# Math
# Released Item 2019

# Grade 4

# Add and Model Fractions
# M400293

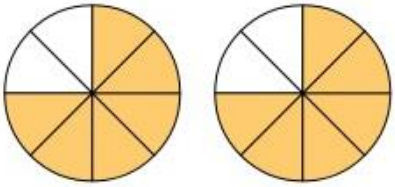
# Anchor Set
# A1 – A6

## With Annotations

# Prompt

## Part A

A pair of fraction models is given.



Which explanation is a correct reasoning for the sum of the shaded parts?

A. Each model shows $\frac{6}{8}$ shaded, so the sum is $\frac{26}{8}$.

B. Each model shows $\frac{6}{8}$ shaded, so the sum is $2\frac{6}{8}$.

C. Each model is divided into 8 parts. There are 12 total parts shaded, so the sum is $\frac{12}{8}$.

D. Each model is divided into 8 parts. There are 12 total parts shaded, so the sum is $1\frac{2}{8}$.

## Part B

Each shape is equal in size and is divided into 5 equal parts.

- Explain one possible way to shade the three shapes to represent a total of $\frac{7}{5}$. In your explanation, at least one part of each shape must be shaded. Explain why your shading is correct.
- One shape is removed. Explain how to decompose $\frac{7}{5}$ into the sum of two fractions. Give an example in the form of $\frac{\square}{\square}+\frac{\square}{\square}=\frac{7}{5}$, and explain how the two remaining shapes would be shaded.

Enter your explanations in the space provided.

Math symbols

+ − × ÷

| M400293 Rubric Part A (Machine Scored) | |
|---|---|
| **Score** | **Description** |
| **1** | **This part of the item is machine scored.**<br>• **Reasoning component** = 1 point<br>○ Student correctly selects option C. $\frac{6}{8} + \frac{6}{8} = \frac{12}{8}$ |
| **0** | Student response is incorrect or irrelevant. |

| M400293 Rubric Part B | |
|---|---|
| **Score** | **Description** |
| **2** | Student response includes each of the following 2 elements.<br>• **Reasoning components** = 2 points<br>○ Valid explanation of how to use the three shapes to represent $\frac{7}{5}$ with valid reason of why the explanation is correct<br>○ Valid explanation with example of how to decompose $\frac{7}{5}$ into the sum of two fractions and how the shapes would be shaded<br><br>Sample Student Response:<br>Shade all of the first shape because there are 5 parts, 1 part of the second shape, and 1 part of the third shape. This is correct because all the shapes are divided into 5 parts and the number of shaded parts is 7, which equals $\frac{7}{5}$.<br>To decompose $\frac{7}{5}$ into the sum of 2 fractions, any combination of 2 fractions that equals $\frac{7}{5}$ will work. An example is $\frac{2}{5} + \frac{5}{5} = \frac{7}{5}$.<br>In this case, one shape would have 2 parts shaded and the other shape would have all 5 parts shaded.<br>Or other valid response. |
| **1** | Student response includes 1 of the 2 elements. |
| **0** | The response is incorrect or irrelevant. |

# A1

Score Point 2

**Part A** Ⓐ Ⓑ ● Ⓓ

**Part B**

My shadis correct because $\frac{3}{5}+\frac{2}{5}+\frac{2}{5}=\frac{7}{5}$.

$\frac{3}{5}$ plus $\frac{4}{5}$ equals $\frac{7}{5}$

$\frac{3}{5}+\frac{4}{5}=\frac{7}{5}$

**Annotation**

**Anchor Paper 1**
**Part B: Score Point 2**

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

- A valid explanation of how to use the three shapes to represent $\frac{7}{5}$ (in the form of 3 hand-drawn and shaded pentagons to represent $\frac{7}{5}$) with a valid reason of why the explanation is correct (My shadis correct because $\frac{3}{5} + \frac{2}{5} + \frac{2}{5} = \frac{7}{5}$) is provided.

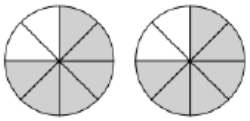
- A valid explanation with an example of how to decompose $\frac{7}{5}$ into the sum of two fractions ($\frac{3}{5} + \frac{4}{5} = \frac{7}{5}$) and how the shapes would be shaded (in the form of 2 hand-drawn and shaded pentagons) is provided.

# A2

Score Point 2

**Part A**

A pair of fraction models is given.



Which explanation is a correct reasoning for the sum of the shaded parts?

