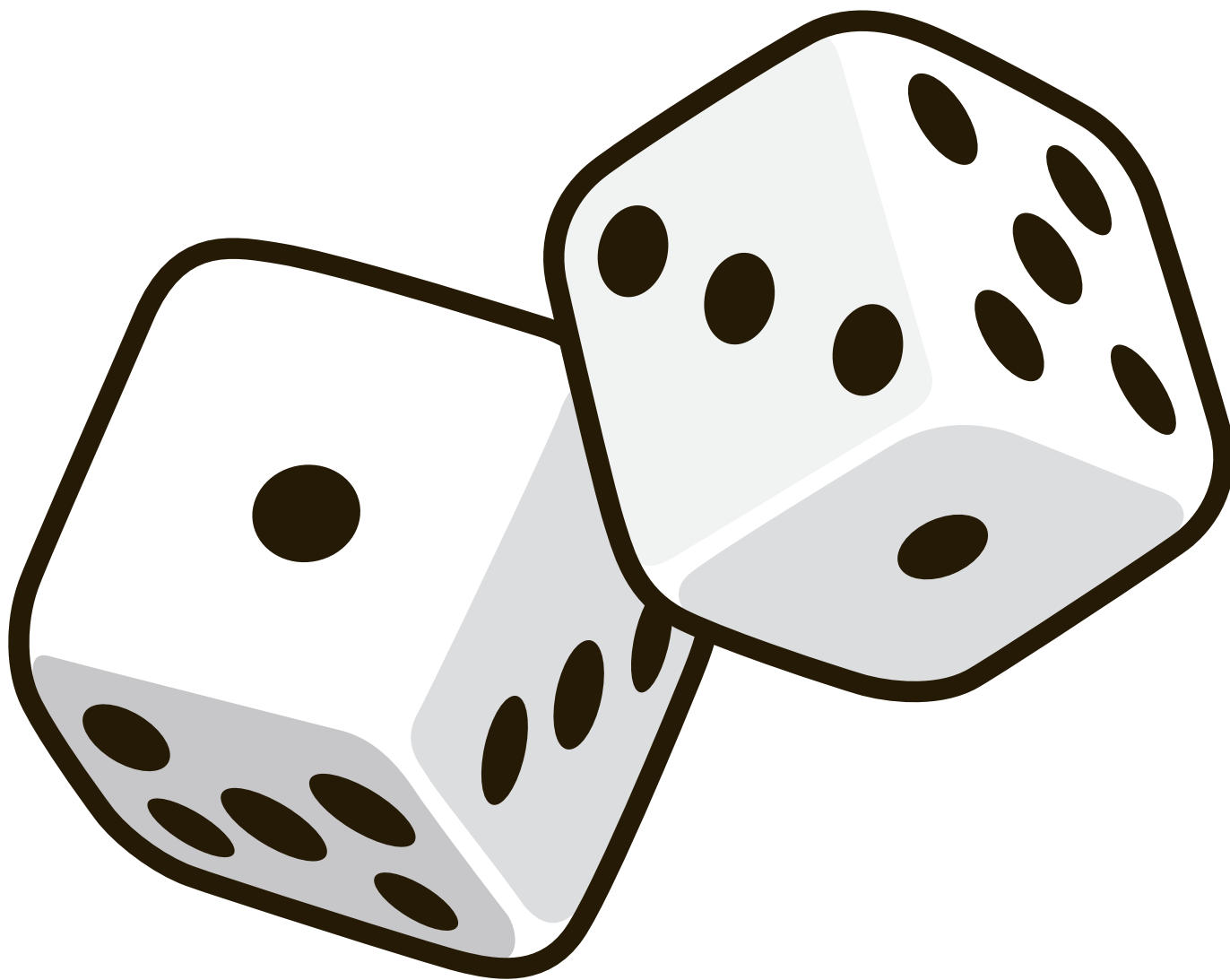


# **Dice Activities for Multiplication**

**Facts • Fluency • Fun**



**Chet Delani, Mary Saltus, Diane Neison,  
Marcia Fitzgerald, Karen Moore**

## Introduction

*Dice Activities for Multiplication Facts* is designed for teachers and parents to use with children in grades 3–5. These engaging, challenging, and fun activities give students a variety of opportunities to practice multiplication facts without tedious paper-and-pencil drills.

*Dice Activities for Multiplication Facts* provides opportunities to:

- Develop fluency with multiplication facts 2 through 12
- Reinforce number patterns
- Recognize the commutative property of multiplication—for, example:  $2 \times 8 = 8 \times 2$
- Develop game strategy
- Investigate the probability concept of chance
- Develop communication and cooperation skills by working in teams of two students

*Dice Activities for Multiplication Facts* presents seven dice activities for each of the multiplication number facts 2 through 12. All seven activities involve tossing two dice, finding the sum, and multiplying the sum by a number 2 through 12.

The Sum Dice Graph activities introduce the table of facts for a specific multiplication family of facts. Students toss two dice, find the sum of the two dice, and multiply the sum by the specified multiplicand for the activity. Students find the product on the graph. They either write the multiplication sentence (for example,  $4 \times 7$ ) in the box above the product or they write the product itself in the box above the product. The multiples listed in sequence on the graph aid students in computing.

The Table Completion activities challenge students to fill in their chart before their

## Notes to Teachers

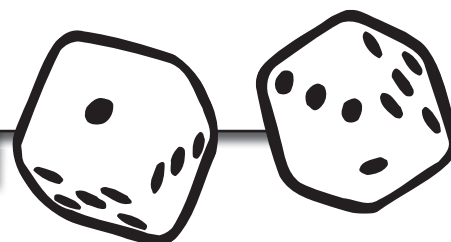
opponent. The players are dependent on tossing sums between 2 and 12 before their opponent does. Some of the Table Completion activities involve students working on a different multiple than their opponent.

