

Math  
Released Item 2019

Grade 4

Subtraction of Fractions on Number Line Drawing  
M400439D

# Anchor Set A1 – A8

With Annotations

# Prompt

## Part A

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts. Starting at 0,

3  
5  
8  
10

shade the first  part(s). Then shade the next  parts to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

1  
3  
5  
8

2  
3  
5

## Part B

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .



- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.



### Math symbols



## Drawing Box



**M04\_M400439 Rubric- Part A (Machine Scored)**

<b>Score</b>	<b>Description</b>
<b>1</b>	<p><b>This part of the item is machine scored.</b></p> <ul style="list-style-type: none"> <li>• <b>Reasoning component</b> = 1 point:               <ul style="list-style-type: none"> <li>○ Divide the segment of the number line between 0 and 1 into <u>8</u> equal parts. Starting at 0, shade the first <u>3</u> parts. Then, shade the next <u>2</u> parts to show the sum of <math>\frac{3}{8} + \frac{2}{8}</math></li> </ul> </li> </ul>
<b>0</b>	Student response is incorrect or irrelevant.

**M04\_M400439 Rubric- Part B**

<b>Score</b>	<b>Description</b>
<b>3</b>	<p>Student response includes each of the following 3 elements.</p> <ul style="list-style-type: none"> <li>• <b>Reasoning component</b> = 1 point:               <ul style="list-style-type: none"> <li>○ Valid explanation why the segment of the number line between 0 and 1 needs to be divided into 10 equal parts</li> </ul> </li> <li>• <b>Reasoning component</b> = 1 point:               <ul style="list-style-type: none"> <li>○ Valid description of each of the remaining steps needed to model the expression</li> </ul> </li> <li>• <b>Computation component</b> = 1 point:               <ul style="list-style-type: none"> <li>○ Correct value of the expression, <math>\frac{4}{10}</math> or equivalent</li> </ul> </li> </ul> <p>Student Sample Response:</p> <p>The segment of the number line between 0 and 1 should be divided into 10 equal parts because the denominators in the expression are 10. Starting at zero, shade the first 7 parts. Then, erase 3 of those parts to show the difference. <math>\frac{4}{10}</math> is the value of the expression.</p> <p>Or other valid response.</p>
<b>2</b>	Student response includes 2 of the 3 elements.
<b>1</b>	Student response includes 1 of the 3 elements.
<b>0</b>	The response is incorrect or irrelevant.

### Part A

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts

to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

### Part B

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .



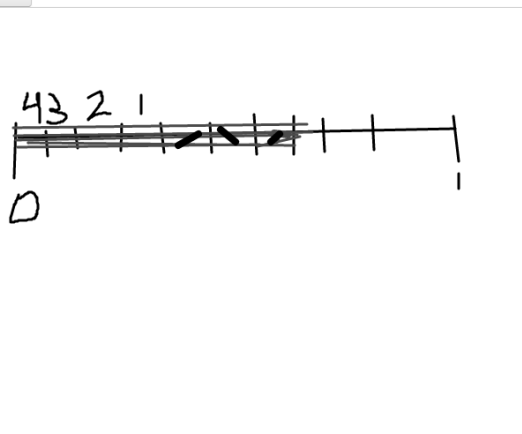
- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

There should be 10 line segments between the 0 and the 1 because the denominator is 10 and the denominator shows how many equal parts there are in 1 whole. Then, you shade 7 parts out of the 10 parts. Next, you shade 3 parts out of the 7 parts after you shaded 7 parts. Lastly, you count the lines that you haven't shaded when you were shading 3 parts to find the difference. The answer to

$$\frac{7}{10} - \frac{3}{10} = \frac{4}{10}$$

### Drawing Box



## Annotation

### Anchor Paper 1 Score Point 3

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

- A valid explanation why the segment of the number line between 0 and 1 needs to be divided into 10 equal parts is provided (There should be 10 line segments between the 0 and the 1 because the denominator is 10 and the denominator shows how many equal parts there are in 1 whole).