- A. Each model shows $\frac{6}{8}$ shaded, so the sum is $\frac{26}{8}$.
- B. Each model shows $\frac{6}{8}$ shaded, so the sum is $2\frac{6}{8}$.
- C. Each model is divided into 8 parts. There are 12 total parts shaded, so the sum is $\frac{12}{8}$. (selected)
- D. Each model is divided into 8 parts. There are 12 total parts shaded, so the sum is $1\frac{2}{8}$.

**Part B**

Each shape is equal in size and is divided into 5 equal parts.

- Explain one possible way to shade the three shapes to represent a total of $\frac{7}{5}$. In your explanation, at least one part of each shape must be shaded. Explain why your shading is correct.
- One shape is removed. Explain how to decompose $\frac{7}{5}$ into the sum of two fractions. Give an example in the form of $\frac{\square}{\square}+\frac{\square}{\square}=\frac{7}{5}$, and explain how the two remaining shapes would be shaded.

Enter your explanations in the space provided.

One possible way to shade the three shapes to make a total of $\frac{7}{5}$ is if one of the shapes had three parts shaded in to make $\frac{3}{5}$. Another shape would have to have $\frac{2}{5}$ shaded in. The last shape would have to have $\frac{2}{5}$ shaded in too.

$\left(\frac{3}{5}+\frac{2}{5}+\frac{2}{5}\right)=\frac{7}{5}$.

To decompose $\frac{7}{5}$ into 2 fractions, and one of the shapes is taken away, you would have to do a number model. One shape is going to have $\frac{4}{5}$ shaded in. The other is going to have $\frac{3}{5}$ shaded in.

$\left(\frac{4}{5}+\frac{3}{5}\right)=\frac{7}{5}$.

**Annotation**

**Anchor Paper 2**
**Part B: Score Point 2**

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

- A valid explanation of how to use the three shapes to represent $\frac{7}{5}$ (One possible way to shade the three shapes to make a total of $\frac{7}{5}$ is if one of the shapes had three parts shaded in to make $\frac{3}{5}$ . Another shape would have to have $\frac{2}{5}$ shaded in. The last shape would have to have $\frac{2}{5}$ shaded in too) with a valid reason of why the explanation is correct [( $\frac{3}{5}$ + $\frac{2}{5}$ + $\frac{2}{5}$) = $\frac{7}{5}$] is provided.

- A valid explanation with an example of how to decompose $\frac{7}{5}$ into the sum of two fractions [To decompose $\frac{7}{5}$ into 2 fractions, and one of the shapes is taken away . . . ($\frac{3}{5}$ + $\frac{4}{5}$) = $\frac{7}{5}$] and how the shapes would be shaded (One shape is going to have $\frac{4}{5}$ shaded in. The other is going to have $\frac{3}{5}$ shaded in) is provided.

  Note: The order of the shaded figures or description of the shading and the fractions that support the shading do not have to be in the same order. They simply must match.

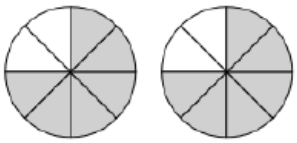
Note: Using a combination of the number of parts (that is, whole numbers) and the fractional amounts to shade is a valid strategy.

# A3

Score Point 1

## Part A

A pair of fraction models is given.



Which explanation is a correct reasoning for the sum of the shaded parts?

- ○ A. Each model shows $\frac{6}{8}$ shaded, so the sum is $\frac{26}{8}$.
- ○ B. Each model shows $\frac{6}{8}$ shaded, so the sum is $2\frac{6}{8}$.
- ◉ C. Each model is divided into 8 parts. There are 12 total parts shaded, so the sum is $\frac{12}{8}$.
- ○ D. Each model is divided into 8 parts. There are 12 total parts shaded, so the sum is $1\frac{2}{8}$.

## Part B

Each shape is equal in size and is divided into 5 equal parts.

- Explain one possible way to shade the three shapes to represent a total of $\frac{7}{5}$. In your explanation, at least one part of each shape must be shaded. Explain why your shading is correct.
- One shape is removed. Explain how to decompose $\frac{7}{5}$ into the sum of two fractions. Give an example in the form of $\frac{\square}{\square}+\frac{\square}{\square}=\frac{7}{5}$, and explain how the two remaining shapes would be shaded.

Enter your explanations in the space provided.

I would shade a whole shape, $\frac{1}{5}$ of another shape, and $\frac{1}{5}$ of another shape. This is correct because $\frac{5}{5}+\frac{1}{5}+\frac{1}{5}=\frac{7}{5}$

**Annotation**

**Anchor Paper 3**
**Part B: Score Point 1**

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

- A valid explanation of how to use the three shapes to represent $\frac{7}{5}$ (I would shade a whole shape, $\frac{1}{5}$ of another shape, and $\frac{1}{5}$ of another shape) with a valid reason of why the explanation is correct (This is correct because $\frac{5}{5} + \frac{1}{5} + \frac{1}{5} = \frac{7}{5}$) is provided.

