

Grade 2 Mathematics Curriculum Guide

King George County Schools

2011

<p>Standard</p>	<p>MATH 2.1</p> <p>The student will</p> <p>a) read, write, and identify the place value of each digit in a three-digit numeral, using numeration models.</p> <p>b) round two-digit numbers to the nearest ten.</p> <p>c) compare two whole numbers between 0 and 999, using symbols ($>$, $<$, or $=$) and words (<i>greater than</i>, <i>less than</i>, or <i>equal to</i>).</p> <p>Timeframe: 2.1a- 4 days, 2.1c- 5 days Q1 1 day – 2.1 a spiraling</p>	<p>Essential Understandings</p> <p>All students should</p> <ul style="list-style-type: none"> • Understand the ten-to-one relationship of ones, tens, and hundreds (10 ones equals 1 ten; 10 tens equals 1 hundred). • Understand that numbers are written to show how many hundreds, tens, and ones are in the number. • Understand that rounding gives a close, easy-to-use number to use when an exact number is not needed for the situation at hand. • Understand that a knowledge of place value is essential when comparing numbers. • Understand the relative magnitude of numbers by comparing numbers.
<p>Strand</p>	<p>Number and Number Sense</p>	
<p>Essential Knowledge and Skills</p>	<p>a) Demonstrate the understanding of the ten-to-one relationships among ones, tens, and hundreds, using manipulatives (e.g., beans and cups, Base-10 blocks, bundles of 10 sticks).</p> <p>b) Determine the place value of each digit in a three-digit numeral presented as a pictorial representation (e.g., a picture of Base-10 blocks) or as a physical representation (e.g., actual Base-10 blocks).</p> <p>c) Write numerals, using a Base-10 model or picture.</p> <p>d) Read three-digit numbers when shown a numeral, a Base-10 model of the number, or a pictorial representation of the number.</p> <p>e) Identify the place value (ones, tens, hundreds) of each digit in a three-digit numeral.</p> <p>f) Determine the value of each digit in a three-digit numeral (e.g., in 352, the 5 represents 5 tens and its value is 50).</p> <p>g) Round two-digit numbers to the nearest ten.</p> <p>h) Compare two numbers between 0 and 999 represented pictorially or with concrete objects (e.g., Base-10 blocks), using the words <i>greater than</i>, <i>less than</i> or <i>equal to</i>.</p>	<p>Teacher Notes</p> <ul style="list-style-type: none"> • The number system is based on a simple pattern of tens where each place has ten times the value of the place to its right. • Opportunities to experience the relationships among hundreds, tens, and ones through hands-on experiences with manipulatives are essential to developing the ten-to-one place value concept of our number system and to understanding the value of each digit in a three-digit number. Ten-to-one trading activities with manipulatives on place value mats provide excellent experiences for developing the understanding of the places in the Base-10 system.

