

Factors & Products

Object of the Game

Players alternate choosing target numbers and identifying factors until no more factors and products remain uncircled. Then they each find the sum of the numbers they've circled. The player with the greater sum wins.

Materials

- 2 pencils, pens, or markers in different colors
- 1 Factors & Products Record Sheet
Print the record sheet or make your own.

Skills

This game helps us practice

- Finding the factors of 2-digit products
- Mental computation

1	2	2	3	3	4	4
5	5	6	6	7	7	8
8	9	9	10	10	11	12
13	14	15	16	18	20	21
24	25	28	30	33	36	40
42	48	50	54	63	72	100
Player 1			Player 2			

How to Play

1. Player 1 chooses a target number on the Factors & Products Record Sheet by drawing a circle around it. This number represents Player 1's score for this round.
2. Using a different color than Player 1, Player 2 circles all of the factors of the target number. Player 2 adds these circled numbers. The sum of the circled numbers is Player 2's score for the round.
 - » The record sheet includes two each of the numbers 2–10. When circling factors of the target number, a player may circle and score each factor only once.

*Player 1 chooses 63 as a target number.
Player 2 then circles the factors of 63: 7, 9, 21, 3, and 1.
For this round, Player 1 scores 63 points and
Player 2 scores 41 points.*

Factors & Products Record Sheet

1	2	2	3	3	4	4
5	5	6	6	7	7	8
8	9	9	10	10	11	12
13	14	15	16	18	20	21
24	25	28	30	33	36	40
42	48	50	54	63	72	100
Player 1			Player 2			
63			7+9+21+3+1=41			

3. Player 2 chooses and circles a new target number, and Player 1 determines and circles the factors of that number, claiming those numbers for their score.
- » Once a number on the game board has been circled, it may not be used again by either player.

Factors & Products Record Sheet						
1	2	2	3	3	4	4
5	5	6	6	7	7	8
8	9	9	10	10	11	12
13	14	15	16	18	20	21
24	25	28	30	33	36	40
42	48	50	54	63	72	100

Player 1	Player 2
(63) $18+2+12+3+9+4+$ $6 = (54)$	$7+9+21+3+1=$ (41) (36)

Player 2 chooses 36 as a target number. Player 1 circles the factors of 36: 2, 18, 3, 12, 4, 9, and 6. Note that each factor, including 6, is circled and scored only once. For this round, Player 2 scores 36 points and Player 1 scores 54 points.

4. Players take turns choosing target numbers and circling factors.
- » If after completing a turn, a player realizes they missed a factor, they do not get to go back and circle that number.
5. When no further rounds can be played, the game is over.
6. Each player then finds the sum of the numbers they've circled. The player with the greater total wins.

Tips for Families

- Suggest that students think about how many different factors a number has and invite them to think about the sum of those numbers.
- Share your thinking about why you chose your target number. Encourage students to explain the thinking about their choices.

Change It Up

Making even small changes to a game can invite new ways of thinking about the math. Try making one of the changes below. How did it change your strategy for winning the game?

- Try Factors & Products Record Sheet A, which has fewer and smaller numbers.
- Play with three players. One player selects the target and the other two players take turns circling factors. Players rotate who selects the target.

Factors & Products Record Sheet						
1	2	2	3	3	4	4
5	5	6	6	7	7	8
8	9	9	10	10	11	12
13	14	15	16	18	20	21
24	25	28	30	33	36	40
42	48	50	54	63	72	100

Player 1 _____ Player 2 _____



Factors & Products Record Sheet A				
1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	20	21
22	24	25	26	27
28	30	32	34	36

Player 1 _____ Player 2 _____