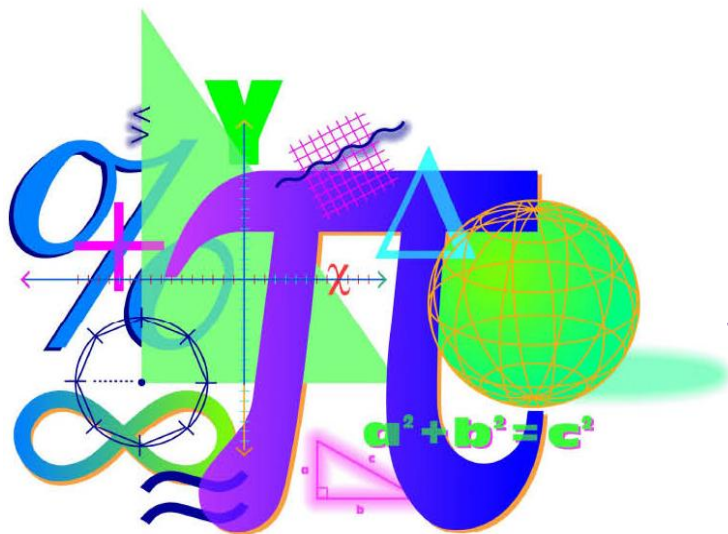


# Spring 2012 Student Performance Analysis



## Grade 3 Mathematics Standards of Learning

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

# Using Symbols to Compare Unlike Fractions

## SOL 3.3

The student will

- a) name and write fractions (including mixed numbers) represented by a model;
- b) model fractions (including mixed numbers) and write the fractions' names; and
- c) compare fractions having like and unlike denominators, using words and symbols ( $>$ ,  $<$ , or  $=$ ).

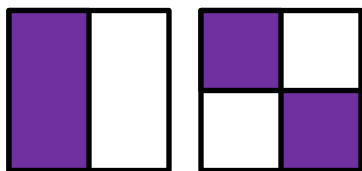
## Suggested Practice for SOL 3.3

Students need additional practice comparing fractions with unlike denominators using the symbols  $<$ ,  $>$ , and  $=$ .

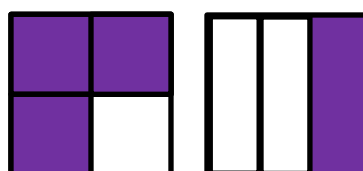
## Suggested Practice for SOL 3.3

Which of these correctly compares the fractions represented by the shaded regions in each model? Select all that are correct.

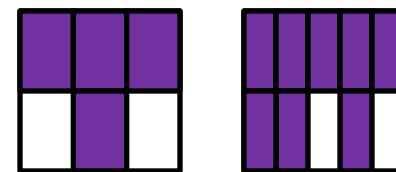
For every model, this represents one whole:



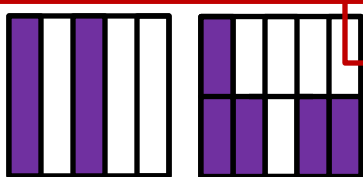
$$\frac{1}{2} > \frac{2}{4}$$



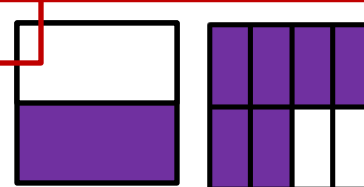
$$\frac{3}{4} > \frac{1}{3}$$



$$\frac{4}{6} = \frac{8}{10}$$



$$\frac{2}{5} < \frac{5}{10}$$



$$\frac{1}{2} < \frac{6}{8}$$

# Solving Problems Using Whole Number Addition or Subtraction

## SOL 3.4

The student will estimate solutions to and **solve single-step and multistep problems involving the sum or difference of two whole numbers**, each 9,999 or less, with or without regrouping.

## Suggested Practice for SOL 3.4

Students need additional practice solving single-step and multistep problems using addition or subtraction with whole numbers.

This table shows the number of books that students checked out and returned at the school library on three days.

Day	Number of Books Checked Out	Number of Books Returned
Tuesday	247	223
Wednesday	118	136
Thursday	204	198

- a) Exactly how many more books were checked out on Tuesday and Wednesday combined than returned on those same two days? **6**
- b) Exactly how many more books were returned on Tuesday and Wednesday combined than on Thursday? **161**
- c) About how many more books were checked out on Wednesday and Thursday combined than on Tuesday? **Depending on the strategy used, answers will vary. Sample answers: 50 books, 70 books, 100 books**



# Solving Multiplication Problems

## SOL 3.6

The student will represent multiplication and division, using area, set, and number line models, and create and **solve problems that involve multiplication** of two whole numbers, one factor 99 or less and the second factor 5 or less.



