



Math  
Released Item 2016

Grade 5

Sum of Decimal Numbers  
VH059780

# Prompt

A student finds the sum of  $87.92 + 32.11 + 63.08 + 54.89$  by adding the sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

## Part A

Explain why the student's strategy can be used to find the sum of  $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

## Part B

Describe or show another strategy for finding the sum of  $87.92 + 32.11 + 63.08 + 54.89$  that can be done using pencil and paper. Include the sum of  $87.92 + 32.11 + 63.08 + 54.89$  in your explanation.

Enter your strategy and your sum in the space provided.

# Rubric

Task is worth a total of 3 points.

Sum of Decimal Numbers – Part A	
Score	Description
1	<p>Student response includes the following element.</p> <ul style="list-style-type: none"><li>• <b>Reasoning component</b> = 1 point<ul style="list-style-type: none"><li>○ The student uses an understanding of the commutative property to explain why the strategy can be used to find the sum.</li></ul></li></ul> <p>Sample Student Response:</p> <p>“Yes, it will work because the student added the same numbers but in a different order. It doesn’t matter which order you add the numbers as long as you add all of the same numbers.”</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"><li>• A variety of explanations are possible. As long as the student shows an understanding of why the rearranged numbers can be used to solve the problem, credit should be given.</li><li>• The student does not need to use the terms like <i>commutative property</i> or <i>associative property</i>; as long as it is clear the student understands the concept, credit should be given.</li></ul>
0	Student response is incorrect or irrelevant.

## Sum of Decimal Numbers – Part B

Score	Description
2	<p>Student response includes the following 2 elements.</p> <ul style="list-style-type: none"><li>• <b>Reasoning component</b> = 1 point<ul style="list-style-type: none"><li>○ The student indicates that using the standard algorithm is another way to solve the problem.</li></ul></li><li>• <b>Computation component</b> = 1 point<ul style="list-style-type: none"><li>○ The student provides the response of 238.</li></ul></li></ul> <p>Sample Student Response:</p> <p>“To solve the problem, you can align the numbers vertically, lining them up by place value. You can then add the numbers vertically, hundredths first, tenths next, then ones, and then tens, regrouping when needed. The sum of the numbers is 238.”</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"><li>• A variety of strategies are possible for finding the sum. As long as the student is able to correctly explain how he or she arrived at the sum, credit should be given.</li><li>• It is not necessary to use terms like standard algorithm or vertically; as long as it is clear the student understands the concept, credit should be given.</li></ul>
1	Student response includes 1 of the above elements.
0	Student response is incorrect or irrelevant.

# Anchor Set

## A1 – A8

With Annotations

Part A: Score Point 1

Part B: Score Point 2

A student finds the sum of  $87.92 + 32.11 + 63.08 + 54.89$  by adding the sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

**Part A**

Explain why the student's strategy can be used to find the sum of  $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

You can line them up more easier. You could put them in any order like  $32.11 + 87.92 + 63.08 + 54.89$  and you will still get the same answer.

**Part B**

Describe or show another strategy for finding the sum of  $87.92 + 32.11 + 63.08 + 54.89$  that can be done using pencil and paper. Include the sum of  $87.92 + 32.11 + 63.08 + 54.89$  in your explanation.

Enter your strategy and your sum in the space provided.

$32.11 + 87.92 = 120.03$   
 $54.89 + 63.08 = 117.97$   
 $120.03 + 117.97 = 238.00$

## Annotation

### Anchor Paper 1

#### Part A: Score Point 1

This response receives full credit. It includes the required element:

- A valid explanation of why the student's strategy can be used to find the sum is provided (You could put them in any order like  $32.11 + 87.92 + 63.08 + 54.89$  and you will still get the same answer). This explanation demonstrates an understanding of the commutative property of addition.

#### Part B: Score Point 2

This response receives full credit. It includes each of the two required elements:

- Another strategy to solve the problem is provided ( $32.11 + 87.92 = 120.03$ ;  $54.89 + 63.08 = 117.97$ ;  $120.03 + 117.97 = 238.00$ ). The amounts are grouped differently and then added correctly. Grouping the addends differently than given in the prompt is considered a valid alternative strategy.
- Provides the correct sum (238).

