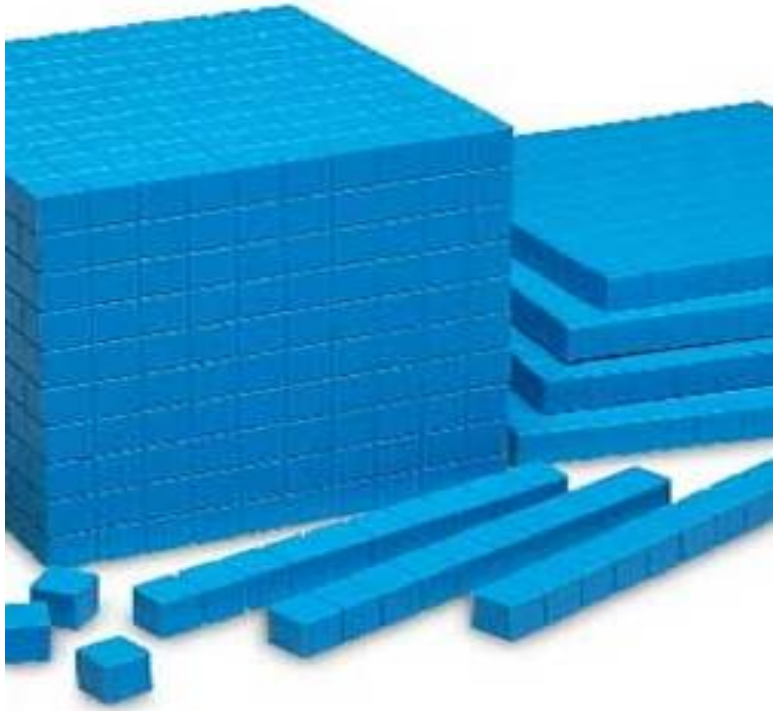
DISTRICT OF COLUMBIA
PUBLIC SCHOOLS

Working with Base10 Blocks



Welcome!

- Place a sticker on the charts on the wall
- How many years how you been teaching?
- How comfortable are you with using Base 10 blocks in your classroom
- How often do you use and discuss the Standards of Mathematical Practice in the classroom with your students?

Agenda

- Why use Base-10 Blocks
- How do the Standards of Mathematical Practice fit in my instruction?
- What does a 5E lesson like?

Session Objectives

- Educators will use Base-10 Blocks to add and subtract various problems.
- Educators will discuss the use of the Standards of Mathematical Practice throughout the lesson.

Do Now

- Add the following problems
- 24 + 14
- 204 + 14
- 24 + 8
- 204 + 18

- Subtract the following problems
- 24 – 14
- 204 – 14
- 24 – 8
- 204 – 18

Exploration

- Use the Base-10 Blocks to solve the following problems
- 24 + 14
- 204 + 14
- 24 + 8
- 204 + 18

- Represent what you did with a picture representation
- Write about what you did to solve the problems

- Subtract the following problems
- 24 – 14
- 204 – 14
- 24 – 8
- 204 – 8

- Represent what you did with a picture representation
- Write about what you did to solve the problems

Explanation

- Educators will present their work and discuss how the problems were solved.
- Key vocabulary
  - Carry
  - Regroup
  - Borrow

Introduction - "Engage"		Time
How will you engage students with an event or question that generates curiosity, raises questions or helps students to make connections to what they already know? How will you hook them into the lesson?	Evaluate: How will you know that students are ready to move forward with exploration?	What key questions will you ask students to engage them in thinking?
Problem Solving - "Explore"		Time
What hands-on/minds-on activity will students be engaging in? How will you introduce/model new skills or procedures? What big ideas/key concepts should students experience as they explore? How will you aid students in constructing meaning of new concepts?	Evaluate: How will you monitor and take note of different strategies used? Will students record their thinking in writing for later evaluation? How will you track students who show new understanding or who reveal misconceptions? How will you know that all students have engaged with the problem and are ready to participate in the next phase?	What strategies are you expecting students to use? How will you prompt students that are "stuck"?
Sharing/Presentation – "Explain"		Time
What will students do together to use new/share concepts or skills? How will you assist students in this process? What key points/main ideas do students need to understand/share with their peers to move towards mastery of the objective/content independently?	Evaluate: What questions will you ask to see if all students are following the discussion?	What type of solutions/strategies are you going to select for sharing? In what order to you want them to share? What questions will you ask to push students to defend their thinking or to respond to others thinking?
Sharing/Presentation - "Elaborate"		Time
Describe how students will develop a more sophisticated understanding of the content. What opportunities will students have to use the new skills and concepts in a meaningful way? How will students demonstrate their understanding? How will students expand and solidify their understanding of the concept and apply?	Evaluate: What questions will you ask that require students to apply their thinking to solve other problems?	How will you connect the different ideas shared in the "explain"?
Closing – "Evaluate"		Time
How will students demonstrate they have achieved the lesson objective? How will students know if they met the lesson objective?		What key points do you want to emphasis again to bring closure to the lesson?

