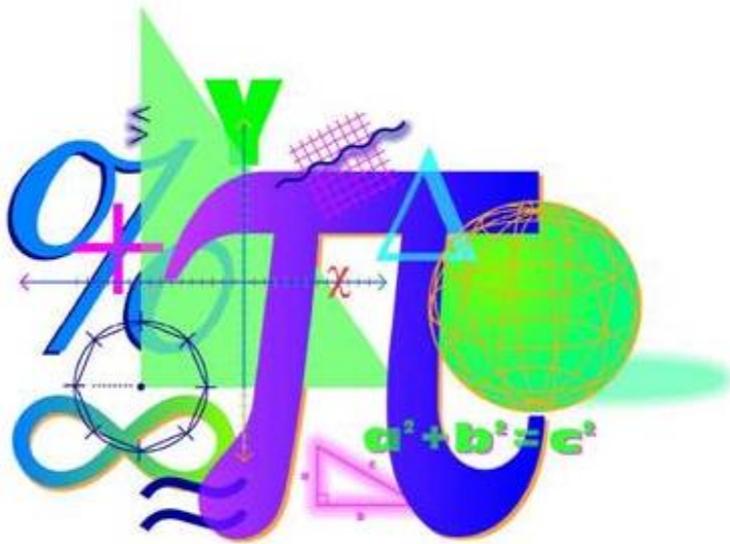# Spring 2012 Student Performance Analysis

Grade 5 Mathematics Standards of Learning

Presentation may be paused and resumed using the arrow keys or the mouse.

Identifying Prime and Composite Numbers

SOL 5.3

The student will

a) **identify and describe the characteristics of prime and composite numbers;** and

b) identify and describe the characteristics of even and odd numbers.

VIRGINIA DEPARTMENT OF
EDUCATION

Suggested Practice for SOL 5.3

Students need additional practice distinguishing between numbers that are prime or composite.

1) Which list contains only numbers that are prime?
   a) 1, 3, 5, 7, 9
   b) 1, 3, 5, 7, 11
   c) 2, 3, 5, 7, 9
   d) 2, 3, 5, 7, 11

2) Which lists contain one prime number and two composite numbers?

1, 33, 45	2, 45, 77	7, 45, 77
7, 33, 45	2, 13, 33	1, 13, 33

Suggested Practice for SOL 5.3

Students need additional practice distinguishing between numbers that are prime or composite.

3) **Select the numbers from this list that are prime.**

41, 63, 76, 83, 91, 99

4) **Exactly how many of the numbers from this list are composite?**

3̶1̶, 32, 33, 34, 35, 36, 3̶7̶, 38, 39

Seven numbers from the list are composite

Solving Practical Problems with Fractions and Mixed Numbers

SOL 5.6

The student will solve single-step and multistep practical problems involving addition and subtraction with fractions and mixed numbers and express answers in simplest form.

Suggested Practice for SOL 5.6

Students need additional practice with adding and subtracting mixed numbers and fractions in single- and multistep problems.

1) **This chart shows the amount of two different types of flour Giselle needs to make a batch of sugar cookies.**

Type of Flour	Cups of Flour
Cake	$2\frac{3}{4}$
All-Purpose	$1\frac{3}{8}$

What is the total amount of flour needed for Giselle to make her batch of cookies?

$4\frac{1}{8}$ **cups of flour**

Suggested Practice for SOL 5.6

2) Joanna worked $8\frac{1}{2}$ hours on Monday. On Tuesday, she worked $2\frac{2}{3}$ hours. What is the difference in the hours she worked on Monday and the hours she worked on Tuesday?

$5\frac{5}{6}$ hours

Suggested Practice for SOL 5.6

3) Timothy used $1\frac{1}{2}$ boxes of nails on Tuesday morning and $2\frac{7}{8}$ boxes of nails Tuesday afternoon. On Wednesday, he used 6 boxes of nails. How many more boxes of nails did Timothy use on Wednesday than on Tuesday morning and afternoon combined?

$1\frac{5}{8}$ boxes of nails

Using the Order of Operations to Simplify Numerical Expressions

SOL 5.7

The student will evaluate whole number numerical expressions, using the order of operations limited to parentheses, addition, subtraction, multiplication, and division.

Suggested Practice for SOL 5.7

Students need additional practice determining the value of an expression using the order of operations and also identifying the sequence in which expressions are simplified.

1. Use the order of operations to simplify the following expressions:

$$49 \div 7(13 - 3 \times 2) \qquad \textcolor{red}{49} \qquad 42 - 12 \div 2 + 4 \qquad \textcolor{red}{40}$$

2. Based on the order of operations, which operation should be applied first?

$$32 \div 4 + 3(11 - \boxed{3 \times 2})$$

3. Debbie will simplify this expression: $20 + 25 - 4 \times 9$
   After she completes the first step, the expression should read:

$$45 - 4 \times 9 \qquad 41 \times 9 \qquad 20 + 21 \times 9 \qquad \boxed{20 + 25 - 36}$$

Equivalent Measures Within the Metric System

SOL 5.8

The student will

a) find perimeter, area, and volume in standard units of measure;

b) differentiate among perimeter, area, and volume and identify whether the application of the concept of perimeter, area, or volume is appropriate for a given situation;

c) identify equivalent measurements within the metric system;

d) estimate and then measure to solve problems, using U.S. Customary and metric units; and

e) choose an appropriate unit of measure for a given situation involving measurement using U.S. Customary and metric units.