Part A: Score Point 1  
Part B: Score Point 2

A student finds the sum of  
 $87.92 + 32.11 + 63.08 + 54.89$  by adding the  
sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

**Part A**

Explain why the student's strategy can be used to find the sum of  
 $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

$$\begin{aligned}87.92 + 63.08 &= 151.00 \\32.11 + 54.89 &= 87.00 \\87.00 + 151.00 &= 238.00 \\87.92 + 32.11 + 63.08 + 54.89 &= 238.00\end{aligned}$$

**Part B**

Describe or show another strategy for finding the sum of  
 $87.92 + 32.11 + 63.08 + 54.89$  that can be done  
using pencil and paper. Include the sum of  
 $87.92 + 32.11 + 63.08 + 54.89$  in your  
explanation.

Enter your strategy and your sum in the space provided.

$$\begin{aligned}87.92 + 32.11 &= 120.03 \\120.03 + 63.08 &= 183.11 \\183.11 + 54.89 &= 238.00\end{aligned}$$



## Annotation

### Anchor Paper 2

#### Part A: Score Point 1

This response receives full credit. It includes the required element:

- A valid explanation of why the student's strategy can be used to find the sum is provided. The response accurately computes and compares both methods shown in the prompt ( $87.92 + 63.08 = 151.00$  ;  $32.11 + 54.89 = 87.00$  ;  $87.00 + 151.00 = 238.00$  ;  $87.92 + 32.11 + 63.08 + 54.89 = 238.00$ ). By finding the same sum for both expressions, the student demonstrates that order of the addends does not make a difference to the final sum found.

#### Part B: Score Point 2

This response receives full credit. It includes each of the two required elements:

- Another strategy to solve the problem is provided. The first two amounts are added, then the third amount is added to the sum of the first two and the last amount is added to the sum of the first three ( $87.92 + 32.11 = 120.03$  ;  $120.03 + 63.08 = 183.11$  ;  $183.11 + 54.89 = 238.00$ ). The regrouping of the additions shows a new valid strategy.
- Provides the correct sum (238).

Part A: Score Point 0

Part B: Score Point 2

A student finds the sum of  $87.92 + 32.11 + 63.08 + 54.89$  by adding the sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

**Part A**

Explain why the student's strategy can be used to find the sum of  $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

the strategy can be used to find the sum because you can add  $87.92 + 32.11 + 63.08 + 54.89$  and get the right answer

**Part B**

Describe or show another strategy for finding the sum of  $87.92 + 32.11 + 63.08 + 54.89$  that can be done using pencil and paper. Include the sum of  $87.92 + 32.11 + 63.08 + 54.89$  in your explanation.

Enter your strategy and your sum in the space provided.

$87.92 + 32.11 = 120.03$   
 $63.08 + 54.89 = 117.97$   
 $120.03 + 117.97 = 238.00$   
you add the first pair of numbers and then add the second pair .when you get done adding the two pairs you add the answers you got for both problems together.

## Annotation

### Anchor Paper 3

#### Part A: Score Point 0

This response receives no credit. It does not include the required element:

A valid explanation of why the student's strategy can be used to find the sum is not provided. The original equation from the prompt is simply repeated. It does not explain how the student's strategy can be used (the strategy can be used to find the sum because you can add  $87.92 + 32.11 + 63.08 + 54.89$ , and get the right answer). To receive credit for this element an explanation of why the student's strategy will work is required.

#### Part B: Score Point 2

This response receives full credit. It includes each of the two required elements:

- Another strategy to solve the problem is provided. The pairs of numbers are grouped differently and added in pairs, then the totals are added ( $87.92 + 32.11 = 120.03$  ;  $63.08 + 54.89 = 117.97$  ;  $120.03 + 117.97 = 238.00$ ). Regrouping the addends is a valid alternative strategy.
- Provides the correct sum (238).