	Resource Materials	Released Test Items	Individual Teacher Notes
Resources	<p>Envision Math</p> <ul style="list-style-type: none"> • Topic 4 <p>Enhanced Scope and Sequence Plus</p> <p>www.ttaonline.com</p> <ul style="list-style-type: none"> • Three-Digit Place Value (2.1 a c) • Race to 100 (2.1 a c) • Two-Digit Addition Using Cafeteria Lunches (2.1 b) <p>5 A Day (located on the share drive)</p>	<p>Gr. 3 2002-1 (2.1 c) John made a number with the blocks below. (2538) Sonya used the same blocks to make a number LESS THAN John's number. Which could be the number Sonya made?</p> <p>Gr. 3 2004-1 (2.1 a) Which digit of this number is in the hundreds place? 5, 769</p> <p>Gr. 3 2004-7 (2.1 b) There are 274 people on the place shown below. What is 274 rounded to the nearest hundred?</p> <p>Gr. 3 2004-8 (2.1 c) Which of the following is a true statement? (using > signs)</p> <p>Gr. 3 2005-1 (2.1 a) Last month, 104,629 people went to the circus. What is the value of the 6 in 104,629?</p> <p>Gr. 3 2005-2 (2.1 b) Ellen counted 66 railroad cars in a train. What is 66 rounded to the nearest ten?</p>	<ul style="list-style-type: none"> • Models that clearly illustrate the relationships among hundreds, tens, and ones are physically proportional (e.g., the tens piece is ten times larger than the ones piece). • Students need to understand that 10 and 100 are special units of numbers (e.g., 10 is 10 ones, but it is also 1 ten). • Flexibility in thinking about numbers is critical. For example, 123 is 123 ones; or 1 hundred, 2 tens, and 3 ones; or 12 tens and 3 ones. • Rounding is finding the nearest easy-to-use number (e.g., the nearest 10) for the situation at hand. • Number lines are useful tools for developing the concept of rounding to the nearest ten. Rounding to the nearest ten using a number line is done as follows: <ul style="list-style-type: none"> - Locate the number on the number line. - Identify the two tens the number comes between. - Determine the closest ten. - If the number in the ones place is 5 (halfway between the two tens), round the number to the higher ten. • Once the concept for rounding numbers using a number line is developed, the procedure for rounding numbers to the nearest ten is as follows: <ul style="list-style-type: none"> - Look one place to the right of the digit in the place you wish to round to. - If the digit is less than 5, leave the digit in the rounding place as it is, and change the digit to the right of the rounding place to zero. - If the digit is 5 or greater, add 1 to the digit in the rounding place, and change the digit to the right of the rounding place to zero. • A procedure for comparing two numbers by examining place value may include the following: <ul style="list-style-type: none"> - Line up the numbers by place value lining up the ones. - Beginning at the left, find the first place value where

		<p>Gr. 3 2005-3 (2.1 c) Which is true? 3,893 is greater than 3.793</p> <p>Gr. 3 2010-5 (2.1 a & b) Fred's Nature Store sold 2,046 pounds of birdseed last month. What is 2,046 rounded to the nearest hundred?</p> <p>Gr. 3 2010-5 (2.1 a & b) A video store has 1,328 videos that can be rented. What is 1,328 rounded to the nearest ten?</p> <p>Gr. 3 2010-7 (2.1 c) Which is true? (using > signs)</p>		<p>the digits are different.</p> <ul style="list-style-type: none"> - Compare the digits in this place value to determine which number is greater (or which is less). - Use the appropriate symbol > or < or words <i>greater than</i> or <i>less than</i> to compare the numbers in the order in which they are presented. - If both numbers are the same, use the symbol = or the words <i>equal to</i>. <ul style="list-style-type: none"> • Mathematical symbols (>, <) used to compare two unequal numbers are called <i>inequality symbols</i>.
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Essential New Vocabulary

- digit
- number
- numeral
- number line (number lines)
- place value
- one (ones)
- ten (tens)
- hundred (hundreds)
- nearest number
- round (rounding)
- estimate
- $< > =$
- Compare
- equal to
- greater than
- less than
- inequality symbols

Released Test Items

Gr. 3. 2004-7 (2.1 b)

What is 274 rounded to the nearest hundred?

- A 200
- B 270
- C 280
- D 300

Gr. 3 2010-7 (2.1 c)

7 Which is true?

- A $4,589 > 4,708$
- B $4,389 > 4,708$
- C $4,709 > 4,708$
- D $4,609 > 4,708$

Gr. 3 2004-1 (2.1 a)

