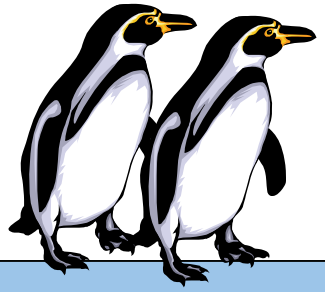
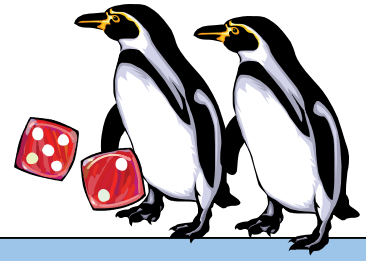


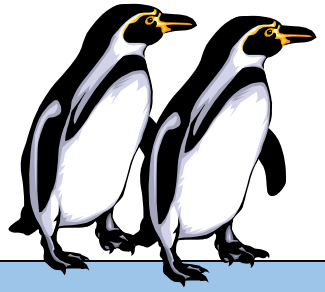
Free the Penguins

Sum of Two Dice Mat



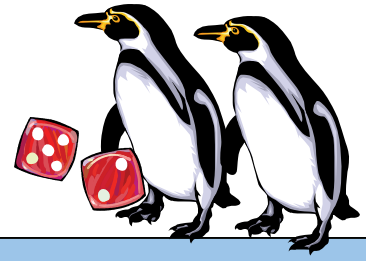
2	3	4	5	
6	7	8		
9	10	11	12	

tkawas@mathwire.com

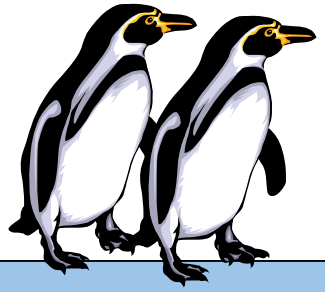


Free the Penguins

Difference of Two Dice Mat

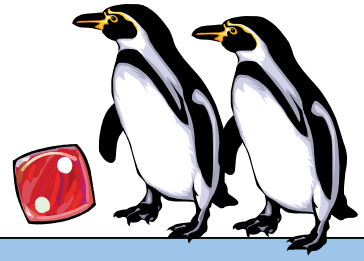


0	1	2
3	4	5

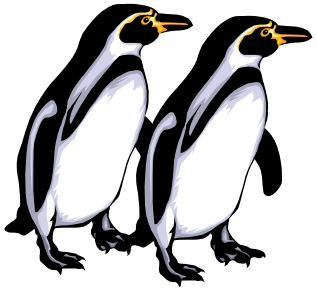


Free the Penguins

One Die Toss Mat

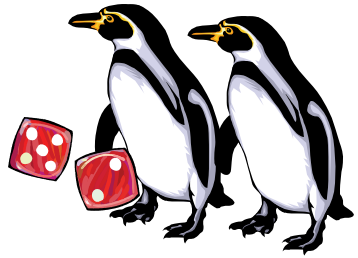


1	2	3
4	5	6



Free the Penguins

Directions: Sum of Two Dice



OBJECTIVE: The penguins are stuck on the ice floes. Be the first to free all the penguins by rolling dice sums!

MATERIALS:

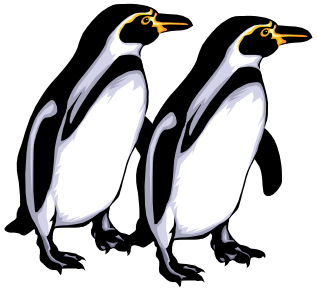
- Sum of 2 Dice game mat, inserted in sheet protector so that students can use dry erase markers for tally marks
- penguins (or other counters)
- 2 regular dice

DIRECTIONS FOR GAME:

- Each player places penguins on each of the 2-12 numbers on the mat.
- The first player rolls both dice, finds the sum, frees a penguin from that ice floe, and makes a tally mark in the box.
- The second player rolls both dice, finds the sum, frees a penguin from that space, and makes a tally mark in the box..
- Play continues back and forth in the same way.
- If there is a penguin on the sum rolled, the player frees that penguin and make a tally mark.
- If there is no penguin on the sum rolled, the player simply makes a tally mark on that number space.
- The first player to free all of his/her penguins wins the game.

