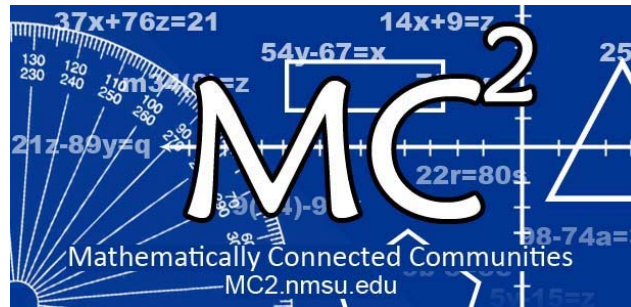


# Mathematically Connected Communities



## PARCC PBA Practice Test Items 4<sup>th</sup> Grade Math

Excerpted 1/2015 from  
PARCC Online Practice Tests  
[www.parcconline.org](http://www.parcconline.org)

## Mathematical Practice Questions for MC<sup>2</sup> Thinking Protocol

Follow the process below in working with the PARCC practice items found in this packet:

1. Choose items from this packet that relate to math concepts studied in the current or previous curriculum units during your math instruction. Each item may be used as a practice item worksheet.
2. Choose a set of **Thinking/Writing Prompts** below based on the math practice the class is working to develop.
3. Add the prompts to the practice item worksheet or display the prompts for the students to respond to.
4. Continue using the same set of prompts for an extended period of time so children develop competence and confidence in describing their mathematical thinking related to the math practice.

The questions below were intentionally not included on each MC<sup>2</sup> PARCC practice item worksheet in this packet. These are intended to help students move beyond “answer getting” to fully making sense of test item questions and their own mathematical thinking.

---

### Thinking/Writing Prompts to Promote Mathematical Practices

#### Math Practice 1: Make sense of problems and persevere in solving them.

1. What do you know about the problem?
2. What questions do you have?
3. Explain your reasoning or thinking in solving the problem.

#### Math Practice 3: Construct viable arguments and critique the reasoning of others.

1. What are the assumptions, definitions, and previous knowledge to help in thinking about this problem?
2. What are some possible conjectures that you have about the problem?
3. Explain your mathematical argument so that somebody else can make sense of your thinking.

#### Math Practice 4: Model with mathematics.

1. What are the important quantities in the problem that are needed to solve it?
2. What mathematical operation(s) or representation(s) will you use to solve the problem?
3. Explain how you know your answer makes sense in the context of the situation.

#### Math Practice 6: Attend to precision.

1. What are the important units in the problem? (What are we measuring or counting?)
2. What relationship between the units/quantities do you need to know in order to solve the problem?
3. Use appropriate and precise mathematical language, units, labels and computations to clearly describe your mathematical reasoning.

**4th Grade PARCC PBA Sample Item #1: Standard 4.NBT.1**

---

1. The value of the digit 4 in the number 42,780 is 10 times the value of the digit 4 in which number?
- A. 34,651
  - B. 146,703
  - C. 426,135
  - D. 510,400

2. Mike is 3 years old. Joe is 6 times as old as Mike.

Which equation shows how to find Joe's age?

- A.  $6 \div 3 = 2$
- B.  $9 - 3 = 6$
- C.  $3 \times 6 = 18$
- D.  $3 + 6 = 9$

3. The number of science fair projects entered for each grade in a city-wide science fair is shown.

**City-Wide Science Fair**

Grade	Number of Science Fair Projects
3	462
4	759
5	891

**Part A**

The science fair projects are set up on tables. There are 99 long tables used. Each long table holds 7 projects. The rest of the projects are set up on short tables. Each short table can hold 4 projects. What is the **fewest** number of short tables that will be needed for the rest of the projects?

- A. 202
- B. 203
- C. 354
- D. 355

### 3. Part B

The science fair judges will be science teachers and volunteers. Each judge will only have time to view 5 science fair projects. There are 133 science teachers. What is the **fewest** number of volunteers needed to have enough judges for all of the projects?