Note: Students are not required to use the term “equal” in their explanations for this element. The prompt includes the term “divide”, which clearly establishes the expectation of equal parts. However, they are expected to tie the need for 10 segments to the denominator.

- A valid description of each of the remaining steps needed to model the expression is provided (you shade 7 parts out of the 10 parts. Next, you shade 3 parts out of the 7 parts . . . Lastly, you count the lines that you haven’t shaded). In addition, the student has provided a drawing that shows the shading of 7 parts, the second overlay shading of 3 out of the 7 parts (which look like back slashes) and, finally, the counting of the parts without the second layer of shading (4, 3, 2, 1). The written description or the drawing alone satisfies this element.
- The correct value of the expression is provided ( $\frac{4}{10}$ ).

**Part A**

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

**Part B**

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .



- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

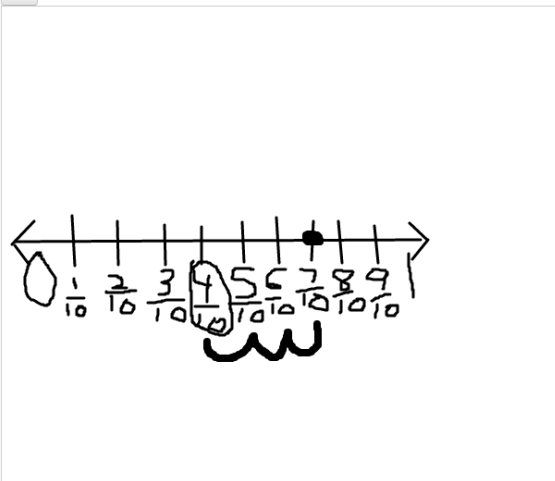
Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

10 parts because the denominator is 10.

Next, plot the seventh parts. Then, go back three of them. Whatever you land on is your answer.

$\frac{4}{10}$

**Drawing Box**





## Annotation

### Anchor Paper 2 Score Point 3

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

- A valid explanation why the segment of the number line between 0 and 1 needs to be divided into 10 equal parts is provided (10 parts because the denominator is 10).

Note: Students are not required to use the term “equal” in their explanations for this element. The prompt includes the term “divide”, which clearly establishes the expectation of equal parts. However, they are expected to tie the need for 10 segments to the denominator.

- A valid description of each of the remaining steps needed to model the expression is provided (plot the seventh parts. Then, go back three of them. Whatever you land on is your answer). In addition to this explanation, the student provides a number line in the drawing box that clearly shows a number line divided into 10 parts.  $\frac{7}{10}$  is marked with a large dot, and the three jumps back from that point land on  $\frac{4}{10}$ , which is circled. The written description or the drawing alone satisfies this element.
- The correct value of the expression is provided ( $\frac{4}{10}$ ).

**Part A**

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

**Part B**

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .

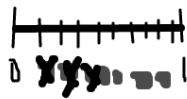


- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

You would have to divide the number line into 10 parts because the fractions are tenths. Then you would have to shade 7 of the parts starting at 0. Last you would have to cross out 3 parts which leaves you with 4 shaded parts.

**Drawing Box**



## Annotation

### Anchor Paper 3 Score Point 2

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

- A valid explanation why the segment of the number line between 0 and 1 needs to be divided into 10 equal parts is provided (You would have to divide the number line into 10 parts because the fractions are tenths). While the student does not use the term "denominator", the use of the mathematically specific term "tenths" clearly ties the number of parts to the denominator.
- A valid description of each of the remaining steps needed to model the expression is provided (Then you would have to shade 7 of the parts starting at 0. Last you would have to cross out 3 parts which leaves you with 4 shaded parts). On the number line in the drawing box, the student crosses out  $\frac{3}{10}$  starting at 0 rather than  $\frac{7}{10}$ ; however, this strategy is valid since the parts not crossed out can be counted to find the solution.

The value of the expression is incorrect. While the student references 4 parts (which leaves you with 4 shaded parts), the correct fraction with a numerator and denominator is required in order to receive credit for this element.

**Part A**

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



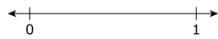
Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

**Part B**

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .

