

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 7.5

The student will

- a) describe volume and surface area of cylinders;
- b) solve practical problems involving the volume and surface area of rectangular prisms and cylinders; and
- c) describe how changing one measured attribute of a rectangular prism affects its volume and surface area.

Essential Understandings/ Big Ideas

How are volume and surface area related?

Volume is a measure of the amount a container holds while surface area is the sum of the areas of the surfaces on the container.

How does the volume of a rectangular prism change when one of the attributes is increased?

There is a direct relationship between the volumes of a rectangular prism increasing when the length of one of the attributes of the prism is changed by a scale factor.

Key Essential Skills and Knowledge

- Determine if a practical problem involving a rectangular prism or cylinder represents the application of volume or surface area.
- Find the surface area of a rectangular prism.
- Solve practical problems that require finding the surface area of a rectangular prism.

- Find the surface area of a cylinder.
- Solve practical problems that require finding the surface area of a cylinder.
- Find the volume of a rectangular prism.
- Solve practical problems that require finding the volume of a rectangular prism.
- Find the volume of a cylinder.
- Solve practical problems that require finding the volume of a cylinder.
- Describe how the volume of a rectangular prism is affected when one measured attribute is multiplied by a scale factor. Problems will be limited to changing attributes by scale factors only.
- Describe how the surface area of a rectangular prism is affected when one measured attribute is multiplied by a scale factor. Problems will be

Vocabulary

Academic Vocabulary

Content Vocabulary

Volume
 Surface Area
 Dimensions
 Length
 Width
 Height
 Tall
 Wide
 Radius
 Diameter
 Scale Factor
 Attribute
 Rectangular Prism
 Cylinder
 Net

Identify
 Describe
 Determine
 Demonstrate

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

Assessment/ Evidence

- Mulligan Math check points: **SOL 7.5**
- Interactive Achievement
- Exit Quiz

- **Compass Learning #:**
Surface Area – [MA69152](#)
Volume (changing attribute) – [M7175](#), [M7178](#)
Volume of Prism – [MA5648](#)
- Virginia SOL Coach, New Gold Edition, Mathematics, Grade 7,
[Volume and Surface Area](#), page(s): 110 – 112; questions 1, 3, 4, 5, 6, 9, 10, 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,

[Volume](#), page: 563; [Volume of Cylinders](#), pages: 567 – 568; [Surface Area](#) page: 587; [Surface Area Cylinder](#), page: 590

Test Practice Questions:

Virginia Math Connects, Course 2, ©2012, Price, et al, McGraw-Hill School Education Group 1,

[Volume](#), page: 563; [Volume of Cylinders](#), pages: 567 – 568; [Surface Area](#), page: 587; [Surface Area Cylinder](#), page: 591

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

Learning Experiences/ Best Practice

Teacher Resource(s):

- Have students create a graphic organizer labeling the parts of a prism and cylinder
- Student created foldable on the formulas needed to find the surface area and volume
- Have students formulate the formulas for calculating surface area and volume of a prism through an hands on approach
- Have students bring in boxes and cans to explore surface area, volumes, and nets of prisms and cylinders.
- Have students create a ratio chart, when exploring changing the dimensions of a prism or cylinder.
- College of William and Mary videos and lesson plans on Surface Area and Volume:
 - [Volume](#)
 - [Growing Boxes and Cans](#)
 - [Henrico County Public School](#) – SOL 7.5
 - [Surface Area of a Rectangular Prism](#)
 - [Box It up, Wrap it up](#)
 - [Volume Rectangular Prism](#)
 - [Fishing for the Best Prism](#)
 - [Popcorn, Anyone?](#)

Student Activity(s):

[Tin Man Project](#) – Project

[Tin Man Project](#) – Project
[Volume and Surface Area](#)
[Hay Bale Farmer](#)
[Changing Dimension](#)
[Moving Day](#)

Interactive Student Practice:

[Volume of a Rectangular Prism](#) - Khan Academy Video and Practice
[Volume and Surface Area](#) – ISQ
[Volume and Surface Area](#) – ISA
[Volume of a Cylinder](#) – Review Video
[Volume of a Prism](#) – Review Video

Technology Integrations

Compass Learning Odyssey
Brainpop
SmartBoard Lessons:
[Volume](#)
[Find the Volume](#)
[Changing Dimensions](#)

Resources

Text:

- [Virginia Math Connects, Course 2](#), ©2012, Price, et al, McGraw-Hill School Education Group 1:
[Volume page\(s\) 558 – 568; Surface Area page\(s\) 588-593; Changing Attributes page\(s\) 823-824](#)
- Virginia SOL , New Gold Edition, Mathematics, Grade 7,
[Volume, page\(s\): 82 – 87;](#)
[Surface Area, page\(s\): 88 – 94;](#)
[Changes in Volume and Area, page\(s\): 96 - 101](#)
- Mulligan Math in Minutes - [SOL 7.5](#)
- Interactive Reading and Note taking – [SOL 7.5](#)

Technology:

[Compass Learning](#) –
Surface Area – [67225](#)
Volume (Changing Attributes does include Triangular Prisms) – [M7171, M7174 M7176, M7177, 8089](#)
Volume of a Prism Only – [MA5647](#)

[Gizmo](#)

Surface and Lateral Area of Prisms and Cylinders
Prisms and Cylinder – Activity A (Volume)

[BrainPop:](#)

Volume of Cylinders
Volume of Prisms

Virginia Department of Education Lesson Plan(s):

[Surface Area of a Rectangular Prism](#)

[Changing Attributes](#)

Other Sites

Cross Curricular Connection

Real World Math – Music [Virginia Math Connects, Course 2](#), ©2012, Price, et al, McGraw-Hill School Education Group 1 **page 601**

History – Students could work with the 6th grade history teacher and incorporate a lesson about Henry “Box” Brown. Where students could measure each other and build a box that they could fit in and/or figure out the dimensions of a box that they could fit in and/or Box Brown

Materials

Manipulatives

Boxes
Cylinders
Graph Paper
Tape Scissors
Centimeter Blocks
Foil (Tin Man Project)

Technology Resources

LCD Projector
Speakers
Computer w/Internet Connection

Student Supplies

Whiteboards/Markers
Frayer Model/ Marzano
Student Notes
Student Activity Sheets