



Math  
Released Item 2016

Grade 4

Using Properties of Operations  
VH049218

# Prompt

## Part A

Using properties of operations, explain why the expression  $8 \times (3,000 + 600 + 5)$  can or cannot be used to find the value of  $3,605 \times 8$ .

Enter your explanation in the space provided.

## Part B

Write a new expression that can be used to find the value of  $3,605 \times 8$ .

Enter your expression in the space provided. Enter **only** your expression.

## Part C

What is the value of  $3,605 \times 8$ ?

Enter your answer in the box.

# Rubric

Task is worth a total of 3 points.

Using Properties of Operations – 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 distributive property to explain why the expressions can be used to find the product.</li></ul></li></ul> <p>Sample Student Response: "Yes it will work because <math>3,000 + 600 + 5</math> is equal to <math>3,605</math>, so when you add them and multiply by 8 they will give the same answer."</p> <p><b>Note:</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 expression can be used to solve the problem, credit should be given.</li></ul>
0	Student response is incorrect or irrelevant.

### Using Properties of Operations – Part B

Score	Description
<b>1</b>	<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 writes an expression different than the expression in Part A that can be used to solve the multiplication problem.</li> </ul> </li> </ul> <p>Sample Student Response:</p> <p style="padding-left: 40px;"><math>(8 \times 3,000) + (8 \times 600) + (8 \times 5)</math> (uses the distributive property) OR <math>8 \times (5 + 600 + 3,000)</math> (uses the commutative property).</p> <p><b>Notes:</b></p> <ul style="list-style-type: none"> <li>• A variety of expressions are valid. As long as the student uses a valid method to solve the problem, credit should be given.</li> <li>• If a computation mistake is made, credit cannot be given for computation, but credit should be given for a valid expression.</li> </ul>
<b>0</b>	Student response is incorrect or irrelevant.

### Using Properties of Operations – Part C (Machine Scored)

Score	Description
<b>1</b>	<p>Student response includes the following 2 elements.</p> <ul style="list-style-type: none"> <li>• <b>Computation component</b> = 1 point                             <ul style="list-style-type: none"> <li>○ Correct answer, 28,840.</li> </ul> </li> </ul> <p>Sample Student Response: 28840 or 28,840</p>
<b>0</b>	Student response is incorrect or irrelevant.

# Anchor Set A1 – A6

With Annotations

Part A: Score Point 1

Part B: Score Point 1

**Part A**

Using properties of operations, explain why the expression  $8 \times (3,000 + 600 + 5)$  can or cannot be used to find the value of  $3,605 \times 8$  .

Enter your explanation in the space provided.

yes you can do  $3,605 \times 8$  because you will still get the same answer because  $8 \times [3,000 + 600 + 5]$  if you add what's in prenthases and then times it you will get the eqation  $3,605 \times 8$

**Part B**

Write a new expression that can be used to find the value of  $3,605 \times 8$  .

Enter your expression in the space provided. Enter **only** your expression.

$3,605 \times [4 + 4]$

**Part C**

What is the value of  $3,605 \times 8$  ?

Enter your answer in the box.

28,840

## Annotation

### Anchor Paper 1

#### Part A: Score Point 1

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

- The student explains why the expression can be used to find the value of  $3,605 \times 8$  (because . . . if you add what's in parentheses and then times it you will get the equation  $3,605 \times 8$ ). Adding the expanded form numbers that are within the parentheses and then multiplying the total times eight will provide the same value as  $3,605 \times 8$ .

#### Part B: Score Point 1

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

- The student writes an expression different than the expression provided in Part A that can be used to find the value of  $3,605 \times 8$  ( $3,605 \times [4 + 4]$ ).

Part A: Score Point 1

Part B: Score Point 1

**Part A**

Using properties of operations, explain why the expression  $8 \times (3,000 + 600 + 5)$  can or cannot be used to find the value of  $3,605 \times 8$  .

Enter your explanation in the space provided.

Yes, the expression  $8 \times (3,000 + 600 + 5)$  can work because if you turn the number 3,605 into expanded form, you would get  $3,000 + 600 + 5$ .

**Part B**

Write a new expression that can be used to find the value of  $3,605 \times 8$  .

Enter your expression in the space provided. Enter **only** your expression.

$$(8 \times 3,000) + (8 \times 600) + (8 \times 5) = \square$$

**Part C**

What is the value of  $3,605 \times 8$  ?

Enter your answer in the box.