- A. 290
- B. 396
- C. 422
- D. 423

4. Which pair of fractions is equivalent?

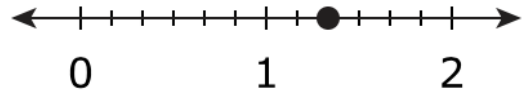
A.  $\frac{1}{3}$  and  $\frac{3}{5}$

B.  $\frac{2}{4}$  and  $\frac{3}{5}$

C.  $\frac{6}{10}$  and  $\frac{4}{8}$

D.  $\frac{6}{10}$  and  $\frac{3}{5}$

5. The point on the number line shows the value of the sum of two fractions.



Which expression has the same sum?

- A.  $\frac{4}{3} + \frac{4}{3}$
- B.  $\frac{6}{4} + \frac{2}{4}$
- C.  $\frac{5}{6} + \frac{3}{6}$
- D.  $\frac{2}{12} + \frac{6}{12}$



6. Which fractions complete the number sentences shown to make true comparisons?

Complete each number sentence so that it is a true comparison.

Drag and drop a fraction into each box.

$\frac{20}{100}$	$\frac{6}{10}$	$\frac{1}{2}$	$\frac{2}{12}$	$\frac{2}{3}$	$\frac{40}{100}$
------------------	----------------	---------------	----------------	---------------	------------------

$$\frac{2}{5} = \square$$

$$\frac{3}{5} < \square$$

4th Grade PARCC PBA Sample Item #7-A: Standard 4.NF.A.Int.1

---

7. Jake and each of his two brothers choose a fraction between 0 and 1. Jake chooses  $\frac{3}{4}$ , Aaron chooses  $\frac{9}{10}$ , and Simon chooses  $\frac{4}{12}$ .

**Part A**

Which symbol belongs in each fraction comparison?

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

$\frac{3}{4}$    $\frac{9}{10}$

=  
<  
>

$\frac{4}{12}$    $\frac{3}{4}$

=  
<  
>

$\frac{9}{10}$    $\frac{4}{12}$

=  
<  
>

**7. Part B**

Select a group of fractions that includes an equivalent fraction for each of the fractions  $\frac{3}{4}$ ,  $\frac{9}{10}$ , and  $\frac{4}{12}$ .

- A.  $\frac{3}{8}$ ,  $\frac{9}{100}$ ,  $\frac{1}{4}$
- B.  $\frac{3}{8}$ ,  $\frac{90}{100}$ ,  $\frac{1}{3}$
- C.  $\frac{9}{12}$ ,  $\frac{90}{100}$ ,  $\frac{1}{3}$
- D.  $\frac{9}{12}$ ,  $\frac{90}{100}$ ,  $\frac{1}{4}$

8. Jian’s family sells honey from beehives. They collected 3,311 ounces of honey from the beehives this season. They will use the honey to completely fill 4-ounce jars or 6-ounce jars.

Jian’s family will sell 4-ounce jars for \$5 each or 6-ounce jars for \$8 each.

Jian says if they use only 4-ounce jars, they could make \$4,140 because  $3,311 \div 4 = 827 \text{ R } 3$ . That rounds up to 828, and 828 multiplied by \$5 is \$4,140.

### Part A

Explain the error that Jian made when finding the amount of money his family could make if they use only 4-ounce jars.

Enter your explanation in the space provided.



▼ Math symbols

+	−	×	÷
$\frac{\square}{\square}$	$\frac{\square}{\square}$	(·)	[·]
=	<	>	≠
\$	°	?	

## 8. Part B

Explain how to determine the money Jian’s family could make if they use only 6-ounce jars. Include the total amount of money and the total number of 6-ounce jars in your explanation.

Enter your answers and your explanation in the space provided.



▼ Math symbols

+	−	×	÷
$\frac{\square}{\square}$	$\frac{\square}{\square}$	(·)	[·]
=	<	>	≠
\$	°	?	

9. Henry cut a piece of yarn that was  $\frac{11}{6}$  feet long into two pieces. List two different pairs of fractions that could show the lengths, in feet, of the two pieces. Explain how you found your pairs of fractions.

Enter your fraction pairs and your explanation in the space provided.



▼ Math symbols

+	-	×	÷
$\frac{\square}{\square}$	$\frac{\square}{\square}$	(·)	[·]
=	<	>	≠
\$	°	?	

10. **Part A**

Alex ran 0.5 mile.

Using a denominator of 10, what is the fractional equivalent of this distance, in miles?