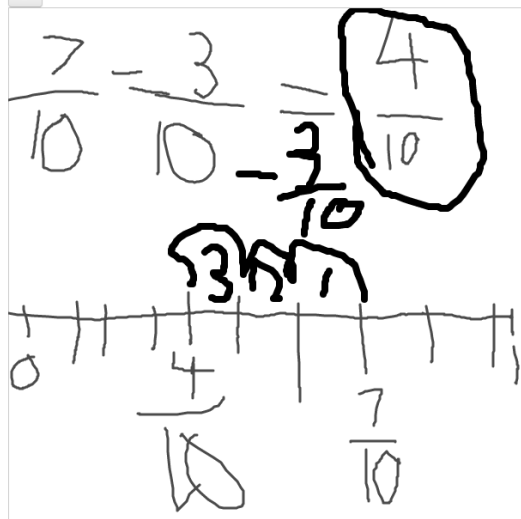


- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

it should be divided in 10 equal parts shade in  $\frac{7}{10}$  of the number line then erase  $\frac{3}{10}$  of  $\frac{7}{10}$  then we find the difference of  $\frac{7}{10} - \frac{3}{10}$  that equals  $\frac{4}{10}$ .

**Drawing Box**



## Annotation

### Anchor Paper 4 Score Point 2

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

- A valid description of each of the remaining steps needed to model the expression is provided (shade in  $\frac{7}{10}$  of the number line then erase  $\frac{3}{10}$  of  $\frac{7}{10}$  then we find the difference). In addition to this explanation, the student provides a number line in the drawing box that shows a valid strategy of marking  $\frac{7}{10}$  and moving back  $\frac{3}{10}$  to land on  $\frac{4}{10}$ .
- The correct value of the expression is provided ( $\frac{4}{10}$ ).

The explanation why the segment of the number line between 0 and 1 needs to be divided into 10 equal parts is not tied to the denominator so is not sufficient to receive credit (it should be divided in 10 equal parts). Students must tie the reason for the number of parts to the denominator of the fractions.

**Part A**

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



Select from the drop-down menus to correctly complete each sentence.

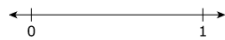
Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts

to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

**Part B**

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .

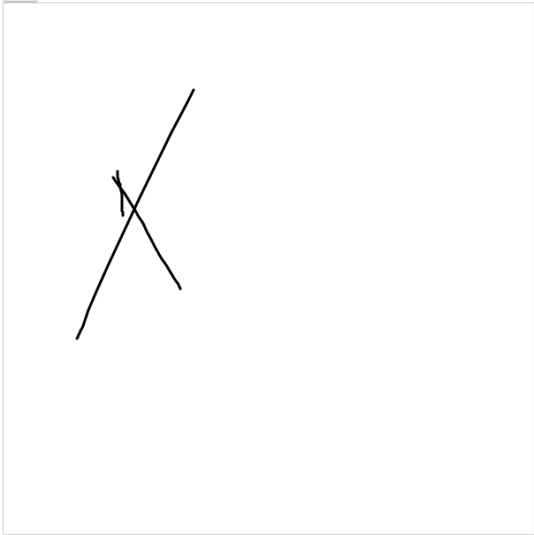


- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

you would make the number line between 0 and 1 divided into 10 because 10 is your denominators then you would add 7 and 3 and get 10 so your answer is  $\frac{10}{10}$ .

**Drawing Box**



## Annotation

### Anchor Paper 5 Score Point 1

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

- A valid explanation why the segment of the number line between 0 and 1 needs to be divided into 10 equal parts is provided (you would make the number line between 0 and 1 divided into 10 because 10 is your denominator).

The description of each of the remaining steps needed to model the expression is incorrect (then you would add 7 and 3 and get 10). This description does not use the number line, and it incorrectly describes addition rather than subtraction.

The value of the expression is incorrect ( $\frac{10}{10}$ ).

**Part A**

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

**Part B**

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .



- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

well in the number line first you break it up into 10 equal pecies second you shade in seven parts then you erase three parts that shows the expression  $\frac{7}{10} - \frac{3}{10}$

**Drawing Box**



## **Annotation**

### **Anchor Paper 6 Score Point 1**

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

- A valid description of each of the remaining steps needed to model the expression is provided (you shade in seven parts then you erase three parts).

The explanation why the segment of the number line between 0 and 1 needs to be divided into 10 equal parts is not tied to the denominator so is not sufficient to receive credit (you break it up into 10 equal pieces).

The correct value of the expression is not provided.

**Part A**

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



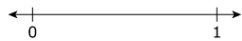
Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

**Part B**

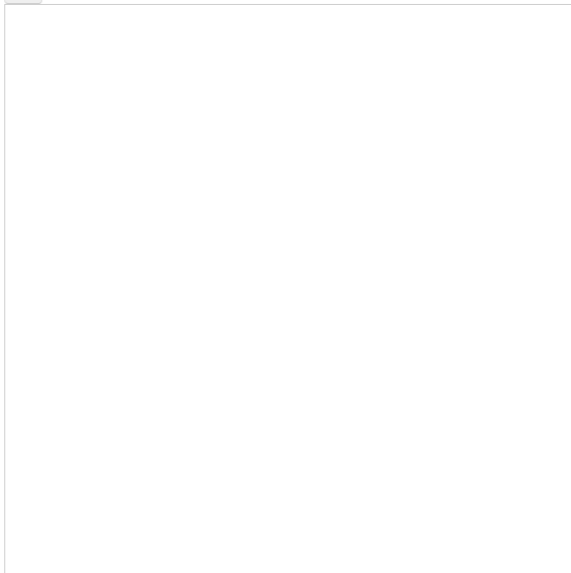
The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .



- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

The number line should be divided into 10.

**Drawing Box**

## **Annotation**

### **Anchor Paper 7 Score Point 0**

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

The explanation why the segment of the number line between 0 and 1 needs to be divided into 10 equal parts is not tied to the denominator, therefore it is not sufficient to receive credit (The number line should be divided into 10).

No description of each of the remaining steps needed to model the expression is provided.

The correct value of the expression is not provided.

### Part A

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

### Part B

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .



- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

$$\frac{7}{10} - \frac{3}{10} \square = 4$$

### Drawing Box



## **Annotation**

### **Anchor Paper 8 Score Point 0**

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

No explanation why the segment of the number line between 0 and 1 needs to be divided into 10 equal parts is provided.

No description of each of the remaining steps needed to model the expression is provided.

The value of the expression is incorrect (4). While the student provides the number 4, which is the correct numerator, the denominator is not included in the solution to the expression. The difference must include both the numerator and denominator in order to receive credit for this element.

# Practice Set

## P1 - P5

No Annotations Included

**Part A**

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

**Part B**

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .



- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

The line segment should be divided into ten equal pieces. Shade seven of the ten and cross out three. You DO NOT do anything to the denominator.

**Drawing Box**



**Part A**

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

**Part B**

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .

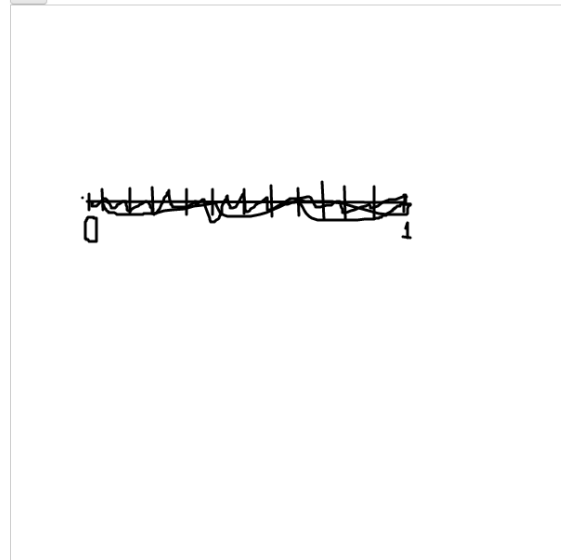


- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

you first need to cut the number line into 10 equal parts this is because  $\frac{3}{10}$  and  $\frac{7}{10}$  have the same bottom number. Then you need to shade in  $\frac{3}{10}$  on the number line, after that you shade in  $\frac{7}{10}$  and then you got the value of 1 whole

**Drawing Box**





**Part A**

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

**Part B**

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .

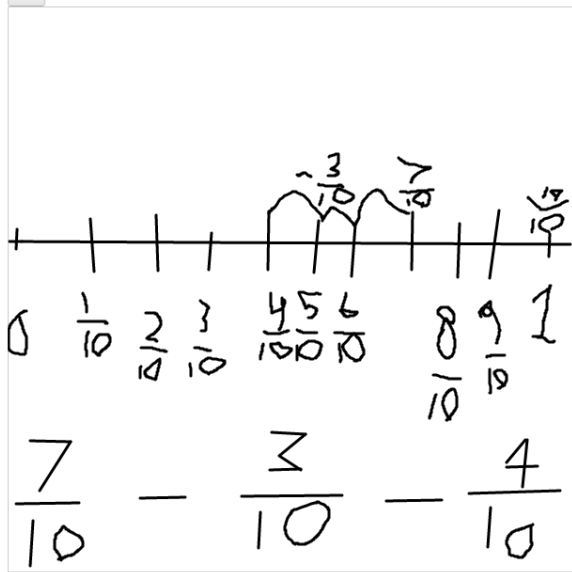


- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

$\frac{7}{10} - \frac{3}{10} = \frac{4}{10}$

**Drawing Box**



**Part A**

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

**Part B**

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .



- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

10 because the denominator is 10. Shade in 7 then unshade 3.  $\frac{4}{10}$

**Drawing Box**



**Part A**

Describe how to show the sum  $\frac{3}{8} + \frac{2}{8}$  on the number line shown.



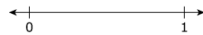
Select from the drop-down menus to correctly complete each sentence.

Divide the segment of the number line between 0 and 1 into  equal parts.

Starting at 0, shade the first  part(s). Then shade the next  parts to show the sum  $\frac{3}{8} + \frac{2}{8}$ .

**Part B**

The number line shown can be used to model the expression  $\frac{7}{10} - \frac{3}{10}$ .

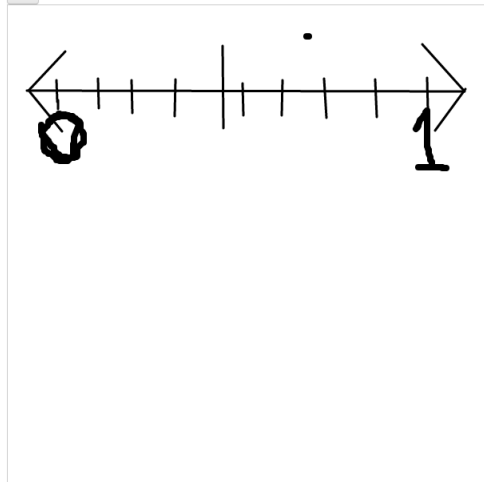


- To model the expression, how many parts should the segment of the number line between 0 and 1 be divided into? Explain your answer.
- Describe each of the remaining steps needed to model the expression.
- What is the value of the expression?

Enter your answers, your explanation, and your description in the space provided. You may use the drawing box to add a drawing to help explain your answer.

You should divide the number line into ten equal parts as shown in the drawing box. You should do this because the denominator is ten. So it needs to be divided into ten equal parts. Then, to model the expression, you need to subtract  $\frac{7}{10} - \frac{3}{10}$ , which equals  $\frac{4}{10}$ . So the model is  $\frac{7}{10} - \frac{3}{10} = \frac{4}{10}$ . The value of the expression is  $\frac{4}{10}$ .

**Drawing Box**



## Practice Set

<b>Paper</b>	<b>Score</b>
<b>P1</b>	<b>2</b>
<b>P2</b>	<b>1</b>
<b>P3</b>	<b>2</b>
<b>P4</b>	<b>3</b>
<b>P5</b>	<b>2</b>