VIRGINIA DEPARTMENT OF
EDUCATION

Suggested Practice for SOL 5.8

Students need additional practice determining equivalent metric measures.

1) Seth ran 4.65 kilometers on Saturday. How many meters are equivalent to 4.65 kilometers?   4,650

2) 3,500 milliliters = ___3.5___ liters

Describing Quadrilaterals Using Their Characteristics

SOL 5.13

The student, using plane figures (square, rectangle, triangle, parallelogram, rhombus, and trapezoid), will

a) develop definitions of these plane figures; and

b) investigate and describe the results of combining and subdividing plane figures.

Suggested Practice for SOL 5.13

Students need additional practice using properties to name plane figures.

1) Name the quadrilaterals that have both of the following properties:

   Rectangle and Square

   - Four right angles
   - Two pairs of congruent sides

   Extension: How could the list be changed so that the figure described is a square but not a rectangle?

   Sample Answer:
   •Four right angles
   •Four sides of equal measure

Suggested Practice for SOL 5.13

2) A square is a rhombus. What properties of a rhombus are also properties of a square?

> **Sample Answer**
> •**Four sides**
> •**Opposite sides are parallel.**
> •**Opposite sides are congruent.**
> •**Opposite angles are congruent.**
> •**All four sides are of equal measure.**

3) Which two statements are true?

An acute triangle always has three acute angles.

An obtuse triangle always has three obtuse angles.

A scalene triangle always has three sides of equal length.

An equilateral triangle always has three sides of equal length.

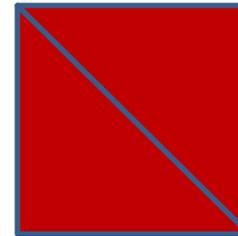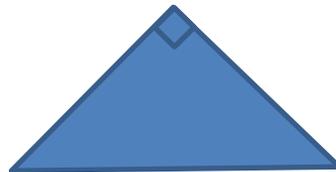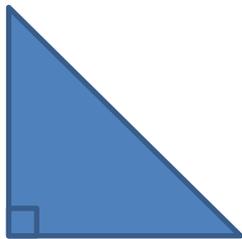An isosceles triangle always has three sides of equal length.

Suggested Practice for SOL 5.13

Students need additional practice describing the results of combined or subdivided figures.

4) What shape will result from combining the two figures side by side, with no overlap? Use the most precise name.
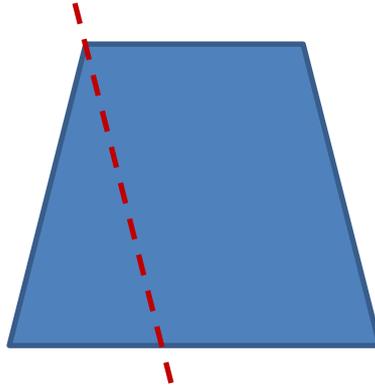
Two congruent isosceles right triangles:
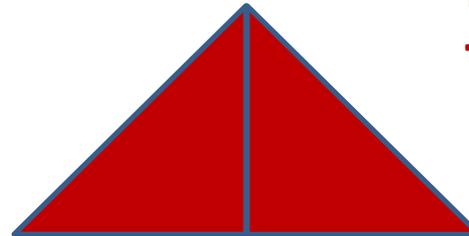
Square or Isosceles Triangle

Suggested Practice for SOL 5.13

5) Which best describes the two shapes formed when the figure is cut along the dotted line?

   a)   Triangle and a square
   b)   Triangle and a trapezoid
   c)   Triangle and a parallelogram
   d)   Trapezoid and a parallelogram

Identifying the Use of the Distributive Property

SOL 5.19

The student will investigate and recognize the distributive property of multiplication over addition.

Suggested Practice for SOL 5.19

Students need additional practice recognizing the application and result of the distributive property.

Which equations show the use of the distributive property?

2 (5 + 3)= (2 x 5) + (2 x 3)

(5 x 4) x 9 = 5 x (4 x 9)

(6 + 2) + 4 = 6 + (2 + 4)

3 x 5 x 7= 7 x 3 x 5

7 + 6 + 1= 6 + 7 + 1

(9 x 8) + (9 x 3) = 9 (8 + 3)

Practice Items

This concludes the student performance information for the spring 2012 Grade 5 Mathematics SOL test.

Additionally, test preparation practice items for Grade 5 Mathematics can be found on the Virginia Department of Education Web site at:

http://www.doe.virginia.gov/testing/sol/practice_items/index.shtml#math

VIRGINIA DEPARTMENT OF
EDUCATION