28,840



## Annotation

### Anchor Paper 2

#### Part A: Score Point 1

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

- The student explains why the expression can be used to find the value of  $3,605 \times 8$  (because if you turn the number 3,605 into expanded form, you would get  $3,000 + 600 + 5$ ). The student explains that the two expressions are equivalent because the expanded form of the number is the same value as the non-expanded form of the number.

#### Part B: Score Point 1

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

- The student writes an expression, as part of his or her equation, different than the expression provided in Part A that can be used to find the value of  $3,605 \times 8$  [ $(8 \times 3,000) + (8 \times 600) + (8 \times 5) =$ ].

Note: In this response, the student provides an equation rather than an expression. If a prompt asks for an expression and an equation is provided instead, it is acceptable. However, if a prompt asks for an equation, an equation must be provided so an expression would not be acceptable.

Part A: Score Point 1

Part B: Score Point 0

**Part A**

Using properties of operations, explain why the expression  $8 \times (3,000 + 600 + 5)$  can or cannot be used to find the value of  $3,605 \times 8$  .

Enter your explanation in the space provided.

It can be used to find  $8 \times 3,605$  beacuse  $3,000 + 600 + 5 = 3,605$ .

**Part B**

Write a new expression that can be used to find the value of  $3,605 \times 8$  .

Enter your expression in the space provided. Enter **only** your expression.

$(3,605 \times 8 = \square)28,840$

**Part C**

What is the value of  $3,605 \times 8$  ?

Enter your answer in the box.

28,840

## Annotation

### Anchor Paper 3

#### Part A: Score Point 1

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

- The student explains why the expression can be used to find the value of  $3,605 \times 8$  (because  $3,000 + 600 + 5 = 3,605$ ).

#### Part B: Score Point 0

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

The student does not provide a different expression than the expression in Part A. The same expression is provided with the solution which is not a different expression [ $(3,605 \times 8 =) 28,840$ ]. No credit is received for this element.

Part A: Score Point 0

Part B: Score Point 1

**Part A**

Using properties of operations, explain why the expression  $8 \times (3,000 + 600 + 5)$  can or cannot be used to find the value of  $3,605 \times 8$  .

Enter your explanation in the space provided.

It cannot because that is adding something this problem needs you to times  $3605 \times 8$ .

**Part B**

Write a new expression that can be used to find the value of  $3,605 \times 8$  .

Enter your expression in the space provided. Enter **only** your expression.

$3605 + 3605 + 3605 + 3605 + 3605 + 3605 + 3605 + 3605$

**Part C**

What is the value of  $3,605 \times 8$  ?

Enter your answer in the box.

28840

## Annotation

### Anchor Paper 4

#### Part A: Score Point 0

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

An incorrect explanation of why the expression can be used to find the value is provided. The student has stated that it cannot be used, which is incorrect (It cannot because that is adding something this problem needs you to times  $3605 \times 8$ ).

#### Part B: Score Point 1

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

- The student writes an expression different than the expression in Part A that can be used to find the value of  $3,605 \times 8$  ( $3605 + 3605 + 3605 + 3605 + 3605 + 3605 + 3605 + 3605$ ). The repeated addition of 3,605 eight times is a valid, different expression that can be used to solve the multiplication problem.

Part A: Score Point 0

Part B: Score Point 0

**Part A**

Using properties of operations, explain why the expression  $8 \times (3,000 + 600 + 5)$  can or cannot be used to find the value of  $3,605 \times 8$  .

Enter your explanation in the space provided.

$$3000 \times 8 = 24000$$
$$600 \times 8 = 4800$$
$$5 \times 8 = 40$$

**Part B**

Write a new expression that can be used to find the value of  $3,605 \times 8$  .

Enter your expression in the space provided. Enter **only** your expression.

$$3605 \times 8$$

**Part C**

What is the value of  $3,605 \times 8$  ?

Enter your answer in the box.

## Annotation

### Anchor Paper 5

#### Part A: Score Point 0

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

An incorrect explanation of why the expression can be used to find the value is provided. The student has correctly multiplied each addend separately ( $3000 \times 8 = 24000$ ,  $600 \times 8 = 4800$ ,  $5 \times 8 = 40$ ), but the products are not added together to show that they equal the same product as the original expression of  $3,605 \times 8$ .

Note: The student could show these same expressions added together in one expression and that would correctly explain why the expression can be used to find the product.

#### Part B: Score Point 0

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

The student does not provide a different expression than the expression in Part A. The same expression is provided which is incorrect ( $3605 \times 8$ ).