Part A: Score Point 1  
Part B: Score Point 1

A student finds the sum of  $87.92 + 32.11 + 63.08 + 54.89$  by adding the sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

**Part A**

Explain why the student's strategy can be used to find the sum of  $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

The students strategy can be used to find the sum because he still added all four numbers together he just used the sum of two of them added and put it together with the other two's sum. Therefore the students strategy is still good for finding the sum of the four numbers.

$$87.92 + 32.11 + 63.08 + 54.89 = 87.92 + 63.08 \text{ and } 32.11 + 54.89$$

**Part B**

Describe or show another strategy for finding the sum of  $87.92 + 32.11 + 63.08 + 54.89$  that can be done using pencil and paper. Include the sum of  $87.92 + 32.11 + 63.08 + 54.89$  in your explanation.

Enter your strategy and your sum in the space provided.

Another way to find the sum of the four numbers is...  
adding the sums of  $54.89 + 63.08$  and  $32.11 + 87.92$ . together to get the final product or answer. This is another way to find the sum of the four numbers using the students strategy in a different way and rearranging the numbers in a different pattern.

## Annotation

### Anchor Paper 4

#### Part A: Score Point 1

This response receives full credit. It includes the required element:

- A valid explanation of why the student's strategy can be used to find the sum is provided (The student's strategy can be used to find the sum because he still added all four numbers together he just used the sum of two of them added and put it together with the other two's sum). The student clearly explains that rearrangement of the numbers (addends) in the equations will not change the sum. The same numbers are used they are just in a different order.

#### Part B: Score Point 1

This response receives partial credit. It includes one of the two required elements:

- Another strategy to solve the problem is provided. The pairs of numbers are grouped differently (Another way to find the sum of the four numbers is . . . adding the sums of  $54.89 + 63.08$  and  $32.11 + 87.92$  . . . rearranging the numbers in a different pattern).

No sum of the addition problem is provided.

Part A: Score Point 0

Part B: Score Point 1

A student finds the sum of  $87.92 + 32.11 + 63.08 + 54.89$  by adding the sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

**Part A**

Explain why the student's strategy can be used to find the sum of  $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

$$87.92 + 32.11 + 63.08 + 54.89 =$$

$$87.92 + 63.08 = 141.00$$

$$32.11 + 54.89 = 87.90 + 141.00 = 228.90$$

**Part B**

Describe or show another strategy for finding the sum of  $87.92 + 32.11 + 63.08 + 54.89$  that can be done using pencil and paper. Include the sum of  $87.92 + 32.11 + 63.08 + 54.89$  in your explanation.

Enter your strategy and your sum in the space provided.

$$87.92 + 32.11 = 120.03$$

$$63.08 + 54.89 = 117.87 + 120.03 = 237.90$$

## Annotation

### Anchor Paper 5

#### Part A: Score Point 0

This response receives no credit. It does not include the required element:

A valid explanation of why the student's strategy can be used to find the sum is not provided. The value of the first expression is not found ( $87.92 + 32.11 + 63.08 + 54.89$ ) and the value it would be compared to is incorrect ( $87.92 + 63.08 = 141.00$  ;  $32.11 + 54.89 = 87.90 + 141.00 = 228.90$ ). A valid comparison to demonstrate an understanding of the commutative properties of addition cannot be made with a missing value and an incorrect value.

#### Part B: Score Point 1

This response receives partial credit. It includes one of the two required elements:

- Another strategy to solve the problem is provided. The pairs of numbers are grouped differently ( $87.92 + 32.11 = 120.03$  ;  $63.08 + 54.89 = 117.87 + 120.03 = 237.90$ ). An error in addition is made, but is correctly carried through the problem and does not affect the regrouping strategy shown. The process is correct and demonstrates an understanding of describing an alternative strategy that can be used to solve the problem.

Note: Work is shown in the form of a run-on equation, but the response is not a top score response and no deduction for precision will be taken.

An incorrect sum of the addition problem is provided (237.90).

Part A: Score Point 0  
Part B: Score Point 1

A student finds the sum of  $87.92 + 32.11 + 63.08 + 54.89$  by adding the sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

**Part A**

Explain why the student's strategy can be used to find the sum of  $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

because they both have the same answer

**Part B**

Describe or show another strategy for finding the sum of  $87.92 + 32.11 + 63.08 + 54.89$  that can be done using pencil and paper. Include the sum of  $87.92 + 32.11 + 63.08 + 54.89$  in your explanation.