  Note: Using fractions to explain how to shade each shape is a valid strategy.

No valid explanation with an example of how to decompose $\frac{7}{5}$ into the sum of two fractions and how the shapes would be shaded is provided.

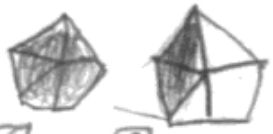
# A4

Score Point 1

**Part A** Ⓐ Ⓑ ● Ⓓ

**Part B**

- You can shade in one whole and then two more from the other shape.



- $\frac{5}{5} + \frac{2}{5} = \frac{7}{5}$

**Annotation**

**Anchor Paper 4**
**Part B: Score Point 1**

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

- A valid explanation with an example of how to decompose $\frac{7}{5}$ into the sum of two fractions ($\frac{5}{5} + \frac{2}{5} = \frac{7}{5}$) and how the shapes would be shaded (You can shade in one whole and then two more from the other shape) is provided.

No valid explanation of how to use the three shapes to represent $\frac{7}{5}$ with a valid reason of why the explanation is correct is provided.

# A5

Score Point 0

Part A Ⓐ● Ⓒ Ⓓ

Part B

Well i would shade 3 on 2 and shade 1 on the 3rd one.

**Annotation**

**Anchor Paper 5**
**Part B: Score Point 0**

This response receives no credit. It includes neither of the two required elements.

While the valid explanation of how to use the three shapes to represent $\frac{7}{5}$ is provided (well i would shade 3 on 2 and shade 1 on the 3rd one), no valid reason of why the explanation is correct is provided.

Note: Both components of the element must be correctly addressed in order to receive credit.

No valid explanation with an example of how to decompose $\frac{7}{5}$ into the sum of two fractions and how the shapes would be shaded is provided.

# A6

Score Point 0

**Part A** Ⓐ Ⓑ ● Ⓓ

**Part B**


I chose $\frac{4}{5}$ and $\frac{3}{5}$ because $4+3=7$ and if you put the 7 over a 5 it equals $\frac{7}{5}$.

**Annotation**

**Anchor Paper 6**
**Part B: Score Point 0**

This response receives no credit. It includes neither of the two required elements.

No valid explanation of how to use the three shapes to represent $\frac{7}{5}$ with a valid reason of why the explanation is correct is provided.

While the explanation with example of how to decompose $\frac{7}{5}$ into the sum of two fractions is provided (I chose $\frac{4}{5}$ and $\frac{3}{5}$ because 4 + 3 = 7 and if you put the 7 over a 5 it equals $\frac{7}{5}$), no explanation how the shapes would be shaded is provided. Simply providing the addition of the fractions or the parts in the supporting work is not sufficient to address the shading component of this element.

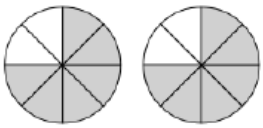
Note: Both components of the element must be correctly addressed in order to receive credit.

# Practice Set
# P1 - P5

No Annotations Included

## Part A

A pair of fraction models is given.



Which explanation is a correct reasoning for the sum of the shaded parts?

- ○ A. Each model shows $\frac{6}{8}$ shaded, so the sum is $\frac{26}{8}$.
- ○ B. Each model shows $\frac{6}{8}$ shaded, so the sum is $2\frac{6}{8}$.
- ◉ C. Each model is divided into 8 parts. There are 12 total parts shaded, so the sum is $\frac{12}{8}$.
- ○ D. Each model is divided into 8 parts. There are 12 total parts shaded, so the sum is $1\frac{2}{8}$.

## Part B

Each shape is equal in size and is divided into 5 equal parts.

- Explain one possible way to shade the three shapes to represent a total of $\frac{7}{5}$. In your explanation, at least one part of each shape must be shaded. Explain why your shading is correct.
- One shape is removed. Explain how to decompose $\frac{7}{5}$ into the sum of two fractions. Give an example in the form of $\frac{\square}{\square}+\frac{\square}{\square}=\frac{7}{5}$, and explain how the two remaining shapes would be shaded.

Enter your explanations in the space provided.

One way to use all three shapes are shading one shape with 3 another with 3 and the last one 1.My shading is correct becuse if you add $\frac{3}{5}$ and $\frac{3}{5}$ it will equal to $\frac{7}{5}$.

