MATHEMATICS 7.5

Strand: Measurement

Standards of Learning Blueprint Summary

Reporting Category	Grade 7 SOL	Number of Items
Number, Number Sense, Computation & Estimation	7.1(a-e), 7.2, 7.3(a-b), 7.4	16
Measurement & Geometry	7.5(a-c), 7.6, 7.7, 7.8	13
Probability, Statistics, Patterns, Functions, & Algebra	7.9, 7.10, 7.11(a-b), 7.12, 7.13(a-b), 7.14(a-b), 7.15(a-b), 7.16(a-e)	21
Excluded from Testing		
Number of Operational Items		50
Number of Field-Test Items		10
Total Number of Items on Test		60

Virginia Mathematics SOL Test Cut Scores

Test	Failing Scores		Passing Scores			
	Basic		Proficient		Advanced	
	# correct	% correct	Minimum # correct	Minimum % correct	Minimum # correct	Minimum % correct
Math 3	**16 of 40**	**40%**	**26 of 40**	**65%**	**36 of 40**	**90%**
Math 4	**17 of 50**	**34%**	**31 of 50**	**62%**	**45 of 50**	**90%**
Math 5	**18 of 50**	**36%**	**31 of 50**	**62%**	**45 of 50**	**90%**
Math 6	**16 of 50**	**32%**	**28 of 50**	**56%**	**45 of 50**	**90%**
Math 7	**17 of 50**	**34%**	**31 of 50**	**62%**	**45 of 50**	**90%**
Math 8	**17 of 50**	**34%**	**31 of 50**	**62%**	**46 of 50**	**92%**
Algebra I	**n/a**	**n/a**	**25 of 50**	**50%**	**45 of 50**	**90%**
Geometry	**n/a**	**n/a**	**25 of 50**	**50%**	**44 of 50**	**88%**
Algebra II	**n/a**	**n/a**	**27 of 50**	**54%**	**43 of 50**	**86%**

Checkpoint Items

1. Directions: After showing your thinking, write your answer in the box. Round to the nearest hundredth. Include the unit of measure.

   What is the surface area of a tissue box with a length of 8.2 inches, a width of 4.3 inches and a height of 3.5 inches?

2. Directions: After showing your thinking, write your answer in the box. Include the unit of measure with your answer.

   You are building a rectangular flower box for the garden. The base is to be 3 feet long and 2 feet wide. The box needs to be 2 feet tall. There will not be a top on the box. How many square feet of wood will you need to build the box?

3. Directions: After showing your thinking, write your answer in the box. Round to the nearest tenth. Include the unit of measure with your answer.

   A glass maker is creating a cylindrical vase. The vase is 10 inches tall and the base is 4 inches at the widest part. The vase will not have a top. What is the total square inches of glass used for the vase?

4. Directions: After showing your thinking, write your answer in the box. Include the unit of measure with your answer.

   How much cereal can a box hold that is 11 inches wide, 15 inches tall and 3 inches deep?

5. Directions: After showing your thinking, write your answer in the box.

   A rectangular swimming pool is 25 feet long and 20 feet wide. The depth of the pool is 5 feet. Each 100 cubic feet of water needs $15 worth of chlorine. When the pool is full, what is the cost for chlorine?

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6. Directions: After showing your thinking, write your answer in the box. Include the unit of measure with your answer.

What is the volume of a city water tank that is 80 feet tall and has a radius of 25 feet?

7. Directions: After showing your thinking, write your answer in the box. Round to the nearest tenth. Include the unit of measure with your answer.

A canister of potato sticks is 10 inches tall and has a radius of 2 inches. The canister was filled to the top. Jake ate $\frac{1}{3}$ of the potato sticks. How many cubic inches of potato sticks are left in the canister?

8. Directions: After showing your thinking, write your answer in the box. Round to the nearest tenth. Include the unit of measure in your answer.

A can of paint has a diameter of 12 inches and is 15 inches tall. Half of the paint has already been used. How much paint is left in the can?

9. Directions: Circle your choice. You must circle all correct answers.

What is the result of multiplying the height of a rectangular prism by a scale factor of $\frac{1}{2}$?

The volume will be doubled	The volume will be decreased by $\frac{1}{2}$
The surface area will be doubled	The surface area will be decreased by $\frac{1}{2}$

Checkpoint Solutions

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 Knowledge and Skills

a. Determine if a practical problem involving a rectangular prism or cylinder represents the application of volume or surface area
b. Find the surface area of a rectangular prism
c. Solve practical problems that require finding the surface area of a rectangular prism
d. Find the surface area of a cylinder
e. Solve practical problems that require finding the surface area of a cylinder
f. Find the volume of a rectangular prism
g. Solve practical problems that require finding the volume of a rectangular prism
h. Find the volume of a cylinder
i. Solve practical problems that require finding the volume of a cylinder
j. 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
k. Describe how the surface area 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

Item	Answer/Solution	SOL/EKS Code	Essential Knowledge and Skills
1	$158.02\ in^2$	7.5ab	Find the surface area of a rectangular prism
2	$26\ ft^2$	7.5bc	Solve practical problems that require finding the surface area of a rectangular prism
3	$138.2\ in^2$	7.5be	Solve practical problems that require finding the surface area of a cylinder
4	$495\ in^3$	7.5af	Find the volume of a rectangular prism
5	$375	7.5bg	Solve practical problems that require finding the volume of a rectangular prism
6	$157{,}000\ ft^3$	7.5ah	Find the volume of a cylinder
7	$83.7\ in^3$	7.5bi	Solve practical problems that require finding the volume of a cylinder
8	$847.8\ in^3$	7.5bi	Solve practical problems that require finding the volume of a cylinder
9	The volume will be decreased by $\frac{1}{2}$	7.5cj	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