1 Which digit of this number is in the hundreds place?

5,769

- A 5
- B 6
- C 7
- D 9

Standard	MATH 2.2			Essential Understandings All students should use ordinal numbers to describe the position of an object in a sequence or set. Teacher Notes <ul style="list-style-type: none"> Understanding the cardinal and ordinal meanings of numbers are necessary to quantify, measure, and identify the order of objects. An ordinal number is a number that names the place or position of an object in a sequence or set (e.g., first, third). <i>Ordered position, ordinal position, and ordinality</i> are terms that refer to the place or position of an object in a sequence or set. The ordinal position is determined by where one starts in an ordered set of objects or sequence of objects (e.g., left, right, top, bottom). The ordinal meaning of numbers is developed by identifying and verbalizing the place or position of objects in a set or sequence (e.g., a student's position in line when students are lined up alphabetically by first name). Ordinal position can also be emphasized through sequencing events (e.g., months in a year or sequencing in a story). Cardinality can be compared with ordinality when comparing the results of counting. There is obvious similarity between the ordinal number words <i>third</i> through <i>twentieth</i> and the cardinal number words <i>three</i> through <i>twenty</i>.
	The student will a) identify the ordinal positions first through twentieth, using an ordered set of objects b) write the ordinal numbers. Timeframe: 5 days Q1			
Strand	Number and Number Sense			
Essential Knowledge and Skills	a) Count an ordered set of objects, using the ordinal number words <i>first</i> through <i>twentieth</i> . b) Identify the ordinal positions first through twentieth, using an ordered set of objects. c) Identify the ordinal positions first through twentieth, using an ordered set of objects presented in lines or rows from <ul style="list-style-type: none"> left to right right to left top to bottom bottom to top. d) Write 1 st , 2 nd , 3 rd , through 20 th in numerals.			
Resources	Resource Materials	Released Test Items	Individual Teacher Notes	
	Envision Math <ul style="list-style-type: none"> Topic 4 Enhanced Scope and Sequence Plus www.ttaonline.com <ul style="list-style-type: none"> Ordinals 	Gr. 3 2004 - 5 Gr. 3 2004-6 (2.2 a) Gr. 3 2002 - 5, 12 Gr. 3 2009 – 10 Gr. 3 2010 – 13		

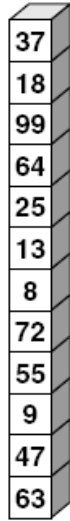
	5 A Day (located on the share drive)			
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Essential New Vocabulary

- first through twentieth
- ordered position
- ordinal position
- ordinality
- cardinality (one, two, etc.)
- left to right
- right to left
- top to bottom
- bottom to top

Gr. 3 2004-6 (2.2 a)

6

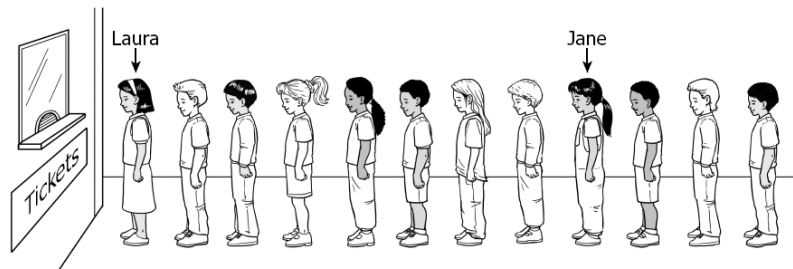


What number is on the block that is 11th from the bottom?

- F 64
- G 18
- H 99
- J 37

Gr. 3 2010 - 13

13 Jane is standing in line to buy tickets for a play. Laura is first in line, as shown.



What is Jane's position in this line?

- A 12th
- B 10th
- C 9th
- D 8th

5



Who is 14th in line from the pony?