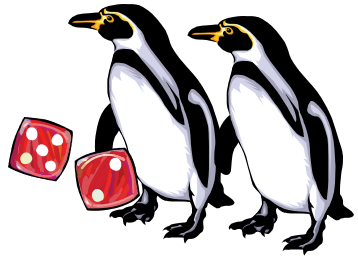
DATA COLLECTION EXTENSION:

- Students have collected data on all of the dice throws during the game by making a tally mark for each toss.
- Ask student pairs to look at the data each collected. How are they the same? How are they different? What patterns do they see? Are they equally likely to toss any of the numbers 2-12? How come there isn't a 1 in this game?
- How long does the average game last? Ask students to count up all of the tally marks to find out how many times the winner tossed the dice including the time he/she freed the last penguin. Add this data to a class line plot of the game results. OPTIONAL: Have the second player continue to play until he/she frees all of the penguins. Record this number on the class line plot as well.
- Play the game several more times to generate additional data to add to the line plot. Ask the class to analyze the class line plot data. Include discussion of median, mode, range, and/or mean, as appropriate to students' mathematical skills.



Free the Penguins

Directions: Difference of Two Dice



OBJECTIVE: The penguins are stuck on the ice floes. Be the first to free all the penguins by rolling dice sums!

MATERIALS:

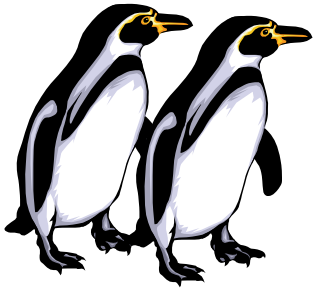
- Difference of 2 Dice game mat, inserted in sheet protector so that students can use dry erase markers for tally marks
- penguins (or other counters)
- 2 regular dice

DIRECTIONS FOR GAME:

- Each player places penguins on each of the 0-5 numbers on the mat.
- The first player rolls both dice, finds the difference, frees a penguin from that ice floe, and makes a tally mark in the box.
- The second player rolls both dice, finds the difference, frees a penguin from that space, and makes a tally mark in the box..
- Play continues back and forth in the same way.
- If there is a penguin on the difference rolled, the player frees that penguin and make a tally mark.
- If there is no penguin on the difference rolled, the player simply makes a tally mark on that number space.
- The first player to free all of his/her penguins wins the game.

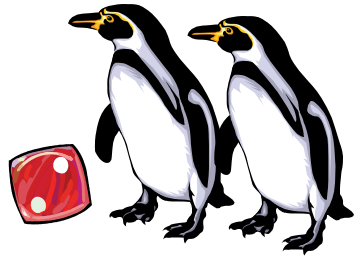
DATA COLLECTION EXTENSION:

- Students have collected data on all of the dice throws during the game by making a tally mark for each toss.
- Ask student pairs to look at the data each collected. How are they the same? How are they different? What patterns do they see? Are they equally likely to toss any of the numbers 0-5? How come there isn't a 6 in this game?
- How long does the average game last? Ask students to count up all of the tally marks to find out how many times the winner tossed the dice including the time he/she freed the last penguin. Add this data to a class line plot of the game results. OPTIONAL: Have the second player continue to play until he/she frees all of the penguins. Record this number on the class line plot as well.
- Play the game several more times to generate additional data to add to the line plot.
- Ask the class to analyze the class line plot data. Include discussion of median, mode, range, and/or mean, as appropriate to students' mathematical skills.



Free the Penguins

Directions: One Die Toss



OBJECTIVE: The penguins are stuck on the ice floes. Be the first to free all the penguins by rolling dice sums!

MATERIALS:

- One Die Toss game mat, inserted in sheet protector so that students can use dry erase markers for tally marks
- penguins (or other counters)
- 1 regular die

DIRECTIONS FOR GAME:

- Each player places penguins on each of the 1-6 numbers on the mat.
- The first player rolls the die, frees a penguin from that ice floe, and makes a tally mark in the box.
- The second player rolls the die, frees a penguin from that space, and makes a tally mark in the box..
- Play continues back and forth in the same way.
- If there is a penguin on the number rolled, the player frees that penguin and make a tally mark.
- If there is no penguin on the number rolled, the player simply makes a tally mark on that number space.
- The first player to free all of his/her penguins wins the game.

DATA COLLECTION EXTENSION:

- Students have collected data on all of the dice throws during the game by making a tally mark for each toss.
- Ask student pairs to look at the data each collected. How are they the same? How are they different? What patterns do they see? Are they equally likely to toss any of the numbers 1-6?
- How long does the average game last? Ask students to count up all of the tally marks to find out how many times the winner tossed the die including the time he/she freed the last penguin. Add this data to a class line plot of the game results. OPTIONAL: Have the second player continue to play until he/she frees all of the penguins. Record this number on the class line plot as well.
- Play the game several more times to generate additional data to add to the line plot.
- Ask the class to analyze the class line plot data. Include discussion of median, mode, range, and/or mean, as appropriate to students' mathematical skills.