Republican	51	5 years and 214 days	no	yes
31 Hoover, Herbert C.	Aug	Republican	54	4 years	no	yes
32 Roosevelt, Franklin D.	Jan	Democratic	51	12 years and 39 days	no	yes
33 Truman, Harry S.	May	Democratic	60	7 years and 263 days	yes	yes
34 Eisenhower, Dwight D.	Oct	Republican	62	8 years	no	yes
35 Kennedy, John F.	Nov	Democratic	43	2 years and 306 days	no	yes
36 Johnson, Lyndon B.	Aug	Democratic	55	5 years and 59 days	yes	yes
37 Nixon, Richard M.	Jan	Republican	56	3 years	no	yes
38 Ford, Gerald R.	Jul	Republican	61	5 years and 201 days	yes	yes
39 Carter, James E.	Oct	Democratic	52	4 years	no	yes
40 Reagan, Ronald	Feb	Republican	69	8 years	no	yes
41 Bush, George H.W.	Jun	Republican	64	4 years	yes	yes
42 Clinton, Bill	Aug	Democratic	46	2 years	no	yes

Graph of Party Affiliation



Graph of Birth Months





Additional IMPACT II Projects Developed by Dr. Karol L. Yeatts

- **Manipulatives: Motivating Mathematics**
- **Geometric Connections**
- **Stories Students Can “Count” On!**
- **“Sensing” Science**

IMPACT II Adaptor Grant

- The application for an Adaptor Grant is located in each Project Packet.
- The application is available on-line at:
<http://www.educationfund.org/apply.html>