Standards of Mathematical Practice

- How many Standards of Mathematical Practice did you use in the warm-up activity?

- How many Standards of Mathematical Practice did you use in the Exploration

Standards of Mathematical Practice #1

Make sense of problems and persevere in solving them. Mathematical Practice 1

When given a problem, I can make a plan, carry out my plan, and check my answer.

BEFORE...

Think about the problem.

Ask myself, "Which strategy will I use?"

Make a plan to solve the problem.

DURING...

Stick to it!

Ask myself, "Does this make sense?"

Change my plan if it isn't working out.

AFTER...

CHECK my work.

Ask myself, "Is there another way to solve the problem?"

Clip art licensed from the Clip Art Gallery on DiscoverySchool.com

Jordan School District 2012, Grades 2-3

Standards of Mathematical Practice #2

Reason abstractly and quantitatively.

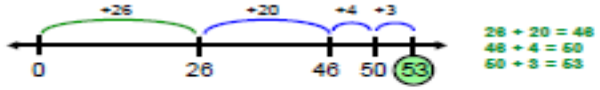
Mathematical Practice 2

I can use numbers and words to help me make sense of problems.

Numbers to Words

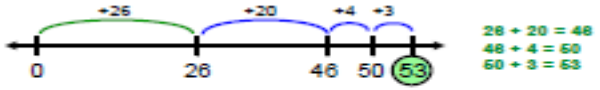
26 + 27 = 53

There are 26 boys and 27 girls on the playground.
How many children are on the playground?



Words to Numbers

There are 26 boys and 27 girls on the playground.
How many children are on the playground?



26 + 27 = 53

Clip art licensed from the Clip Art Gallery on DiscoverySchool.com

Jordan School District 2012, Grades 2-3

Standards of Mathematical Practice #3

Construct viable arguments and critique the reasoning of others. Mathematical Practice 3

I can explain my thinking and respond to the mathematical thinking of others.

I can explain my strategy using...

- objects, drawings, and actions
- examples and non-examples
- contexts

I can compare strategies with others by...

- listening
- asking useful questions
- understanding mathematical connections between strategies

Clip art licensed from the Clip Art Gallery on DiscoverySchool.com

Standards of Mathematical Practice #4

Model with mathematics.

Mathematical Practice 4

I can recognize math in everyday life and use math I know to solve problems.

I can use....

I can use take-away to find the difference between the number of crayons Jill and Rob have.

(Words)

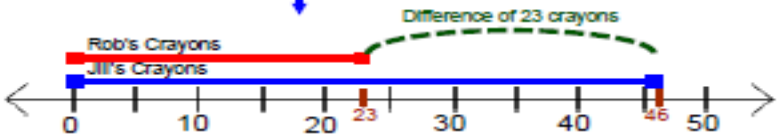
Rob has 23 crayons. Jill has 46 crayons. How many more crayons does Jill have than Rob?

(Symbols)

$$\begin{array}{r} 46 \\ -\ 23 \\ \hline 23 \end{array}$$

(Objects)

(Pictures)



...to solve everyday problems.

Clip art licensed from the Clip Art Gallery on DiscoverySchool.com

Jordan School District 2012, Grades 2-3

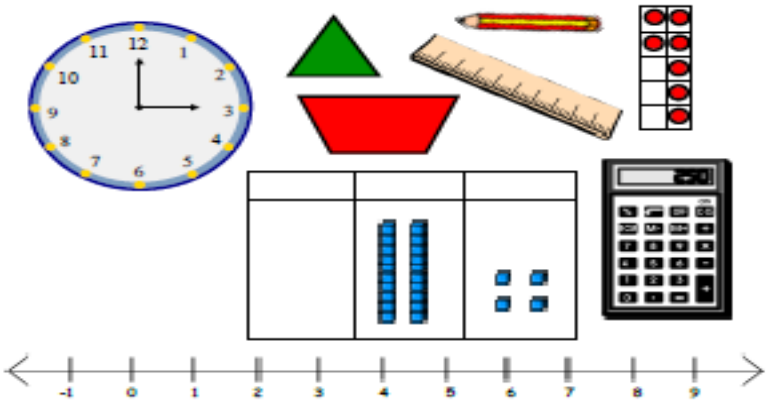
Standard of Mathematical Practice #5

Use appropriate tools strategically.

