



At Bat with Math

Strands:

Number & Quantity	X
Algebra	
Functions	
Geometry	
Statistics & Probability	X

Materials:

- Game Board
- 2 Dice
- Number Cards (0-12), one set per team
- Markers, 20–30 per team
- 3 pennies

Where:

Outside	
Inside	X
On-line	
On-site	

Get your bats ready! Use flexibility with numbers to create numbers to hit your players around the bases! Use probability to strategically label the bases.

Set-Up:

- Cut out the number cards and place them face down next to the game board.
- If there are more than 2 players, split players into two teams.
- Choose which team will be the Home Team and which will be the Away Team.

Object of the Activity:

Add or subtract numbers to create new numbers. Label the bases with strategically chosen numbers to help your team score runs while keeping your opponents from winning the game.

Playing the game:

Round 1

1. Away Team randomly chooses four numbers from the number card pile and place them in any order on the bases.
2. Home Team hits first. Choose a team member to roll first.
3. Roll the dice. Add or subtract the two numbers to create a number on one of the bases. For example, if you roll a 2 and a 5, you can make two number sentences, $2 + 5 = 7$ or $5 - 2 = 3$.
4. If you are successful:
 - a. Move your marker to that base.
 - b. Advance other team members' markers if they are forced forward by your run. For example: Assume there are runners on first base and third base. The next player creates a number that is on first base. The player on first base runs to second base because the runner on first forces the player to run to second. The player on third base does not move because no player forced the player on third to move forward. Your team now has players on first, second, and third base.
 - c. Record each run by moving the marker from home plate into your team's score box on the side of the field.
5. If you cannot create a number on one of the bases, your team receives an out. Mark the out by placing a penny in the middle of the field.
6. Play moves to the next player on your team.
7. The half inning ends once your team scores 10 runs or receives 3 outs. Remove any players (markers) left on the board. Home Team randomly chooses four numbers to label bases. Away Team bats.
8. Round 1 ends when the Away Team scores 10 runs or rolls its third out.



Round 2

9. The Away Team randomly selects four numbers from their pile of number cards. Arrange the numbers in order of how likely they are to be rolled from most likely to least likely. Label first base with the most likely number, second with the next most likely number, and so on. For example, if the Away Team randomly selects the numbers 1, 5, 9, and 12, number 1 would go on first base because it can be rolled most often. The number 5 would go on second base, 9 on third base, and 12 would go on home plate since it is least likely to be rolled. The Home Team bats first.
10. Continue with Steps 3 through 8 of Round 1.
11. When it is the Away Team's turn to bat, the Home Team removes and replaces the numbers on the bases, following the directions in Step 9.
12. Round 2 ends when the Away Team rolls its third out.

Round 3

13. At the same time, each team purposefully chooses four numbers from their team's number cards. Before the Away Team reveals the numbers they chose, the Home Team sets their four numbers aside to be used during the second half of the inning. Each team will bat using the other team's number choices on the bases. The goal for both teams is to try to win the game.
14. The Away Team places their numbers on the bases first. The Home Team bats first.
15. Play as described in Steps 3 through 8 of Round 1.
16. When it is the Away Team's turn to bat, the Home Team removes and replaces the numbers on the bases with their numbers from Step 13.
17. Round 3 ends when the Away Team rolls its third out.

To Win:

Be the Team with the most runs at the end of Round 3.

Think About It:



1. Is there an equal chance of getting each number 0 through 12?
2. What are all of the possible outcomes that can be rolled using two dice?
3. What labeling of the bases gives your team the greatest chance for rolling a hit? Why do you think so?
4. What strategies did you use when labeling the bases in Round 3?