## Suggested Practice for SOL 3.6

Students need additional practice solving multiplication problems presented in a practical situation.

This table has information about the classes and students at a school.

Grade Level	Number of Classes	Number of Students in each Class
3	5	22
4	5	25
5	4	27

- 1) How many students are in grade 3? **110**
- 2) What is the total number of students in grade 5? **108**



## Suggested Practice for SOL 3.6

- 3) A bookcase has 5 shelves. Each shelf holds exactly 38 reading books. How many of these reading books will the bookcase hold in all?

**190**

- 4) A hotel has vans to transport its guests to the airport. Exactly 1 driver and 14 guests can ride in each van at the same time. How many guests can ride in 4 vans?

**56 guests**

# Subtracting Fractions with Like Denominators

## SOL 3.7

The student will add and **subtract proper fractions** having like denominators of 12 or less.

# Suggested Practice for SOL 3.7

Students need additional practice finding the difference between fractions less than one when models are given.

This model is shaded to represent one whole.



These two models are each shaded to represent a fraction.

Model A



Model B



Which model is shaded to show the difference between Model A and Model B?

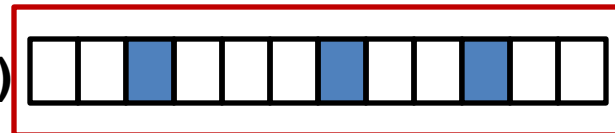
a)



b)



c)



d)



# Counting Money

## SOL 3.8

The student will determine, by counting, the value of a collection of bills and coins whose total is \$5.00 or less, compare the value of the bills and coins, and **make change**.

## Suggested Practice for SOL 3.8

Students need additional practice making change in practical situations.

Sarah bought apples for \$3.40. She gave the clerk a \$5.00 bill. Which set of money shows the change Sarah should receive from the clerk?

a)



c)



b)



d)



# Measuring to Find Perimeter

## SOL 3.10

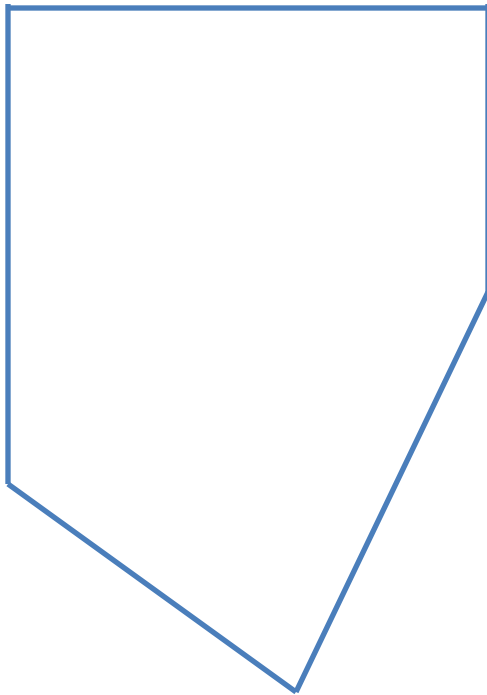
The student will

- a) **measure the distance around a polygon in order to determine perimeter; and**
- b) **count the number of square units needed to cover a given surface in order to determine area.**

## Suggested Practice for SOL 3.10

Students need additional practice determining perimeter of irregular polygons.

1) Use the inch ruler to find the perimeter of this figure.

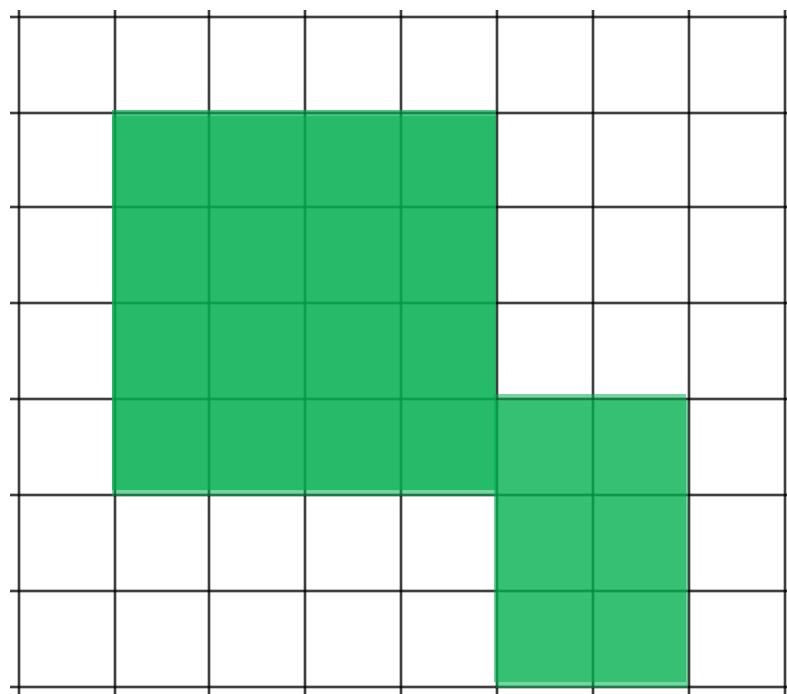


The perimeter of this figure will vary depending upon the printed size of this slide.

