

keep scrolling to get
a sneak peek!

Help your Algebra 2 students
practice **evaluating series**
using summation notation.
Students will be eager to get
the self-checking benefits
from this circuit activity!

EVALUATING SUMMATION NOTATION

Differentiated Circuit Worksheet

Answer Key

Date: _____

SUMMATION NOTATION CIRCUIT

A circuit is a route that starts and ends at the same place. Start in the first box and solve the problem. Search through the remaining boxes for the answer you got for that question. Continue until you have completed the questions and you return to the original question. Record your path below.

6 → 10 → 3 → 8 → 2 → 9 → 4 → 7 → 5

Answer: 55	# 5	Previous Answer: 24
$\sum_{n=1}^4 n+3$		2. Write the series in sigma notation and evaluate. $2, 5, 8, 11, 14$ $\sum_{n=1}^5 (3n-1)$
Terms: 4, 5, 6, 7 $4 + 5 + 6 + 7 = 22$		
Answer: _____	# 10	Previous Answer: 181
3. Evaluate: $\sum_{n=1}^5 n+1$		4. Find the sum of the first 5 terms of an arithmetic series that has a first term of 1 and a common difference of 2.

Directions: A circuit is a route that starts and ends at the same place. Start in the first box and solve the problem. Search through the remaining boxes for the answer you got for that question. Continue until you have completed the questions and you return to the original question. Record your path below.

1 → 6 → 10 → 3 → 8 → 2 → 9 → 4 → 7 → 5

Previous Answer: -7	# 5	Previous Answer: 34
1. Evaluate: $\sum_{n=1}^4 3$		2. Evaluate: $\sum_{k=1}^4 3k$
Terms: 3, 3, 3, 3 Sum: $3 + 3 + 3 + 3 = 12$		Terms: 5, 8, 11, 14 Sum: $5 + 8 + 11 + 14 = 38$
Previous Answer: 14	# 10	Previous Answer: 62
3. Evaluate: $\sum_{n=1}^5 n+1$		4. Evaluate: $\sum_{k=1}^4 3k$



2 versions + Answer key included

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Why do you need this?

Evaluating Series with Summation Notation Circuit



It's self-checking! Your students will know if they are correct or not.



2 differentiated versions for all students practice this essential math skill.

Name: _____ Date: _____

SUMMATION NOTATION CIRCUIT

Directions: A circuit is a route that starts and ends at the same place. Start in the first box labeled 1 and solve the problem. Search through the remaining boxes for the answer you got for question 1. Now complete that question. Continue until you have completed the questions and you are back to the original question. Record your path below.

1 → _____ → _____ → _____ → _____ → _____

Previous Answer: 55	# _____	Previous
1. Evaluate: $\sum_{n=1}^4 n + 3$		2. Write and evaluate
Previous Answer: 36 <th># _____</th> <th>Previous</th>	# _____	Previous
3. Write the series in sigma notation and evaluate. 1, 6, 11, 16, 21		4. Find the arithmetic series of 3 and
Previous Answer: 45 <th># _____</th> <th>Previous</th>	# _____	Previous
5. Evaluate: $\sum_{k=0}^6 -2k + 5$		6. Write positive

Previous Answer: 11	# _____	Previous Answer: 20
7. Find the sum of the first 5 terms of an arithmetic series with a common difference of 2 and the first term is 5.		8. Find the sum of the first 4 terms of an arithmetic series with a common difference of 4 and the first term is 4.
Previous Answer: 38 <th># _____</th> <th>Previous Answer: 15</th>	# _____	Previous Answer: 15
9. Find the sum of the first 5 terms of a geometric series with a common ratio of 2 and the first term is 2.		10. Evaluate: $\sum_{n=1}^3 n^2$

Helpful Hints: Use these hints to help you solve the problems.

Arithmetic Series:

- Add the same number
- Common difference =

Geometric Series:

- Multiply by the same
- Common ratio = r

Evaluating a Summation:

Step 1: Plug in each value and each term.

Sigma Notation:

sigma → $\sum_{n=1}^4 n = 1 + 2 + 3 + 4$

upper bound

Evaluating Summation Notation *includes:*

Challenge: Evaluate the summation notation below.

$$\sum_{n=4}^8 (n^2 + n + 1)$$

How are you feeling about this topic? Circle one:

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Helpful Hints: Use these hints to help you solve the problems.