Variations:

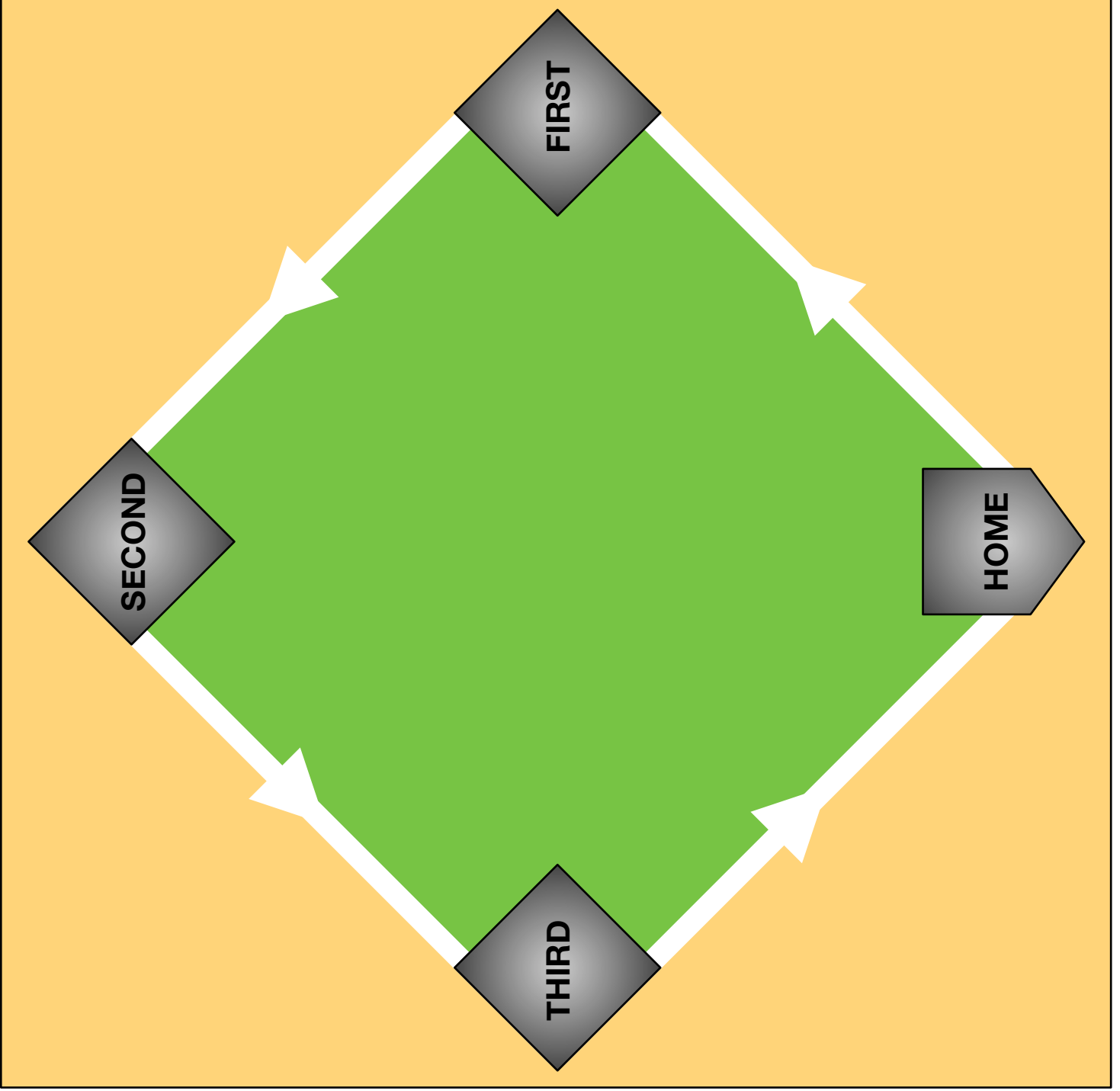
Multiplication League: Use addition, subtraction, multiplication, and division to combine the numbers on the dice to get the base numbers.

Advanced League: Allow players to use any operation to combine two numbers. If players are from a wide range of ages, ask more advanced players to avoid addition and subtraction, if possible.

Helpful Hints:

1. To strategically place the numbers in Rounds 2 and 3, create a table of all possible outcomes using addition and subtraction.
2. Only two numbers at most from the group 0, 1, 2, 3, 4 may be placed on the board at the same time.

**AWAY
TEAM**



**HOME
TEAM**

0	1	2	3	4	5	<u>6</u>
7	8	<u>9</u>	10	11	12	
0	1	2	3	4	5	<u>6</u>
7	8	<u>9</u>	10	11	12	