Enter your strategy and your sum in the space provided.

the sum of 1 is 238.00  
and the next one is the same



## **Annotation**

### **Anchor Paper 6**

#### **Part A: Score Point 0**

This response receives no credit. It does not include the required element:

A valid explanation of why the student's strategy can be used to find the sum is not provided. Although a comparison is offered (because they both have the same answer), it is too general to receive credit without further clarification or examples provided. Without showing what work has the same sums, it is uncertain if the student is referencing the addition problems given in the prompt.

#### **Part B: Score Point 1**

This response receives partial credit. It includes one of the two required elements:

- Provides the correct sum (238).

Another strategy to solve the problem is not provided. Stating that the totals are the same (the sum of 1 is 238.00 and the next one is the same), is not the use of an alternative strategy.

Part A: Score Point 0  
Part B: Score Point 0

A student finds the sum of  
 $87.92 + 32.11 + 63.08 + 54.89$  by adding the  
 sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

**Part A**

Explain why the student's strategy can be used to find the sum of  
 $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

Because by adding all thoughts  
 numbers up you get a total and that  
 number that you see it the sum. This  
 is the equation  
 $87.92 + 32.11 + 63.08 + 54.89 =$

**Part B**

Describe or show another strategy for finding the sum of  
 $87.92 + 32.11 + 63.08 + 54.89$  that can be done  
 using pencil and paper. Include the sum of  
 $87.92 + 32.11 + 63.08 + 54.89$  in your  
 explanation.

Enter your strategy and your sum in the space provided.

$87.92 - 32.11 - 63.08 - 54.89 = 5.05$   
 By  $-$  you can also do the same as  
 $+$ .

## Annotation

### Anchor Paper 7

#### Part A: Score Point 0

This response receives no credit. It does not include the required element:

A valid explanation of why the student's strategy can be used to find the sum is not provided. A vague explanation is provided; it cannot be determined to which equation the first statement references (Because by adding all thoughs numbers up you get a total and that numder that you see it the sum). It then restates the original equation ( $87.92 + 32.11 + 63.08 + 54.89 =$ ). No comparison is made nor is the student's strategy clarified.

#### Part B: Score Point 0

This response receives no credit. It includes none of the two required elements:

Another strategy to solve the problem is not provided. The process shown is incorrect and does not demonstrate an understanding of providing an alternative strategy ( $87.92 - 32.11 - 63.08 - 54.89 = 5.05$  By  $-$  you can also do the same as  $+$ ). To receive credit for describing another alternate strategy the process must be valid.

No sum of the addition problem is provided.

Part A: Score Point 0  
Part B: Score Point 0

A student finds the sum of  $87.92 + 32.11 + 63.08 + 54.89$  by adding the sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

**Part A**

Explain why the student's strategy can be used to find the sum of  $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

The students strategy can be used because he or her will get the right answer.

**Part B**

Describe or show another strategy for finding the sum of  $87.92 + 32.11 + 63.08 + 54.89$  that can be done using pencil and paper. Include the sum of  $87.92 + 32.11 + 63.08 + 54.89$  in your explanation.

Enter your strategy and your sum in the space provided.

First, I would add two numbers. Then I will add the other two numbers. Then I would add it all together. That would be my strategy if I would do the same problem. The answer of  $87.92 + 32.11 + 63.08 + 54.89$  is 238.10

## Annotation

### Anchor Paper 8

#### Part A: Score Point 0

This response receives no credit. It does not include the required element:

A valid explanation of why the student's strategy can be used to find the sum is not provided. It is insufficient (he or her will get the right answer).

#### Part B: Score Point 0

This response receives no credit. It includes none of the two required elements:

Another strategy to solve the problem is not provided. The response discusses grouping addends (First, I would add two numbers. Then I will add the other two numbers. Then I would add it all together), but it is too vague to receive credit for grouping them in an alternative way since the work shown provides them in the same order as the student's strategy ( $87.92 + 32.11 + 63.08 + 54.89$ ).