Enter your answer in the box.

10

10. **Part B**

Christy ran  $\frac{4}{10}$  mile on Monday and  $\frac{7}{100}$  mile on Tuesday. She said that she ran a total of  $\frac{47}{100}$  mile. Christy told Alex that she ran a greater distance than he ran, because 47 is more than 5.

- Identify the incorrect reasoning in Christy’s statement.
- Explain how Christy can correct her reasoning.
- Use  $>$ ,  $<$ , or  $=$  to give a correct comparison between the distances that Alex and Christy ran.

Enter the incorrect reasoning, your explanation, and the correct comparison in the space provided.



▼ Math symbols

+	-	×	÷
$\frac{\square}{\square}$	$\frac{\square}{\square}$	(·)	[·]
=	<	>	≠
\$	°	?	



**4th Grade PARCC PBA Sample Item #11: Standard 4.OA.2**

---

11. A basketball team scored a total of 747 points for the season. This was 9 times the number of points scored in the first game. How many points were scored during the first game?

- A. 73
- B. 75
- C. 82
- D. 83

12. Which numbers make the comparison true?

$$27,768 < \square$$

Select the **two** correct answers.

- A. 27,759
- B. 28,744
- C. 26,773
- D. 27,568
- E. 27,836

13. What is the value of  $6 \times \frac{3}{8}$  ?

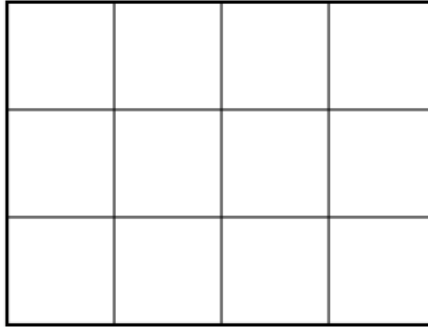
A.  $\frac{2}{8}$

B.  $\frac{9}{8}$

C.  $\frac{18}{8}$

D.  $\frac{51}{8}$

14. Martin cut a pan of corn bread into equal pieces as shown in the model.



**Part A**

Martin gave  $\frac{1}{3}$  of the corn bread to his neighbor.

Explain how you can use the model to show  $\frac{1}{3}$ . Then write a fraction that is equivalent to  $\frac{1}{3}$ .

Enter your explanation and your answer in the space provided.



▼ Math symbols

+	-	×	÷
$\frac{\square}{\square}$	$\frac{\square}{\square}$	(·)	[·]
=	<	>	≠
\$	°	?	

14. **Part B**

Martin gave  $\frac{6}{12}$  of the corn bread to his teacher.

Write a comparison using  $<$ ,  $>$ , or  $=$  to compare the fractions  $\frac{1}{3}$  and  $\frac{6}{12}$ . Explain how the model can be used to compare these fractions.