Mathematical Practice 5

I can use certain tools to help me explore and deepen my math understanding.

I have a math toolbox.



- I know *HOW* and *WHEN* to use math tools.
- I can reason: *"Did the tool I used give me an answer that makes sense?"*

Clip art licensed from the Clip Art Gallery on DiscoverySchool.com

Jordan School District 2012, Grades 2-3

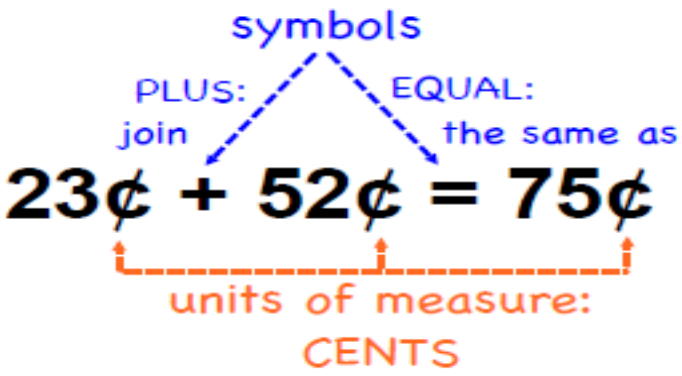
Standard of Mathematical Practice #6

Attend to precision.

Mathematical practice 6

I can be precise when solving problems and clear when I share my ideas.

Careful and clear mathematicians use...



- math vocabulary
- symbols that have meaning
- context labels
- units of measure
- calculations that are accurate and efficient

Clip art licensed from the Clip Art Gallery on DiscoverySchool.com

Jordan School District 2012, Grades 2-3

Standard of Mathematical Practice # 7

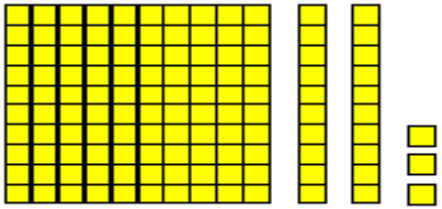
Look for and make use of structure.

Mathematical Practice 7

I can see and understand how numbers and shapes are organized and put together as parts and wholes.

Numbers

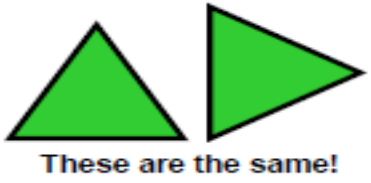
For example:



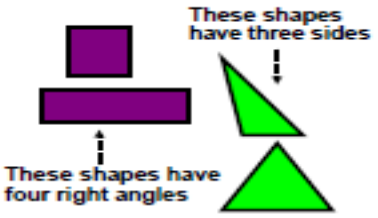
Base Ten System

Shapes

For example:



Orientation



Attributes

Clip art licensed from the Clip Art Gallery on DiscoverySchool.com

Jordan School District 2012, Grades 2-3

Standards of Mathematical Practice #8

Look for and express regularity in repeated reasoning. Mathematical Practice 8

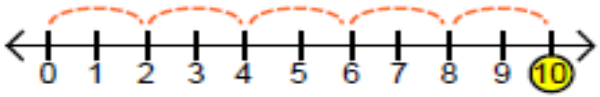
I can notice when calculations are repeated.

5 x 2 = 10

2 + 2 + 2 + 2 + 2 = 10

I am adding 2 five times.

I am counting rows with 2 in each row five times.



I am making 5 hops of 2 on the number line.

Clip art licensed from the Clip Art Gallery on DiscoverySchool.com

Wrapping up

- Educators used Base-10 Blocks to add and subtract various problems.
- Educators discussed the use of the Standards of Mathematical Practice throughout the lesson.
- http://www.carrollk12.org/Assets/file/ElemMath/Mathematical_Practices/MP.K.JSD.pdf
- http://www.carrollk12.org/Assets/file/ElemMath/Mathematical_Practices/MP.2.JSD.pdf
- http://www.carrollk12.org/Assets/file/ElemMath/Mathematical_Practices/MP.4.JSD.pdf