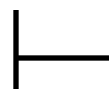


## Suggested Practice for SOL 3.10

2) What is the perimeter of the shaded figure?



Key



1 unit

**The perimeter is 24 units.**





# Telling Time on Analog Clocks

## SOL 3.11

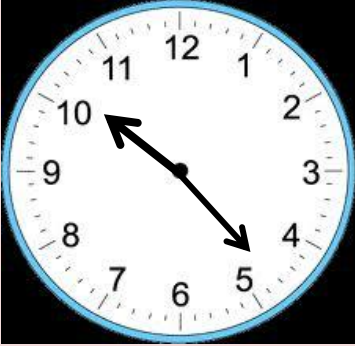
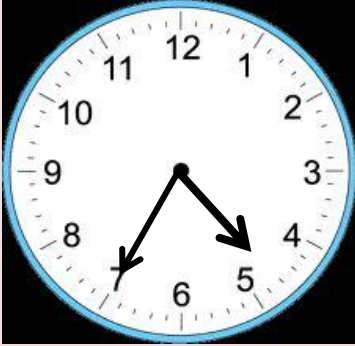
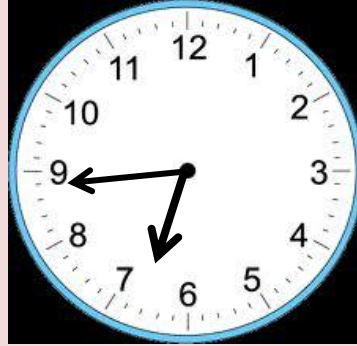

The student will

- a) tell time to the nearest minute, using analog and digital clocks; and
- b) determine elapsed time in one-hour increments over a 12-hour period.

# Suggested Practice for SOL 3.11

Students need additional practice telling time to the nearest minute using an analog clock.

Circle the time that is shown on each clock.

 <p>4:51 <b>10:23</b></p>	 <p><b>4:35</b> 7:23</p>	 <p><b>6:44</b> 9:38</p>	 <p><b>11:57</b> 12:57</p>
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## Suggested Practice for SOL 3.11

Students need additional practice determining elapsed time.

Aaron watched television for 2 hours. He stopped watching television at 8:00 p.m. What time did Aaron start watching television?

**6:00 p.m.**

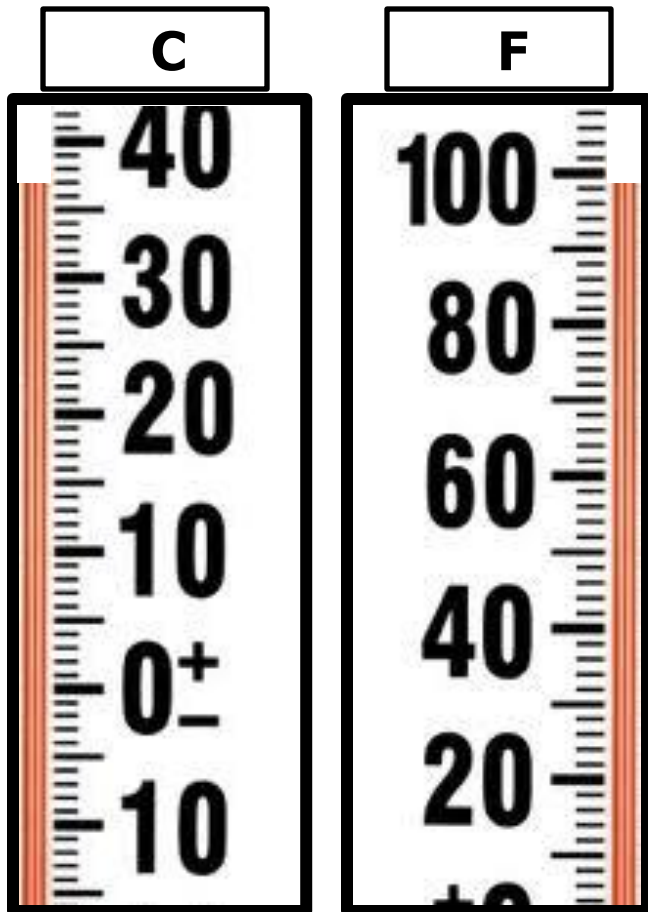
# Reading Temperatures

## SOL 3.13

The student will **read temperature to the nearest degree** from a Celsius thermometer and a Fahrenheit thermometer. Real thermometers and physical models of thermometers will be used.

