Richmond Public Schools

Department of Curriculum and Instruction

Curriculum Pacing and Resource Guide – Unit Plan

Course Title/ Course #: Math Grade 7

Unit Title/ Marking Period # (MP): 1

Start day:

Meetings (Length of Unit): 12 days

Desired Results ~ What will students be learning?

Standards of Learning/ Standards

SOL 7.3

The student will…

a) model addition, subtraction, multiplication and division of integers; and

b) add, subtract, multiply, and divide integers.

SOL 7.16d

The student will apply the following properties of operations with real numbers…

d) the additive and multiplicative inverse properties;

Essential Understandings/ Big Ideas

The sums, differences, products and quotients of integers are either positive, zero, or negative. How can this be demonstrated?

This can be demonstrated through the use of patterns and models.

Why is it important to apply properties of operations when simplifying expressions?

Using the properties of operations with real numbers helps with understanding mathematical relationships.

Key Essential Skills and Knowledge

SOL 7.3

- Model addition, subtraction, multiplication and division of integers using pictorial representations of concrete manipulatives.
- Add, subtract, multiply, and divide integers.
- Simplify numerical expressions involving addition, subtraction, multiplication and division of integers using order of

operations.
- Solve practical problems involving addition, subtraction, multiplication, and division with integers.

SOL 7.16d
- Identify properties of operations used in simplifying expressions.
- Apply the properties of operations to simplify expressions.

Vocabulary

Academic Vocabulary	Content Vocabulary
Rational Numbers Integers Opposites Zero Pairs Additive Inverse Sum Difference Signed Numbers Positive Integers Negative Integers Product Quotient Operations Numerical Expressions Order of Operation	Counters Number lines Simplify Model Illustrate Identify

Assessment Evidence ~ What is evidence of mastery? What did the students master & what are they missing?

Assessment/ Evidence

- Interactive Achievement
- Exit Quiz
- BrainPop Assessments
- Gizmo Assessments
- Virginia SOL Coach, New Gold Edition, Mathematics, Grade 7,
  Adding, Subtracting, Multiplying and Dividing Integer, and Order of Operations,
  page(s): 78 – 80; questions: 1, 2, 3, 4, 7, 8, 9, 11, 12, and 13

H.O.T –(Higher Order Thinking)
Virginia Math Connects, Course 2, ©2012, Price, et al, McGraw-Hill School Education Group 1, Adding Integers, page 92; Subtracting Integers, pages 98 ; Multiplying Integers, page 108; Dividing Integers, page 113

Test Practice Questions:
Virginia Math Connects, Course 2, ©2012, Price, et al, McGraw-Hill School Education Group 1, Adding Integers, page 92; Subtracting Integers, pages 98; Multiplying Integers, page 108; Dividing Integers, page 113

Learning Plan ~ What are the strategies and activities you plan to use?

Learning Experiences/ Best Practice

Teacher Resources:

- Use Frayer Model and/or Marzano for new vocabulary terms
- Modeling Adding and Subtracting Integers with counters and number lines. When using number lines have students to "act out" movement on a number line
- Graphic Organizer for each integer operation
- Order of Operation Graphic Organizer – use GEMDAS, where G represents all symbols
- How to Subtract Integers Using Counters – Teacher Reference Video
- Zip, Zilch, Zero – Illuminations Lesson SOLS 7.1e, 7.3 (adding integers), 7.16d (additive inverse)
- How to use Number lines when teaching adding and subtracting Integers
- Have students create a scrapbook, when given an equation, illustrate the equation using counters, numbers lines, and solve using numbers
- Inquiry Based Lesson on Adding and Subtracting Integers
- Students should rewrite subtraction problems as addition (when subtracting integers always add the opposite)
- Label It – Students usually struggle with making sure they write down the correct symbol
- Have students create a poster on how to use Order of Operations
- How to use repeated addition to illustrate Multiplying and Dividing Integers
- How to use counters to multiply integers – Video
- How to model dividing integers with counters and number lines – Video
- Given an order of operation problem, and steps scrambled, have students match the correct steps needed to solve the expression
- Task Cards to review concepts when students are finished working on an activity
- Given an order of operation problem, can students find and correct the error?
- Have students write a Comic Strip explaining to a friend how to add, subtract, multiply, and/or divide integers

Student Activity:

- Integer Football
- 123 Switch
- Zip, Zilch, Zero – Illuminations Lesson SOLS 7.1e, 7.3 (adding integers), 7.16d (additive inverse)
- Number Line Madness – Student Practice adding or subtracting integers on a number line
- Order Of Operation Bingo with Integers
- Give students a target number, and using cards and operations, they must create a problem that will equal the target number.

Interactive Student Practice:

- Subtracting Negative Numbers - Khan Academy Student Practice
- Integer –ISA
- Integers Mixed Operation - ISA
- Multiplying and Dividing Integers – Khan Academy Video and Student Practice

Technology Integrations

Brainpop

SmartBoard Lesson

Order of Operations – Lesson and Practice

Resources

Text

Virginia Math Connects, Course 2, ©2012, Price, et al, McGraw-Hill School Education Group 1;
page(s) 86 – 113; EP5 Multi- Part Lesson 2-2, EP6 Multi – Part Lesson 2-3, EP7 – EP8 Multi-Part Lesson 3-2
Virginia SOL Coach, New Gold Edition, Mathematics, Grade 7,
Add and Subtract Integers, page(s) 54 – 59;
Multiply and Divide Integers, page(s) 60 -65;

Order of Operations, page(s) 66 - 70

Technology:
Gizmo
7.3a -Adding and Subtracting Integers
7.3a - Adding and Subtracting Integers with Chips
7.3b – Order of Operations
BrainPop
Adding and Subtracting Integers
Order of Operations

Virginia Department of Education
Adding and Subtracting Integers
Multiplying and Dividing Integers

Other Sites
Adding and Subtracting Integers – Illuminations
Integer Operations -(James Bond and Sign your Name)

Cross Curricular Connection

- **Science** – Real World Connection: Virginia Math Connects, Course 2, ©2012, Price, et al, McGraw-Hill School Education Group , page 115

- **Physical Education** – Work with physical education class, and see how people use negative and positive integers, in football, golf, and other sports

Materials

Manipulatives	**Technology Resources**	**Student Supplies**
Number Lines	LCD Projector	Whiteboards/Markers
Counters	Speakers	Frayer Model/ Marzano
Integer Work Mat	Computer w/Internet Connection and SmartBoard Software	Interactive Student Notes
Playing Cards	SmartBoard	Zip, Zilch, Zero Record Sheet
Dice	Computer Cart	123 Switch Record Sheet
		Integer Tournament Record Sheet