If one shape is gone I would decompose $\frac{7}{5}$ with the 2 shapes. The 2 shapes left should be shaded like one shape is shaded $\frac{3}{5}$ and the other should be shaded $\frac{4}{5}$.

$$\frac{3}{5}+\frac{4}{5}=\frac{7}{5}$$

**Part A** Ⓐ Ⓑ ● Ⓓ

**Part B**

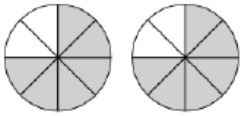
There are 3 shapes divided into 5 parts. One way to make $\frac{7}{5}$ is shade two shape $\frac{2}{5}$ and one $\frac{3}{5}$.

$\frac{2}{5} + \frac{2}{5} + \frac{3}{5} = \frac{7}{5}$ or $1\frac{2}{5}$.

If you have only 2 shapes to make $\frac{7}{5}$ you can do one shape $\frac{3}{5}$ and another $\frac{4}{5}$. $\frac{3}{5} + \frac{4}{5} = \frac{7}{5}$.

## Part A

A pair of fraction models is given.



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## Part B

Each shape is equal in size and is divided into 5 equal parts.

- Explain one possible way to shade the three shapes to represent a total of $\frac{7}{5}$. In your explanation, at least one part of each shape must be shaded. Explain why your shading is correct.
- One shape is removed. Explain how to decompose $\frac{7}{5}$ into the sum of two fractions. Give an example in the form of $\frac{\square}{\square}+\frac{\square}{\square}=\frac{7}{5}$, and explain how the two remaining shapes would be shaded.

Enter your explanations in the space provided.

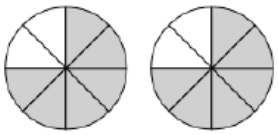
One possible way to shade all three shapes to represent or equal $\frac{7}{5}$ is , that you could shade in $\frac{2}{5}$ of the first shape. $\frac{3}{5}$ of the second shape.And on the last shape shade in $\frac{2}{5}$ like you did on the first shape. My shading is correct because $\frac{2}{5}+\frac{3}{5}+\frac{2}{5}=\frac{7}{5}$.

How to decomose $\frac{7}{5}$ into the sum of two fractions: $\frac{3}{5}+\frac{4}{5}=\frac{7}{5}$ .

The two remaining shapes would be shaded like so: The first shape would be shaded entirely and the second shape would be shaded in $\frac{2}{5}$ of the way.

## Part A

A pair of fraction models is given.



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## Part B

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- Explain one possible way to shade the three shapes to represent a total of $\frac{7}{5}$. In your explanation, at least one part of each shape must be shaded. Explain why your shading is correct.
- One shape is removed. Explain how to decompose $\frac{7}{5}$ into the sum of two fractions. Give an example in the form of $\frac{\square}{\square}+\frac{\square}{\square}=\frac{7}{5}$, and explain how the two remaining shapes would be shaded.

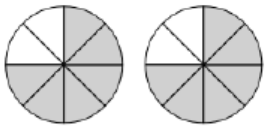
Enter your explanations in the space provided.

You would have to 2 in on the first one & 2 in on the second one & 3 in on the third one . Why my shading is correct because I just add some of them together and I split some of them apart like $2+2+3=7$ thats how I got my answer.

$\frac{3}{5}+\frac{4}{5}=\frac{7}{5}$ you just had to take out one of the shapes and then I just add $3+4=7$ then I just put on the five as denomanators.

## Part A

A pair of fraction models is given.



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- D. Each model is divided into 8 parts. There are 12 total parts shaded, so the sum is $1\frac{2}{8}$.

## Part B

Each shape is equal in size and is divided into 5 equal parts.

- Explain one possible way to shade the three shapes to represent a total of $\frac{7}{5}$. In your explanation, at least one part of each shape must be shaded. Explain why your shading is correct.
- One shape is removed. Explain how to decompose $\frac{7}{5}$ into the sum of two fractions. Give an example in the form of $\frac{\square}{\square}+\frac{\square}{\square}=\frac{7}{5}$, and explain how the two remaining shapes would be shaded.

Enter your explanations in the space provided.

After solving I learned that one possible way to represent 7 over 5 on three shapes is by putting $\frac{3}{5}$ in the first shape, $\frac{3}{5}$ in the second shape, and $\frac{1}{5}$ in the last shape. This is correct because I know that 3 plus 3 plus 1 equals 7 so the shapes are going to equal 7 over 5. You can decompose 7 over 5 into shapes by shading 4 in the first shape and 3 in the second shape. I know that 4 plus 3 equals 7, so if you put those two shapes together you will get $\frac{7}{5}$. $\frac{4}{5}+\frac{3}{5}=\frac{7}{5}$.

## Practice Set

| Paper | Score |
|---|---|
| P1 | 1 |
| P2 | 2 |
| P3 | 1 |
| P4 | 0 |
| P5 | 2 |