No correct sum of the addition problem is provided (238.10).

Practice Set  
P101 - P105

No Annotations Included

A student finds the sum of  $87.92 + 32.11 + 63.08 + 54.89$  by adding the sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

### Part A

Explain why the student's strategy can be used to find the sum of  $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

because  
 $87.92 + 32.11 + 63.08 + 54.89$   
is the same as  
 $87.92 + 32.11 + 63.08 + 54.89$

### Part B

Describe or show another strategy for finding the sum of  $87.92 + 32.11 + 63.08 + 54.89$  that can be done using pencil and paper. Include the sum of  $87.92 + 32.11 + 63.08 + 54.89$  in your explanation.

Enter your strategy and your sum in the space provided.

$87 + 32 + 63 + 54 = 236$   
 $.92 + .11 + .08 + .89 = 2.00$   
 $236 + 2.00 = 238$

A student finds the sum of  $87.92 + 32.11 + 63.08 + 54.89$  by adding the sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

**Part A**

Explain why the student's strategy can be used to find the sum of  $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

it can be used to find the sum by adding.

**Part B**

Describe or show another strategy for finding the sum of  $87.92 + 32.11 + 63.08 + 54.89$  that can be done using pencil and paper. Include the sum of  $87.92 + 32.11 + 63.08 + 54.89$  in your explanation.

Enter your strategy and your sum in the space provided.

you can add all numbers to get the sum.



A student finds the sum of  $87.92 + 32.11 + 63.08 + 54.89$  by adding the sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

**Part A**

Explain why the student's strategy can be used to find the sum of  $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

$$87.92 + 32.11 + 63.08 + 54.89 = 238.00$$

**Part B**

Describe or show another strategy for finding the sum of  $87.92 + 32.11 + 63.08 + 54.89$  that can be done using pencil and paper. Include the sum of  $87.92 + 32.11 + 63.08 + 54.89$  in your explanation.

Enter your strategy and your sum in the space provided.

what i did was add all the numbers together and got 238.00

A student finds the sum of  $87.92 + 32.11 + 63.08 + 54.89$  by adding the sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

### Part A

Explain why the student's strategy can be used to find the sum of  $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

The student's strategy can be used because finding the sum of  $87.92 + 63.08$  and then finding the sum of  $32.11 + 54.89$  you will get the same sum as if you added all four of the numbers.

### Part B

Describe or show another strategy for finding the sum of  $87.92 + 32.11 + 63.08 + 54.89$  that can be done using pencil and paper. Include the sum of  $87.92 + 32.11 + 63.08 + 54.89$  in your explanation.

Enter your strategy and your sum in the space provided.

You could add  $80 + 30 + 60 + 50$  then you could add  $7 + 2 + 3 + 4$  next you could add  $.92 + .11 + .08 + .89$  then you could add all the answers you got and then you would get the total sum of 238.00.

A student finds the sum of  $87.92 + 32.11 + 63.08 + 54.89$  by adding the sums of  $87.92 + 63.08$  and  $32.11 + 54.89$ .

### Part A

Explain why the student's strategy can be used to find the sum of  $87.92 + 32.11 + 63.08 + 54.89$ .

Enter your explanation in the space provided.

$87.92 + 63.08 = 151.00$   
 $32.11 + 54.89 = 87.00$   
 $151.00 ( + 87.00 = 238.00 = 87.92 + 32.11 + 63.08 + 54.89 + ( ) )$

### Part B

Describe or show another strategy for finding the sum of  $87.92 + 32.11 + 63.08 + 54.89$  that can be done using pencil and paper. Include the sum of  $87.92 + 32.11 + 63.08 + 54.89$  in your explanation.

Enter your strategy and your sum in the space provided.

well what i did was add both of those problems and then took the sums and added them up and got 238.00 wich was the awnser to  $87.92 + 32.11 + 63.08 + 54.89$

## Practice Set

Paper	Score
P101	0,2
P102	0,0
P103	0,1
P104	1,2
P105	1,1