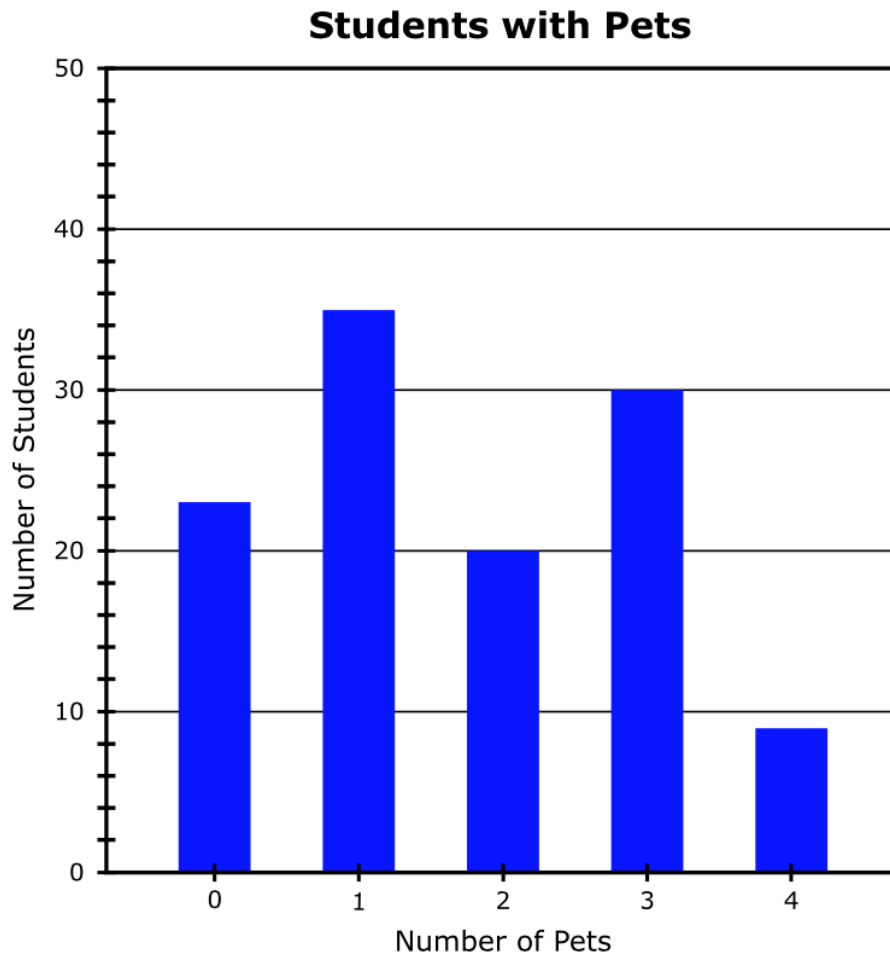
Enter your comparison and your explanation in the space provided.



▼ Math symbols

+	-	×	÷
$\frac{\square}{\square}$	$\frac{\square}{\square}$	(·)	[·]
=	<	>	≠
\$	°	?	

15. Ms. Sloan asked 117 fourth-grade students the question, “How many pets do you have?” She displayed the data she collected in the bar graph shown.



**Part A**

How many of the students that responded have 2 pets?

Enter your answer in the box.

15. **Part B**

How many more students have 1 pet than students who have 3 pets? Explain your answer.

Enter your answer and explanation in the space provided.



▼ Math symbols

+	-	×	÷
$\frac{\square}{\square}$	$\frac{\square}{\square}$	(·)	[·]
=	<	>	≠
\$	°	?	

15. **Part C**

Find the total number of pets the fourth-grade students have.

- Explain how you used the bar graph to solve the problem.
- Show your work using equations.

Enter your explanation, your work, and the total number of pets in the space provided.



▼ Math symbols

+	-	×	÷
$\frac{\square}{\square}$	$\frac{\square}{\square}$	(·)	[·]
=	<	>	≠
\$	°	?	



16. **Part A**

Shaun plotted a point on the number line by drawing 5 equally spaced marks between 0 and 1 and placing a point on the third mark. He claims that the point represents the fraction  $\frac{3}{5}$  because each mark represents  $\frac{1}{5}$ , so the third mark represents  $\frac{3}{5}$ .



- Explain why Shaun’s reasoning is incorrect.
- Explain how you can use the number line to determine the fraction that Shaun’s point represents.
- Determine the fraction that Shaun’s point represents.

Enter your explanations and your answer in the space provided.



▼ Math symbols

+	-	×	÷
$\frac{\square}{\square}$	$\frac{\square}{\square}$	(·)	[·]
=	<	>	≠
\$	°	?	

16. **Part B**

Shaun wants to write a fraction that is equivalent to the fraction  $\frac{2}{3}$ .

Describe how Shaun can find a fraction that is equivalent to  $\frac{2}{3}$ .

Enter your description in the space provided.



▼ Math symbols

+	-	×	÷
$\frac{\square}{\square}$	$\frac{\square}{\square}$	(.)	[·]
=	<	>	≠
\$	°	?	

17. The table shows the number of yards Ed ran in each of the first three football games of the season.

**Ed's Running Yards**

Game	Yards
1	157
2	309
3	172

After the first three games of the season, Rico had exactly 3 times the total number of running yards that Ed had.

How many **more** total running yards did Rico have than Ed after the first three games of the season? Show your work or explain how you got your answer.

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



▼ Math symbols

+	-	×	÷
$\frac{\square}{\square}$	$\frac{\square}{\square}$	(.)	[.]
=	<	>	≠
\$	°	?	