Unterrichtsplan

Multiplication Table Beyond 10

Altersgruppe: **Grade 4, Grade 5, Grades 6 & 7**
CAPS: **G5.1.1a.5, G5.1.1c.2, G5.1.1d.3, G5.1.1e.1, G6.1.1a.6, G6.1.1c.2, G6.1.1d.3, G6.1.1e.1, G7.1.1a.1, G7.1.1f.1**
Online-Ressourcen: Spinning Tables

Opening	Teacher presents	Students play	Class discussion	Closing
7 min	12 min	12 min	12 min	6 min

ZIELE:

- **Experience** analyzing patterns
- **Practice** multiple methods to calculate products
- **Learn** multiplication facts
- **Develop** problem-solving skills

Opening | 7 min

- Explain to the students that you are going to call out a number. The students should raise their right hand if the number is a multiple of two, raise their left hand if the number is a multiple of five and stand if the number is a multiple of three. If the number is not a multiple of two, three, or five, the students do nothing. If the number is a multiple of more than one of those numbers, they should do all of the actions that apply. For example, for 20, they should raise both hands. For six, they should stand and raise their right hand.
- Say: Eight.
  - *Students should raise their right hands.*
- Ask the students to lower their hands.
- Say: 25.
  - *Students should raise their left hands.*
- Ask the students to lower their hands.
- Say: 12.
  - *Students should stand and raise their right hand.*
- Ask the students to sit and lower their hands.
- Say: 30.
  - *Students should stand and raise both hands.*
- Ask the students to sit and lower their hands.
- Continue to call out numbers, checking for understanding.

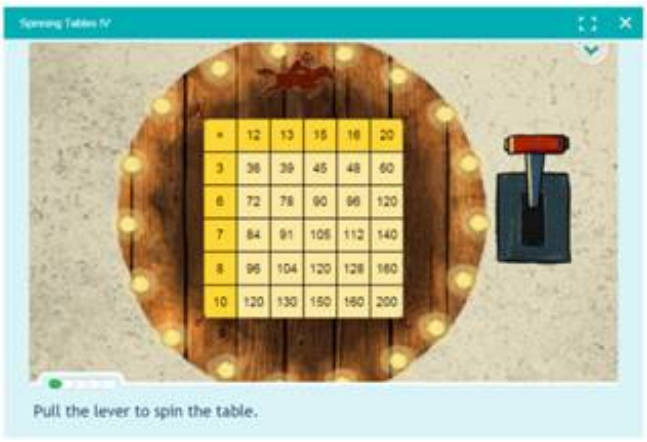
Teacher presents Spinning Tables: Multiplication Table Beyond 10 | 12 min

---

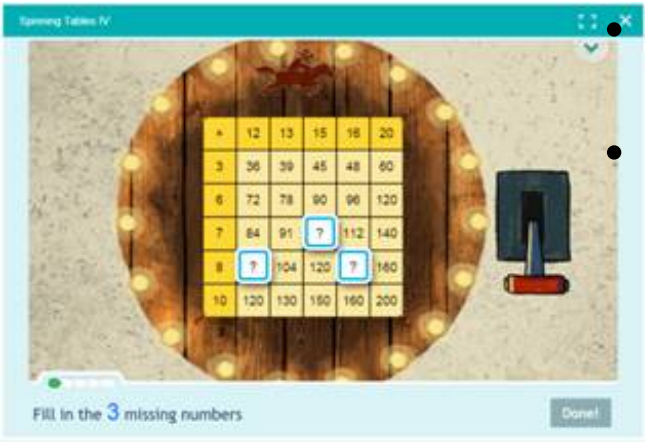
- Present *Matific*'s episode Spinning Tables – Multiplication Table Beyond 10 to the class, using the projector.

The goal of the episode is to analyze patterns to calculate products.

Example:



- Pull the lever down. Some numbers will fly off, leaving missing products.



- Ask: What numbers belong in the missing spots?
- Click on the ? to enter the numbers that the students indicate.

If the answer is correct, the space will remain white.

If the answer is incorrect, the space will turn brown.

- When you have filled in the three missing numbers, click on Done!.
- The episode will ask you to spin the lever and fill in the missing numbers a total of five times.

Students play Spinning Tables: Multiplication Table Beyond 10 | 12 min

- Have the students play **Spinning Tables – Multiplication Table Beyond 10** on their personal devices. Circulate, answering questions as necessary.

Students who need practice with their times tables can use the **Multiplication Table** worksheet.

Students who are ready to advance can use the **Multiplication - 1-Digit by 2-Digit** worksheet.

Class discussion | 12 min

- Display the following table:

x	8	9	11	15	16
3	24	27	33	45	48
5	40	45	55	75	?
6	48	?	66	?	96
7	?	63	77	105	?
8	64	72	88	?	128

- Ask: What is the product when we multiply 5 and 16?
  - *The product is 80.*
- Ask: How can we use the rest of the table to help us determine that the answer is 80?
  - *Responses may vary. Two possible responses:*

1. We can see from the table that the product of 5 and 15 is 75. So 15 fives make 75. So 16 fives must be 5 larger than 75, which is 80.

