# 2021 MCAS Sample Student Work and Scoring Guide

## Grade 5 Mathematics
## Question 12: Constructed-Response

**Reporting Category:** Number and Operations—Fractions
**Standard:** 5.NF.B.6 - Solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
**Item Description:** Write an equation to represent a given problem and multiply fractions and whole numbers to solve real-world problems.
**Calculator:** Not allowed

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## Scoring Guide

***Select a score point in the table below to view the sample student response.***

| Score* | Description |
|---|---|
| **4A** | The student response demonstrates an exemplary understanding of the Number and Operations—Fractions concepts involved in solving real-world problems that require multiplication of fractions and mixed numbers. The student correctly writes an equation and multiplies fractions and whole numbers to solve real-world problems. |
| **4B** | |
| **3** | The student response demonstrates a good understanding of the Number and Operations—Fractions concepts involved in solving real-world problems that require multiplication of fractions and mixed numbers. Although there is significant evidence that the student was able to recognize and apply the concepts involved, some aspect of the response is flawed. As a result, the response merits 3 points. |
| **2** | The student response demonstrates a fair understanding of the Number and Operations—Fractions concepts involved in solving real-world problems that require multiplication of fractions and mixed numbers. While some aspects of the task are completed correctly, others are not. The mixed evidence provided by the student merits 2 points. |
| **1** | The student response demonstrates a minimal understanding of the Number and Operations—Fractions concepts involved in solving real-world problems that require multiplication of fractions and mixed numbers. |
| **0** | The student response contains insufficient evidence of an understanding of the Number and Operations—Fractions concepts involved in solving real-world problems that require multiplication of fractions and mixed numbers. As a result, the response does not merit any points. |

*Letters are used to distinguish between sample student responses that earned the same score (e.g., 4A and 4B).

## Score Point 4A

### This question has four parts.

Two football games were played at a stadium on the same day.

### Part A

At the start of the first game, $\frac{3}{4}$ of the stadium's seats were filled with people. At the end of the game, $\frac{2}{3}$ of those seats remained filled.

Write an equation that can be used to determine $p$, the fraction of the stadium's seats that remained filled with people at the end of the first game.

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

$\frac{3}{4} \times \frac{2}{3} = p$

### Part B

What fraction of the stadium's seats remained filled with people at the end of the first game?

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

$\frac{1}{2}$

### Part C

The stadium has $5{,}000$ seats. At the end of the **second** game, $\frac{2}{5}$ of the seats were filled with people.

What was the total number of seats that were filled with people at the end of the second game? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

First I split 5,000 into 5 groups and got 1,000 in each group so $\frac{2}{5}$ of 5,000 would be 2,000

## Part D

Workers at the stadium gave posters to $\frac{1}{4}$ of the people who were in their seats when the second game ended.

What was the total number of people who received posters? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

I know that I had to do $\frac{1}{4}$ of 2,000 besause there were 2,000 poeple left and $\frac{1}{4}$ of 2,000 is 500.

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## Score Point 4B

### This question has four parts.

Two football games were played at a stadium on the same day.

### Part A

At the start of the first game, $\frac{3}{4}$ of the stadium's seats were filled with people. At the end of the game, $\frac{2}{3}$ of those seats remained filled.

Write an equation that can be used to determine $p$, the fraction of the stadium's seats that remained filled with people at the end of the first game.

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

$\frac{3}{4} \times \frac{2}{3} = p$

### Part B

What fraction of the stadium's seats remained filled with people at the end of the first game?

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

$\frac{1}{2}$

### Part C

The stadium has $5{,}000$ seats. At the end of the **second** game, $\frac{2}{5}$ of the seats were filled with people.

What was the total number of seats that were filled with people at the end of the second game? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$\frac{5000}{1} \times \frac{2}{5} = \frac{10{,}000}{5} = \frac{2000}{1} = 2000$

there was 2000 seats filled with people at the end of the second game

## Part D

Workers at the stadium gave posters to $\frac{1}{4}$ of the people who were in their seats when the second game ended.

What was the total number of people who received posters? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$$\frac{2000}{1} \times \frac{1}{4} = \frac{2000}{4} = \frac{500}{1} = 500$$

500 people recieved posters.

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## Score Point 3

### This question has four parts.

Two football games were played at a stadium on the same day.

### Part A

At the start of the first game, $\frac{3}{4}$ of the stadium's seats were filled with people. At the end of the game, $\frac{2}{3}$ of those seats remained filled.