Sigma Notation:

upper bound

sigma $\rightarrow \sum_{n=1}^4 n = 1 + 2 + 3 + 4$

lower bound

Arithmetic Series:

- Add the same number each time.
- Common difference = d

Geometric Series:

- Multiply by the same number each time.
- Common ratio = r

Evaluating a Summation:

Step 1: Plug in each value of the index.
Step 2: Find each term.
Step 3: Add up all the terms

How are you feeling about this topic? Circle one:

- ✓ 10 self-checking problems
- ✓ a detailed answer key
- ✓ a standard version with an extension question
- ✓ a basic version with helpful hints section
- ✓ student self assessment

Evaluating Summation Notation

standards covered:

CCSS: HSA-SSE.B.4

TEKs: P.5.A, P.5.D

VA SOLs: F.A11.5

SUMMATION NOTATION CIRCUIT

Previous Answer: 65	# 4	Previous Answer: 93	# 3
7. Evaluate: $\sum_{n=0}^5 2n + 1$ Terms: 1, 3, 5, 7, 9, 11 Sum: $1 + 3 + 5 + 7 + 9 + 11 = 36$		8. Evaluate: $\sum_{k=2}^4 3k - 1$ Terms: 5, 8, 11 Sum: $5 + 8 + 11 = 24$	
Previous Answer: 120	# 2	Previous Answer: 10	# 6
9. Evaluate: $\sum_{k=3}^8 k^2 + 2$ Terms: 11, 18, 27, 38, 51, 66 Sum: $11 + 18 + 27 + 38 + 51 + 66 = 181$		10. Evaluate: $\sum_{n=1}^3 2n^2$ Terms: 2, 8, 18 Sum: $2 + 8 + 18 = 28$	
Challenge: Evaluate the summation notation below.			
$\sum_{n=4}^8 (n^2 + n + 1)$			

how this circuit resource works

Then search for their answer on the worksheet. Once the answer is found, students complete the problem below it.

Students can track their path at the top.

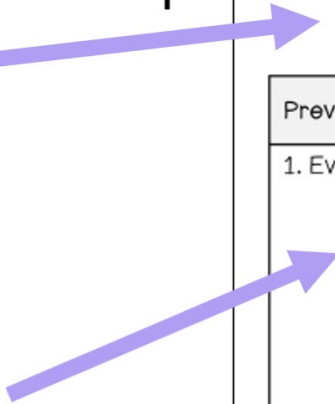
Name: _____ Date: _____

SUMMATION NOTATION CIRCUIT

Directions: A circuit is a route that starts and ends at the same place. Start in the first box labeled 1 and solve the problem. Search through the remaining boxes for the answer you got for question 1. Now complete that question. Continue until you have completed the questions and you are back to the original question. Record your path below.

1 → _____ → _____ → _____ → _____ → _____ → _____ → _____ → _____ → _____ → 1

Previous Answer: 55 # _____	Previous Answer: 24 # _____
1. Evaluate: $\sum_{n=1}^4 n + 3$	2. Write the series in sigma notation and evaluate. 2, 5, 8, 11, 14
Previous Answer: 36 # _____	Previous Answer: 181 # _____
3. Write the series in sigma notation and evaluate. 1, 6, 11, 16, 21	4. Find the sum of the first 5 terms of the arithmetic series that has a common difference of 3 and the starting value is 7.



Students start with the first question.

The last question they answer should lead back to problem #1 to “close” the circuit.

how to use this resource

Name: **Answer Key** Date: _____

SUMMATION NOTATION CIRCUIT

Directions: A circuit is a route that starts and ends at the same place. Start in the first box labeled 1 and solve the problem. Search through the remaining boxes for the answer you got for question 1. Now complete that question. Continue until you have completed the questions and you are back to the original question. Record your path below.

1 → **6** → **10** → **3** → **8** → **2** → **9** → **4** → **7** → **5** → 1

Previous Answer: -7 # 5	Previous Answer: 34 # 8
1. Evaluate: $\sum_{n=1}^4 3$ <p>Terms: 3, 3, 3, 3 Sum: 3 + 3 + 3 + 3 = 12</p>	2. Evaluate:

SUMMATION NOTATION CIRCUIT

Previous Answer: 65 # 4	Previous Answer: 93 # 3
7. Evaluate: $\sum_{n=0}^5 2n + 1$ <p>Terms: 1, 3, 5, 7, 9, 11 Sum: 1 + 3 + 5 + 7 + 9 + 11 = 36</p>	8. Evaluate: $\sum_{k=2}^4 3k - 1$ <p>Terms: 5, 8, 11 Sum: 5 + 8 + 11 = 24</p>
Previous Answer: 120 # 2	Previous Answer: 10 # 6
9. Evaluate: $\sum_{k=3}^8 k^2 + 2$ <p>Terms: 11, 18, 27, 38, 51, 66 Sum: 11 + 18 + 27 + 38 + 51 + 66 = 181</p>	10. Evaluate: $\sum_{n=1}^3 2n^2$ <p>Terms: 2, 8, 18 Sum: 2 + 8 + 18 = 28</p>

Previous Answer: 14
3. Evaluate: $\sum_{n=1}^5 n + 1$ <p>Terms: 2, 3, 4, 5, 6 Sum: 2 + 3 + 4 + 5 + 6 = 20</p>
Previous Answer: 45
5. Evaluate: $\sum_{k=0}^6 -2k + 5$ <p>Terms: 5, 3, 1, -1, -3, -5, -7</p>

This is a great activity to use when reviewing how evaluate a series using summation notation.

It can be used right after teaching the concept or as homework.

This is also a **substitute-friendly** assignment!



hey there!

My name is Malia and I'm passionate about making learning and practicing math fun. I love creating engaging math resources for my students and I hope your students enjoy this activity too!

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