## Suggested Practice for SOL 3.13

Students need additional practice reading thermometers with scales having intervals greater than one.



Part of two thermometers are shown. The labels on top of the thermometers indicate if the temperature shown is in degrees Celsius or degrees Fahrenheit.

What are the temperatures shown on these thermometers?

37 °C and 98 °F

# Analyzing Data Represented in Graphs

## SOL 3.17





The student will

- a) collect and organize data, using observations, measurements, surveys, or experiments;
- b) construct a line plot, a picture graph, or a bar graph to represent the data; and
- c) read and interpret the data represented in line plots, bar graphs, and picture graphs and write a sentence analyzing the data.

## Suggested Practice for SOL 3.17

Students need additional practice reading and interpreting information presented in graphs.

This graph represents the number of points scored by a basketball team on three days.

Points Scored	
Tuesday	
Thursday	
Saturday	
Key:	Each  represents 2 points.

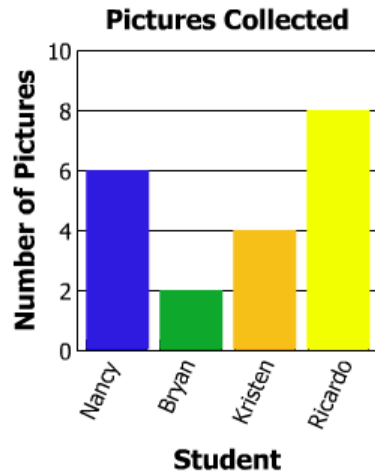
- 1) According to the graph, what was the difference in the number of points scored on Tuesday and Thursday combined when compared to the points scored on Saturday? **11 points**
- 2) If the team had scored 24 points on Tuesday, how would you change the graph to show this number of points?

**One whole orange circle and one half orange circle would be added to the row representing points scored on Tuesday.**



# Suggested Practice for SOL 3.17

The graph shows the number of pictures collected by each of four students. Based on the graph, select all statements that are true.



Nancy collected more pictures than Bryan and Kristen combined.

**Ricardo collected the most pictures.**

**Ricardo collected more pictures than Bryan and Kristen combined.**

Nancy collected 2 more pictures than Bryan.

**The four students collected a total of 20 pictures.**





# Determining Possible Outcomes

## SOL 3.18

The student will investigate and describe the concept of probability as chance and **list possible results of a given situation.**

## Suggested Practice for SOL 3.18

This table shows the flavors and shapes of animal crackers in a bowl.

Flavors of the Animal Crackers	Shapes of the Animal Crackers
Chocolate	Monkey
Vanilla	Lion
	Bear

Make a list to show all the possible flavor and shape choices for one animal cracker.



# Suggested Practice for SOL 3.18

(continued)

Flavors of Animal Crackers	Shapes of the Animal Crackers
Chocolate	Monkey
Vanilla	Lion
	Bear

**Make a list to show all the possible flavor and shape choices for one cracker.**

Chocolate Monkey

Chocolate Lion

Chocolate Bear

Vanilla Monkey

Vanilla Lion

Vanilla Bear



# Extending Patterns

## SOL 3.19

The student will recognize and describe a variety of patterns formed **using numbers**, tables, and pictures, and **extend the patterns**, using the same or different forms.

## Suggested Practice for SOL 3.19

Students need additional practice extending arithmetic patterns that grow quickly.

Each table has a number pattern. For each table, fill in the missing number and describe the rule.

1)

12	37	62	87	112	137	162
----	----	----	----	-----	-----	-----

The rule for this pattern is + 25.

2)

1	2	4	7	11	16	22	29
---	---	---	---	----	----	----	----

The rule for this pattern is + 1, + 2, + 3, + 4, + 5....

# Identifying Properties

## SOL 3.20

The student will

- a) investigate the identity and the commutative properties for addition and multiplication; and
- b) identify examples of the identity and commutative properties for addition and multiplication.

## Suggested Practice for SOL 3.20

Students need additional practice identifying and applying the identity and commutative properties.

Which number sentence shows the commutative property of addition?

- a)  $25 + 7 = 7 + 25$
- b)  $15 + 1 = 16$
- c)  $11 = 0 + 11$
- d)  $8 + 9 = 10 + 7$

Which number sentence shows the identity property of multiplication?

- a)  $2 \times 12 = 12 \times 2$
- b)  $8 \times 0 = 0$
- c)  $2 \times 6 = 3 \times 4$
- d)  $45 \times 1 = 45$

# Practice Items

This concludes the student performance information for the spring 2012 Grade 3 Mathematics SOL test.

Additionally, test preparation practice items for Grade 3 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](http://www.doe.virginia.gov/testing/sol/practice_items/index.shtml#math)