A



C



B



D

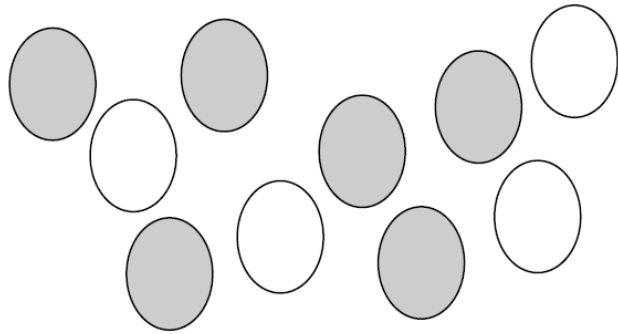
<p>Standard</p>	<p>MATH 2.3</p> <p>The student will</p> <p>a) identify the parts of a set and/or region that represent fractions for halves, thirds, fourths, sixths, eighths, and tenths</p> <p>b) write the fractions</p> <p>c) compare the unit fractions for halves, thirds, fourths, sixths, eighths, and tenths.</p> <p>Timeframe:</p> <p>2.3 a-d 6 days Q2</p> <p>2.3 a-d spiraling 1 day Q4</p> <p>2.3e 4 days Q4</p>	<p>Essential Understandings</p> <p>All students should</p> <ul style="list-style-type: none"> • Understand that fractional parts are equal shares of a whole or a whole set. • Understand that the fraction name (<i>half, fourth</i>) tells the number of equal parts in the whole. • Understand that when working with unit fractions, the larger the denominator, the smaller the part and therefore the smaller the fraction. <p>Teacher Notes</p>
<p>Strand</p>	<p>Number and Number Sense</p>	<ul style="list-style-type: none"> • The whole should be defined.
<p>Essential Knowledge and Skills</p>	<p>a) Recognize fractions as representing equal-size parts of a whole.</p> <p>b) Identify the fractional parts of a whole or a set for $\frac{2}{2}, \frac{2}{3}, \frac{3}{4}, \frac{2}{6}, \frac{7}{8}, \frac{7}{10}$, etc.</p> <p>c) Identify the fraction names (halves, thirds, fourths, sixths, eighths, tenths) for the fraction notations $\frac{2}{2}, \frac{2}{3}, \frac{3}{4}, \frac{2}{6}, \frac{7}{8}, \frac{7}{10}$, etc.</p> <p>d) Represent fractional parts of a whole for halves, thirds, fourths, sixths, eighths, tenths using</p> <ul style="list-style-type: none"> – region/area models (e.g., pie pieces, pattern blocks, geoboards) – sets (e.g., chips, counters, cubes) – measurement models (e.g., fraction strips, rods, connecting cubes). <p>e) Compare unit fractions ($\frac{1}{2}, \frac{1}{3}, \frac{1}{4}, \frac{1}{6}, \frac{1}{8},$ and $\frac{1}{10}$) using the words <i>greater than, less than</i> or <i>equal to</i> and the symbols ($>, <, =$).</p>	<ul style="list-style-type: none"> • A fraction is a way of representing part of a whole (as in a region/area model) or part of a group (as in a set model). • In each fraction model, the parts must be equal (i.e., each pie piece must have the same area; the size of each chip in a set must be equal). In problems with fractions, a whole is broken into equal-size parts and reassembled into one whole. • Students should have experiences dividing a whole into additional parts. As the whole is divided into more parts, students understand that each part becomes smaller. • The denominator tells how many equal parts are in the whole or set. The numerator tells how many of those parts are being described. • Students should have opportunities to make connections among fraction representations by connecting concrete or pictorial representations with spoken or symbolic representations.

	Resource Materials	Released Test Items	Individual Teacher Notes
<p>Resources</p>	<p>Envision Math</p> <ul style="list-style-type: none"> • Topic 12 <p>5 A Day (located on the share drive)</p> <p>Enhanced Scope and Sequence Plus</p> <p>www.ttaonline.com</p> <ul style="list-style-type: none"> • Don't Answer the Door! • Fraction Fish 	<p>Gr. 3 2004-4 (2.3 a) Which necklace has $\frac{5}{8}$ of the beads with stars showing?</p> <p>Gr. 3 2004-10 Mary will put vanilla ice cream into exactly $\frac{1}{10}$ of the group of cones shown below. Into how many cones will she put vanilla ice cream?</p> <p>Gr. 3 2004-13 In which group do exactly $\frac{4}{5}$ of the beach balls have stars on them?</p> <p>Gr. 3 2005-5 What fraction of the circles is shaded?</p> <p>Gr. 3 2005-7 Which group shows $\frac{3}{4}$ of the dogs with spots?</p> <p>Gr. 2005-9 Which figure has LESS THAN $\frac{1}{2}$ shaded?</p> <p>Gr. 3 2005-13 Nancy will decorate exactly $\frac{1}{2}$ of the eggs below. Which of the following groups</p>	<ul style="list-style-type: none"> • Informal, integrated experiences with fractions at this level will help students develop a foundation for deeper learning at later grades. Understanding the language of fractions (e.g., <i>thirds</i> means “three equal parts of a whole” or $\frac{1}{3}$ represents one of three equal-size parts when a pizza is shared among three students) will further this development. • A unit fraction is one in which the numerator is one. • Using models when comparing unit fractions will assist in developing the concept that the larger the denominator the smaller the piece; therefore, $\frac{1}{3} > \frac{1}{4}$. <p>Essential New Vocabulary</p> <ul style="list-style-type: none"> • greater than • less than • equal to • $>$, $<$, or $=$ • inequality symbols • whole • fraction • part • denominator • numerator