Write an equation that can be used to determine $p$, the fraction of the stadium's seats that remained filled with people at the end of the first game.

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

$\frac{9}{12} \times \frac{8}{12} = p$

### Part B

What fraction of the stadium's seats remained filled with people at the end of the first game?

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

$\frac{1}{12}$

### Part C

The stadium has $5{,}000$ seats. At the end of the **second** game, $\frac{2}{5}$ of the seats were filled with people.

What was the total number of seats that were filled with people at the end of the second game? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

2000 seats were filled with people at the end of the second game because if you make $\frac{2}{5}$ into $\frac{2000}{5000}$ then that leaves you with 2000 seats left at the end of the second game.

## Part D

Workers at the stadium gave posters to $\frac{1}{4}$ of the people who were in their seats when the second game ended.

What was the total number of people who received posters? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

If you divide 2000 by the 4 in $\frac{1}{4}$ then you get a total of 500 people that recieved posters.

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## Score Point 2

### This question has four parts.

Two football games were played at a stadium on the same day.

### Part A

At the start of the first game, $\frac{3}{4}$ of the stadium's seats were filled with people. At the end of the game, $\frac{2}{3}$ of those seats remained filled.

Write an equation that can be used to determine $p$, the fraction of the stadium's seats that remained filled with people at the end of the first game.

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

$\frac{3}{4} \div \frac{2}{3} = p$

### Part B

What fraction of the stadium's seats remained filled with people at the end of the first game?

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

$\frac{2}{3}$

### Part C

The stadium has $5{,}000$ seats. At the end of the **second** game, $\frac{2}{5}$ of the seats were filled with people.

What was the total number of seats that were filled with people at the end of the second game? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{5}{5}$ and $\frac{1}{5} = 1000$ so $\frac{2}{5} = 2000$ seats.

## Part D

Workers at the stadium gave posters to $\frac{1}{4}$ of the people who were in their seats when the second game ended.

What was the total number of people who received posters? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$\frac{1}{4} \times \frac{2000}{1} = \frac{2000}{4}$. $2000 \div 4 = 500$ people who received posters.

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**Score Point 1**

## This question has four parts.

Two football games were played at a stadium on the same day.

### Part A

At the start of the first game, $\frac{3}{4}$ of the stadium's seats were filled with people. At the end of the game, $\frac{2}{3}$ of those seats remained filled.

Write an equation that can be used to determine $p$, the fraction of the stadium's seats that remained filled with people at the end of the first game.

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

$\frac{1}{12}$

### Part B

What fraction of the stadium's seats remained filled with people at the end of the first game?

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

$\frac{8}{12}$

### Part C

The stadium has $5{,}000$ seats. At the end of the **second** game, $\frac{2}{5}$ of the seats were filled with people.

What was the total number of seats that were filled with people at the end of the second game? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$\frac{2{,}000}{5{,}000}$ = 2,000 out of the 5,000

## Part D

Workers at the stadium gave posters to $\frac{1}{4}$ of the people who were in their seats when the second game ended.

What was the total number of people who received posters? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$5{,}000 \div 4 = 12{,}500$

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**Score Point 0**

## This question has four parts.

Two football games were played at a stadium on the same day.

### Part A

At the start of the first game, $\frac{3}{4}$ of the stadium's seats were filled with people. At the end of the game, $\frac{2}{3}$ of those seats remained filled.

Write an equation that can be used to determine $p$, the fraction of the stadium's seats that remained filled with people at the end of the first game.

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

$$\frac{3}{4} - \frac{2}{3} = \frac{1}{1} = 1$$

### Part B

What fraction of the stadium's seats remained filled with people at the end of the first game?

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

$$\frac{1}{1} = 1$$

### Part C

The stadium has $5{,}000$ seats. At the end of the **second** game, $\frac{2}{5}$ of the seats were filled with people.

What was the total number of seats that were filled with people at the end of the second game? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$$\frac{5{,}000}{1} - \frac{2}{5} = \frac{4{,}998}{5}$$

## Part D

Workers at the stadium gave posters to $\frac{1}{4}$ of the people who were in their seats when the second game ended.

What was the total number of people who received posters? Show or explain how you got your answer.

Enter your answer and your work or explanation in the space provided.

$$\frac{4998}{1} - \frac{1}{4} = \frac{4997}{4}$$

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