Game Rules

"Factors and Multiples" Game

Object: Work together to mark as many numbers as possible.

Materials
- "Factors and Multiples" Game Board

How to Play:

1. Player 1: Mark numbers with an "O."

2. Player 2: Mark numbers with an "X."

3. Player 1: Mark a multiple of 2.

4. Player 2: Mark a factor or a multiple of the previous number.

5. Take turns marking a factor or a multiple of the previous number.

6. Continue until no more moves are possible.

7. Count how many numbers are marked.

8. Start another game and try to end with more marked numbers.

Factors and Multiples

Learning Objectives

Identify factors and multiples of whole numbers in the range of 1–100.

Content Standard

Gain familiarity with factors and multiples. Find all factor pairs for a whole number in the range 1–100 . . . (CCSSM: 4.0A.4)

Math Vocabulary

- *composite*
- *factor*
- *prime*

Materials

For each pair of students:

- "Factors and Multiples" Game Board (page 50)
- Game Rules, if needed, after presentation (page 68)

①	②	③	4	⑤	6	7	X̶	X̶	X̶
11	X̶	13	14	X̶	⑯	17	X̶	19	㉕
21	22	23	㉔	25	26	17	18	19	㉚
31	32	33	34	35	36	37	38	39	X̶
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Explaining the Game: Factors and Multiples

Number of Players: 2

Object: Work together to mark as many numbers as possible.

How to Play:

1. Player 1 marks numbers with an "O"; Player 2 marks numbers with an "X."

2. Player 1 marks a multiple of 2.

3. Player 2 marks a factor or a multiple of the previous number.

4. Players take turns marking a factor or a multiple of the previous number.

5. Continue until no more moves are possible.

6. Count how many numbers are marked.

7. Start another game and try to end with more marked numbers.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22		24	25	26	17	18	19	30
31	32	33		35	36	37	38	39	40
41	42	43	44	15	46	47	48	49	50
51	52	53	54	5	56	57	58	59	60
61	62	63	64	65		67	68	69	70
71	72	73	74	75	76		78	79	80
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Example

- Player 1 circles 12.
- Player 2 can mark either:
  ~ One of the factors of 12 (1, 2, 3, 4, or 6), or
  ~ One of the multiples of 12 (24, 36, 48, 60, 72, 84, or 96).

Differentiation

More Support

- Use a 1–40 game board for a few games before using the 1–100 game board.

More Challenge

- Play the game competitively.

Deepening the Understanding

Ask the class:	Mathematical Practices (CCSSM)	
What advice would you give someone who was going to play this game and wants to mark as many numbers as possible before getting stuck?	MP1	Make sense of problems and persevere in solving them.
• What strategies would you recommend?	MP2	Reason abstractly and quantitatively.
	MP6	Attend to precision.
• Which numbers should a player mark first? Why?	MP7	Look for and make use of structure.
Jen said that it is helpful to choose composite numbers in this game. Do you agree? Why or why not?	MP2	Reason abstractly and quantitatively.
	MP6	Attend to precision.
	MP7	Look for and make use of structure.
After a student shares an idea, ask the class if they agree or disagree and why.	MP3	Construct viable arguments and critique the reasoning of others

Note: This game is based on a classic math game called Juniper Green. The original Juniper Green game was developed by Richard Porteous, of Edinburgh, Scotland, to help his students learn multiplication and division.

"Factors and Multiples" Game Board (Game 4-7)

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