Three chart activities—Four in a Row, Square Off, and Cross Over—present a choice of activities involving strategies of placing four tokens in a row, forming a square with four tokens, or placing tokens so they cross the chart either vertically or horizontally.

The simple Tic-Tac-Toe activity is a game of chance. The players are more dependent on the toss of the dice than in any of the other activities. Not all possible multiples of 2 through 12 are represented. This activity is an introduction to the Four-Grid Tic-Tac-Toe activity.

Four-Grid Tic-Tac-Toe is less an activity of chance and more of skill than simple Tic-Tac-Toe. Players place three tokens in a row on as many of the grids as they can until all possible moves have been played. Players then count their sets of three tokens in a row to determine who has the most. Players sometimes have a choice of blocking an opponent.

Assigning the same dice activity but different multiplication facts for specific students provides teachers with opportunities to differentiate class instruction and homework assignments.



# Directions for Sum Dice Graph Activities

## Objectives:

- Practice computing the sum of number combinations 1 through 12
- Practice multiplication facts 2 through 12
- Recognize and reinforce the sequence of multiples
- Practice directionality on an  $x$ - $y$  axis

Introduce the Sum Dice Graphs by demonstrating on an overhead.

## How to Play

- Toss 2 dice. Find the sum. Multiply the sum by the number specified for that activity.
- Multiples of the number are in sequence on the  $x$ -axis (bottom row) of the graph.
- Find the multiple and write the multiple in the box above it, or write the number sentence that produced the multiple. For example, for 16 write  $2 \times 8$ .

## Variations

The student tosses the dice, finds the sum, and multiplies the sum by the number specified on the chart, but instead of recording the product, performs any of the following variations:

- Doubles or triples the multiple
- Halves the multiple
- Adds 5 to the multiple and halves the result



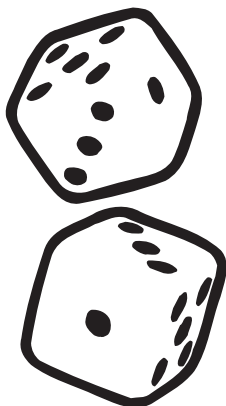
- Adds 7, 8, 9, 10, or 11 to the multiple
- Subtracts 7, 8, 9, 10, 11... (It's possible that a negative number will result!)
- Divides the product by 3 (or any number from 2 to 12)

The student then records that computation in the product column.

## Discussion

- When the students have completed their graphs, call attention to the patterns that have emerged.
- Examine the data on many graphs. What columns are more likely to be filled in? Lead students to look at the distribution of sums when tossing 2 dice. (Probability)
- Some students will not notice that the multiples are in sequence on the  $x$ -axis and will use repeated addition or recall to arrive at the multiplication fact.
- Some students may need to be led to see how to use the information on the graph as a tool.

# 2 x Sum Dice Graph



- How to Play**
- Toss 2 dice.
  - Find the sum.
  - Multiply by 2.
  - Fill in the box above the multiple.

4	6	8	10	12	14	16	18	20	22	24				

# Directions for Table Completion Charts

## Objectives:

- Practice computing the sum of number combinations 1 through 12
- Practice multiplication facts 2 through 12
- Make the connection that the concept of chance determines who fills in their chart first.

Introduce the Table Completion Charts by demonstrating on an overhead and playing against the class. Two teams with two players on a team are suggested. Teams give students an opportunity to discuss moves and strategies and provide a check on correct computation.

## How to Play

Each team tosses a die. The higher number goes first.

- Team tosses two dice, finds the sum, and then multiplies the sum by the number at the top of the chart.
- Records the product next to the sum in the chart.
- If the sum has already been tossed, the team loses a turn.
- First team to complete their chart wins.

Some of the Table Completion activities have two teams play against each other using different multiplicands (for example, 6 vs 7, 6 vs 8, and so on). To play these activities:

- Each team tosses a die and finds the sum.
- Team with the higher number chooses a chart.
- Team with the lower number goes first.

## Suggestions

If students are struggling with recalling multiplication facts, suggest that they list the multiples of the multiplicand as a reference.

Before placing a token on the chart, the team members should say the multiplication fact aloud—for example, “Seven times three equals twenty-one.”

## Variations

The teams toss the dice, find the sum, and multiply by the number on the chart, but instead of recording the product, they perform any of the following variations and record that computation next to the product.

- Double or triple the product.
- Halve the product.
- Add 5 to the product and halve the result.
- Add 7, 8, 9, 10, or 11 to the product.
- Subtract 7, 8, 9, 10, 11... (It's possible to result in a negative number!)
- Tally both columns in each activity and see if there is a pattern.

## Discussion

- Is this a game of luck or skill?



## Twos Table Completion

- Each team tosses a die.
- Higher number goes first.

### How to Play

- Toss 2 dice. Find the sum. Multiply the sum by 2.
- Record the product next to the sum in the table.
- If the sum has already been tossed, lose a turn.
- First to complete their table wins.



Team: \_\_\_\_\_

Team: \_\_\_\_\_

SUM	$\times 2$
12	
11	
10	
9	
8	
7	
6	
5	
4	
3	
2	

SUM	$\times 2$
12	
11	
10	
9	
8	
7	
6	
5	
4	
3	
2	