
Grades 3-8

# Explore the PARCC Math Assessment and Identify Effective Instructional Strategies


## Robyn Silbey

www.robynsilbey.com ◊ robyn@robynsilbey.com

- Examine several PARCC items
- Analyze the items for commonalities
- Identify instructional implications for "teaching to the test"
- Create an action plan for implementing the instructional implications

The **shift in job growth requires a shift in learning,** which can be accomplished only if we make a corresponding **shift in instruction.**

Introduction:
UNDERSTANDING MATHEMATICS

COMMON CORE STATE STANDARDS INITIATIVE
PREPARING AMERICA'S STUDENTS FOR COLLEGE & CAREER

Mathematical understanding and procedural skill are equally important, and both are assessable using mathematical tasks of sufficient richness.

## Standards for Mathematical Practice

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Goals

COMMON CORE

Assessments

PARCC
Partnership for Assessment of Readiness for College and Careers

Instruction

- identifies the "big ideas" in the Common Core State Standards for each grade level.

PARCC
Partnership for Assessment of Readiness for College and Careers

- provides guidance to teachers for the development of instructional materials.

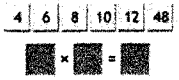
http://parcconline.org/samples/item-task-prototypes

## Grade 3, Part 1 of 2

There is a large mural made of colored tiles at the entrance of Rena's school.

The mural is made with 48 square tiles and is 12 tiles wide.


Drag tiles into the boxes to show a number sentence that can be used to find how many tiles high the mural is.

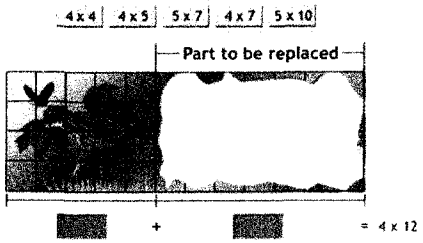



## Grade 3, Part 2 of 2

There is a large mural made of colored tiles at the entrance of Rena's school.

A part of the mural was damaged in a heavy storm as shown. The part of the mural that was NOT damaged is 5 tiles long and 4 tiles high.

Rena wants to know how many tiles need to be replaced. First drag the tiles to label the model. Then fill in the blank with the number of tiles that need to be replaced in the mural.



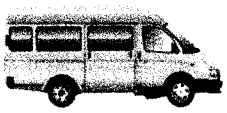

tiles need to be replaced in the mural.

## Grade 4

Three classes at Lakeview School are going on a field trip. The table shows the number of people in each class, including the teacher.

| | Total number of people |
|---|---|
| Mrs. Ruiz's Class | 23 |
| Mr. Yang's Class | 25 |
| Mrs. Evans' Class | 24 |

They can choose to use buses, vans, and cars.



Buses have 20 seats

Vans have 16 seats

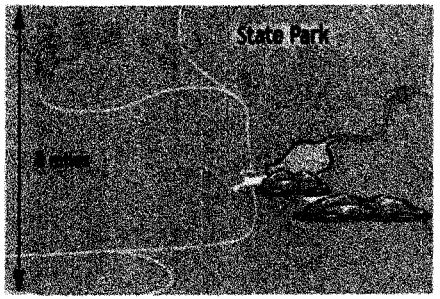
Cars have 5 seats

Which three combinations can be used to take all three classes on the field trip?

- ☐ 1 bus and 4 vans
- ☐ 3 vans and 11 cars
- ☐ 1 bus and 1 van and 6 cars
- ☐ 1 bus and 8 cars
- ☐ 2 buses and 3 vans and 4 cars

## Grade 4

The perimeter of the rectangular state park shown is 42 miles.



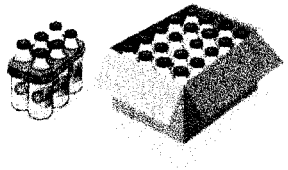

A ranger estimates that there are 9 deer in each square mile of the park.

If this estimate is correct, how many total deer are in the park? Explain your answer using numbers, symbols, and words.

## Grade 4

Julian makes and sells juice drinks. The juice drinks are sold in six-packs and boxes.

A six-pack has 6 juice drinks and costs $2.
A box has 20 juice drinks and costs $7.



The Friendly Corner Store placed this order:

24 juice drinks packaged in six-packs
200 juice drinks packaged in boxes

Fill in the blanks to complete the order receipt.

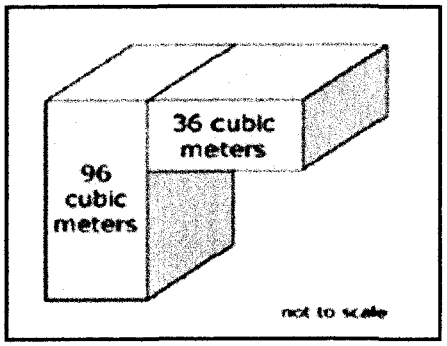
**Order receipt**

| | Number of packages | Total cost |
|---|---|---|
| Six-packs | ☐ | $☐.00 |
| Boxes | ☐ | $☐.00 |
| | Total | $☐.00 |

## Grade 5, Part 1 of 2

A large tank at the state aquarium is shown. There are two rectangular prisms which form the large tank.