Part A: Score Point 0

Part B: Score Point 0

**Part A**

Using properties of operations, explain why the expression  $8 \times (3,000 + 600 + 5)$  can or cannot be used to find the value of  $3,605 \times 8$  .

Enter your explanation in the space provided.

yes it can be used to find the value of  $3605 \times 8$ .

**Part B**

Write a new expression that can be used to find the value of  $3,605 \times 8$  .

Enter your expression in the space provided. Enter **only** your expression.

$3605 \times 8 = 28840$

**Part C**

What is the value of  $3,605 \times 8$  ?

Enter your answer in the box.

28840



## **Annotation**

### **Anchor Paper 6**

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

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

An incorrect explanation of why the expression can be used to find the value is provided. The student has provided an incomplete explanation of why the expression can be used (yes it can be used to find the value of  $3605 \times 8$ ). The student explains that the expression can be used, but does not explain why it can be used to find the value of the multiplication expression.

#### **Part B: Score Point 0**

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

The student does not provide a different expression than the expression in Part A. The same expression is provided with the solution. Giving the solution to the same expression shows no understanding of how to provide a different expression ( $3605 \times 8 = 28840$ ).

Practice Set  
P101 - P105

No Annotations Included

**Part A**

Using properties of operations, explain why the expression  $8 \times (3,000 + 600 + 5)$  can or cannot be used to find the value of  $3,605 \times 8$ .

Enter your explanation in the space provided.

$8 \times (3,000 + 600 + 5)$  can be used to find the value of  $3,605 \times 8$  because  $3,000 + 600 + 5 = 3,605$ . I say this because I did  $3,000 + 600 + 5$  and that equals 3,605 and the 8 in both equations is the same and has the same value.

**Part B**

Write a new expression that can be used to find the value of  $3,605 \times 8$ .

Enter your expression in the space provided. Enter **only** your expression.

$$8 \times (3,600 + 5) = \square$$

**Part C**

What is the value of  $3,605 \times 8$  ?

Enter your answer in the box.

28,840

**Part A**

Using properties of operations, explain why the expression  $8 \times (3,000 + 600 + 5)$  can or cannot be used to find the value of  $3,605 \times 8$  .

Enter your explanation in the space provided.

$$8 \div 3,605$$

**Part B**

Write a new expression that can be used to find the value of  $3,605 \times 8$  .

Enter your expression in the space provided. Enter **only** your expression.

$$3,605 \times 8 = 28,240$$

**Part C**

What is the value of  $3,605 \times 8$  ?

Enter your answer in the box.

**Part A**

Using properties of operations, explain why the expression  $8 \times (3,000 + 600 + 5)$  can or cannot be used to find the value of  $3,605 \times 8$  .

Enter your explanation in the space provided.

it can be used  $3,000 + 600 + 5 = 3,605$ .

**Part B**

Write a new expression that can be used to find the value of  $3,605 \times 8$  .

Enter your expression in the space provided. Enter **only** your expression.

$3,005 + 600 = 3,605$

**Part C**

What is the value of  $3,605 \times 8$  ?

Enter your answer in the box.

3,000

**Part A**

Using properties of operations, explain why the expression  $8 \times (3,000 + 600 + 5)$  can or cannot be used to find the value of  $3,605 \times 8$ .

Enter your explanation in the space provided.

$8 \times (3,000 + 600 + 5)$  is the same as  $8 \times 3,605$  because they just decompose the number in the parenthesis to make it easier.

**Part B**

Write a new expression that can be used to find the value of  $3,605 \times 8$ .

Enter your expression in the space provided. Enter **only** your expression.

$(3,000 \times 8) + (600 \times 8) + (5 \times 8)$

**Part C**

What is the value of  $3,605 \times 8$  ?

Enter your answer in the box.

28,840

**Part A**

Using properties of operations, explain why the expression  $8 \times (3,000 + 600 + 5)$  can or cannot be used to find the value of  $3,605 \times 8$  .

Enter your explanation in the space provided.

you add  $3,000 + 600 + 5$  and that  $\square = 3,605$  now you multiply it by the number 8

**Part B**

Write a new expression that can be used to find the value of  $3,605 \times 8$  .

Enter your expression in the space provided. Enter **only** your expression.

$$3,605 \times 8 = a$$

**Part C**

What is the value of  $3,605 \times 8$  ?

Enter your answer in the box.

12,340

## Practice Set

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