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Line 'Em Up
Teacher Version

Suggested Pre-requisite	Grade Range
Unit 4 – Multiplication Facts II Lessons 1–9	3–4
Concepts Covered • Apply understanding of multi-digit x 1- and 2-digit factors • Select appropriate methods and apply them accurately to estimate products of multi-digit x 1- and 2-digit factors • Communicate verbally regarding the strategies utilized in reaching solutions to ultimately win the game	**Materials Needed** • Line 'Em Up Game Board, one per group • Factor Board, one per group • 2-color markers • paper/pencil
Activity Structure Groups of 4 (2 on each team)	**Time Needed** 30–40 minutes
Summary The students will utilize the concepts and strategies covered in Unit 4 with an emphasis on estimating products of multi-digit and 2-digit factors.	

Warm up
Review the different strategies used to find the product of two factors—partial products, place value, base ten models, the distributive property of multiplication over addition—and give an example of each. Also, review the guidelines for rounding numbers—i.e., 56 ≈ 60, 714 ≈ 700. Model several problems of estimating products. Discuss why estimation is an important skill and how it is used in everyday life.

Activity
In this activity the students will practice multiplication of 2-digit numbers using estimation to find an approximate product. Each team should have paper and pencil to record the problem and show all the steps used to get the solution.

- Organize students in to groups of four, consisting of two teams of two.
- Give each group a Line 'Em Up Game Board, a Factor Board, and 25 two-color markers. Team 1 will select one factor from Column A and one from Column B.
- Players write their problem on their paper, rounding off the factors to their greatest place value. Then they calculate the estimated product. Example: Team 1 selects 18 and 211. They write the problem on their paper: 18 x 211 ≈ 20 x 200 = 4,000 (2 x 2 = 4, then add the three zeros for 4,000).
- The players find the estimated product on the Line 'Em Up Game Board and cover it with a marker.
- It is then Team 2's turn.
- The goal is to be the first team to get four correct answers in a row—across, down, or diagonal.

- Not all products are on the game board.

Wrap up

Have students share the strategies they used in playing the game. Possible questions: Did you randomly pick the two factors? Were you searching for two specific factors that when rounded and multiplied would give you a specific product? What did you learn from playing the game? If you play it again, what would you do differently?

Student Checklist
Directions:
Think back on the method and parts of the Line 'Em Up game used to round factors and to use the rounded factors to estimate products. Then discuss your findings with your classmates.

	EASY	JUST RIGHT	CHALLENGING	TOO HARD
Rounding factors				
Estimating products of the rounded factors				
Multiplying the factors				
Explaining my strategies				

Extension

- To accommodate student needs/differences: factors could be changed
- Students could line up 3 or 5 products instead of four.
- Students could create a factor board and game board to challenge their classmates.
- Round each column of factors on the factor board to a different place value—i.e., Column A could round to the nearest ten and Column B could round to the nearest hundred.

Flexible Rubric

CATEGORY	**3** Exceeded objective	**2** Met objective	**1** Did not meet objective	**0** Did not attempt
Completion				
Mathematical Errors				
Record of problems				
Mathematical Concepts				
Working with Others				
Self Reflection				

Name:_____ Date: _____

Line 'Em Up
Directions

Number of Players: 4 (2 on each team)

Goal: To be the first to cover 4 estimated products in a row—across, down, or diagonally.

Materials Needed: Line 'Em Up Game Board
Line 'Em Up Factor Board
Two-color markers
Paper and pencil

Rules of the Game:

1. Team 1 picks one factor from Column A and one factor from Column B on the Line 'Em Up Factor board and writes a multiplication problem on their paper using the two selected factors.
   For example, if players selected the factors 12 and 555, the team would write the multiplication problem 12 x 555.
2. Next, estimate the product by rounding each factor to its greatest place value.
   In the example, the factors in 12 x 555 would be rounded to 10 x 600.
3. Now calculate the product of the rounded factors.
   In the example, 10 x 600 = 6000.
4. Locate and cover the product on the Line 'Em Up Game Board with one of the two-color markers. Note: Not all products are on the board.
5. This completes a turn. Now Team 2 follows steps 1–4. Teams will take turns.

The first team to line up four markers in a row either across, down, or diagonally wins the game!

Be prepared to discuss the strategies you used to play the game.

Line 'Em Up
Factor Board

- Select one factor from Column A and one factor from Column B.
- Round EACH factor to its greatest place value.

Column A	Column B
32	372
56	19
67	486
45	6158
94	299
15	77

Line 'Em Up
Game Board

1,800	27,000	30,000	400	4,800
180,000	4,000	2,400	5,600	28,000
18,000	10,000	360,000	1,400	35,000
9,000	720,000	300,000	45,000	1,000
600	25,000	15,000	20,000	540,000

Student Checklist

Directions:
Think back on the method and parts of the Line 'Em Up game used to round factors and to use the rounded factors to estimate products. Then discuss your findings with your classmates.

	EASY	JUST RIGHT	CHALLENGING	TOO HARD
Rounding factors				
Estimating products of the rounded factors				
Multiplying the factors				
Explaining my strategies				