**Part A**
What is the volume of the large tank?
_____ cubic meters



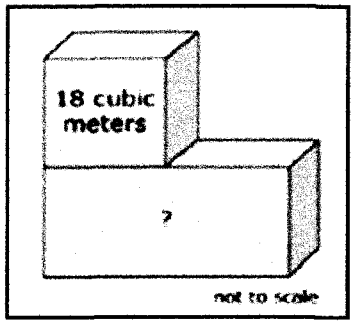
## Grade 5, Part 2 of 2

A large tank at the state aquarium is shown. There are two rectangular prisms which form the large tank.

**Part B**

The scientists are creating a second large tank that is also made from two rectangular prisms. The second tank has the same volume as the first tank. What is the volume of the rectangular prism at the bottom?

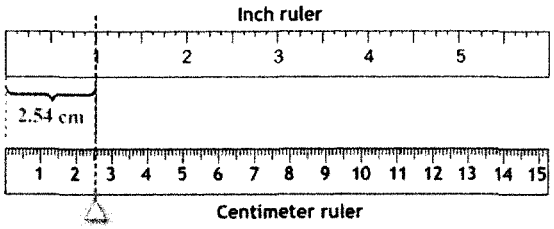
_____ cubic meters




## Grade 6, Part 1 of 2

The diagram shows that 1 inch is approximately equal to 2.54 centimeters.

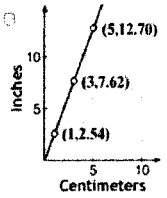
Drag the slider to explore this relationship and then answer the question below.




## Grade 6, Part 2 of 2

If we say that the relationship between the number of inches and the number of centimeters is exact, which of the following correctly represents the relationship? Select all that apply.

- ☐ $i = 2.54c$, where $i$ stands for the number of inches and $c$ stands for the number of centimeters
- ☐ $c = 2.54i$, where $c$ stands for the number of centimeters and $i$ stands for the number of inches
- ☐ The ratio of centimeters to inches is 1 to 2.54.
- ☐ The ratio of centimeters to inches is 2.54 to 1.
- ☐




## Grade 7

A restaurant makes a special seasoning for all its grilled vegetables. Here is how the ingredients are mixed:

$\frac{1}{2}$ of the mixture is salt

$\frac{1}{4}$ of the mixture is pepper

$\frac{1}{8}$ of the mixture is garlic powder

$\frac{1}{8}$ of the mixture is onion powder

The restaurant mixes a 12-cup batch of the mixture every week. How many cups of each ingredient do they use in the mixture each week?

_____ cups salt

_____ cups pepper

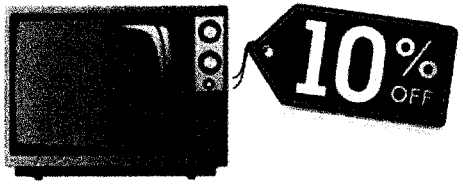
_____ cups garlic powder

_____ cups onion powder

## Grade 7, Part 1 of 2

A store is advertising a sale with 10% off all items. Sales tax is 5%.

A 32-inch TV is regularly priced at $295. What is the total price of the TV, including sales tax, if it was purchased on sale? Round your answer to the nearest cent.




## Grade 7, Part 2 of 2

Write your answers to the following problem in your answer booklet.

A store is advertising a sale with 10% off all items in the store. Sales tax is 5%.

Adam and Brandi are customers discussing how the discount and tax will be calculated.

Here is Adam's process for finding the total cost for any item in the store.

- Take 10% off the original price.
- Then, add the sales tax to the discounted price.

Adam represents his process as:

$$T = \underbrace{0.9p}_{\text{sale price}} + \underbrace{0.05(0.9p)}_{\text{sales tax}}$$

Here is Brandi's process for finding the total cost for any item in the store.

- Determine the original price of the item, including sales tax.
- Then, take 10% off.

Brandi represents her process as:

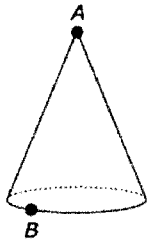
$$T = \underbrace{1.05p}_{\text{T.V. price plus tax}} - \underbrace{0.10(1.05p)}_{\text{10\% off discount}}$$

In both equations, $T$ represents the total cost of the television and $p$ represents the regular price.

Are they both correct? Use the properties of operations to justify your answer.

## Grade 8

A right circular cone is shown. Point A is the vertex of the cone and point B lies on the circumference of the base of the cone.




The cone has a height of 24 units and a diameter of 20 units. What is the distance from point A to point B?