2. We can see from the table that the product of 3 and 16 is 48. So 3 sixteens make 48. We want 5 sixteens, so we need to add 32. Thirty-two more than 48 is 80.

- Ask: What is the product when we multiply 6 by 9?
  - *The product is 54.*
- Ask: If we did not know that 6 times 9 is 54, how could we use the table to figure it out?
  - *Responses may vary. Two possible responses:*

1. We can see that 6 times 8 is 48. So 8 sixes make 48. To get 9 sixes, we need to add one six. So the answer is six more than 48, which is 54.

2. We can see that 5 times 9 is 45. So 5 nines make 45. To get 6 nines, we need to add another nine. So the answer is 9 more than 45, also known as 54.

- Ask: What is the product when we multiply 6 by 15? How do we use the table to figure it out?
  - *The product of 6 and 15 is 90. Three possible explanations:*

1. The table shows that 3 times 15 is 45. So 3 fifteens make 45. So 6 fifteens must be twice 45, or 90.

2. We can see from the table that 5 fifteens make 75. Since we want 6 fifteens, we want one more fifteen. So we add 15 to 75 to get 90.

3. The table shows that 16 sixes make 96. We are looking for 15 sixes, which is one fewer six. So we subtract 6 from 96 to get 90.

- Ask: What is the product when we multiply 7 by 8? If we had not memorized the answer, how could we use the table to figure it out?

- *The product of 7 and 8 is 56. Two possible explanations:*

  1. The table shows that 6 times 8 is 48. So 6 eights make 48. Since we are looking for 7 eights, we want one more eight. Eight added to 48 is 56.

  2. We can see from the table that 7 times 9 is 63. So 9 sevens make 63. We want 8 sevens. This must be seven less than 63, or 56.

- Ask: What is the product when we multiply 7 by 16? How can we use the table to figure it out?
  - *The product of 7 and 16 is 112. Two possible explanations:*

    1. The table shows that 6 times 16 is 96. Since we want 7 times 16, we need to add 16. Sixteen added to 96 is 112.

    2. The table shows that 7 times 15 is 105. So 15 sevens make 105. We want to calculate 16 sevens. So we need one more seven. When we add 7 to 105, we get 112.

- Ask: What is the product when we multiply 8 by 15? How can we use the table to figure it out?
  - *The product of 8 and 15 is 120. Two possible explanations:*

    1. The table shows that 7 times 15 is 105. So 7 fifteens make 105. Eight fifteens must be fifteen larger than 105. When we add 15 to 105, we get 120.

    2. The table shows that 8 times 16 is 128. Instead of 16 eights, we want 15 eights. So we need to subtract 8 from 128. We get 120.

- Say: Let's skip count by fours. What do we get?
  - *4, 8, 12, 16, 20, 24, 28, 32, 36, 40, 44, …*

- Ask: What do you notice about these numbers?
  - *Responses may vary. Possible responses:*

1. All the numbers are even.

2. The ones digit repeats every five numbers: 4, 8, 12, 16, 20, 24, 28, …

- Say: Let's skip count by sevens. What do we get?
  - *7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84, …*
- Ask: What do you notice about these numbers?
  - *Responses may vary. Possible responses:*

    1. The numbers alternate odd and even.

    2. The ones digit repeats every 10 digits: 7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84, …
- Ask: When you skip count by an odd number, why does the sequence alternate between odd and even?
  - *We are skip counting by an odd number. So each time, we add an odd number. So the first number is odd. Now we add an odd to it. Odd plus odd is even. So the second number is even. To this even number, we add an odd. Even plus odd is odd. So the third number is odd. To this odd number, we add an odd. Odd plus odd is even. So the fourth number is even. This pattern continues forever.*

Closing | 6 min

- **Say:** Let's say we know that 5 times 38 is 190. Then how do we calculate 5 times 39?
  - *Thirty-eight fives make 190. We need 39 fives. So we need one more five. We add 5 to 190 to get 195.*
- **Say:** Let's say we know that 7 times 27 is 189. How do we determine 7 times 28?
  - *Twenty-seven sevens make 189. We want 28 sevens. So we need one more seven. We add 7 to 189 to get 196.*
- **Ask:** What is 10 times 33?
  - *The product is 330.*
- **Ask:** How can we use that information to find the product of 5 and 33?
  - *The product of 5 and 33 is half the product of 10 and 33. Since 10 times 33 is 330, then 5 times 33 must be 165.*
- **Say:** Now that we know that 5 times 33 is 165, how can we find 6 times 33?
  - *We want 6 thirty-threes instead of 5 thirty-threes. So we need to add 33 to the product of 5 times 33. So we add 33 to 165 to get 198.*
- **Ask:** So what steps could we take to find the product of 6 and 28?
  - *Responses may vary. One possible response: We could first find the product of 10 and 28, which is 280. Then we know the product of 5 and 28 is half of 280, or 140. To get 6 times 28, we need to add 28 to 140. Twenty-eight plus 140 is 168. So the product of 6 and 28 is 168.*