		<p>shows how many of the eggs she will decorate?</p> <p>Gr. 3 2007-5 This model is shaded to show a fraction of a whole. Which of the following is shaded to show a fraction with a value GREATER THAN the one above?</p> <p>Gr. 3 2007-11 What fraction of the group of T-shirts is striped?</p> <p>Gr. 3 2010 – 4 Look at this set of shapes. What fraction of this set is shaded?</p> <p>Gr.3 2010 – 6 In which group are EXACTLY $\frac{3}{8}$ of the cabinet doors open?</p>		<ul style="list-style-type: none"> • unit fraction • equal • unequal • parts • region • set • shaded • not shaded • half (halves) • thirds • fourths • sixths • eighths • tenths
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Released Test Items

4 Look at this set of shapes.



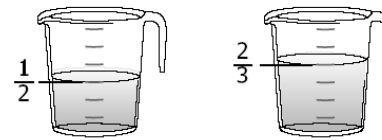
F $\frac{4}{10}$

G $\frac{4}{6}$

H $\frac{6}{10}$

J $\frac{6}{4}$

11 The picture below shows how much milk was poured into two measuring cups.



Which statement is true?

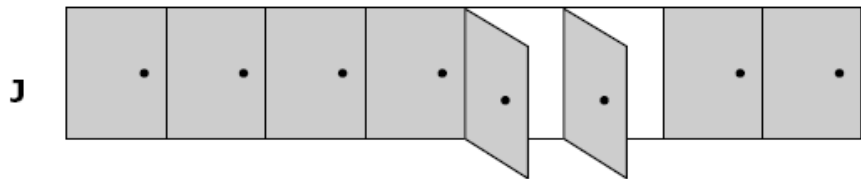
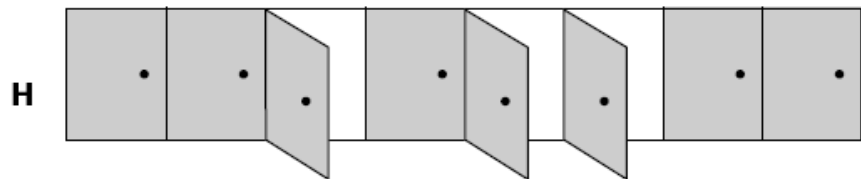
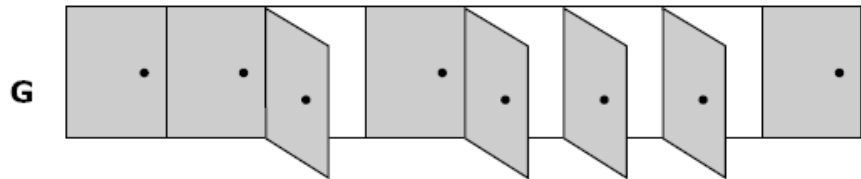
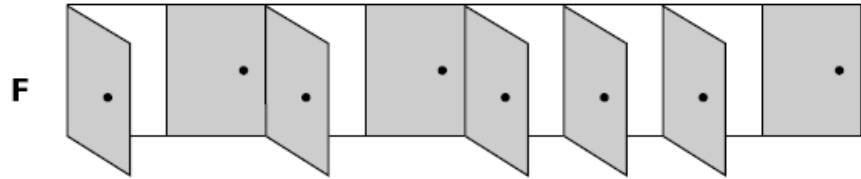
A $\frac{1}{2} < \frac{2}{3}$

B $\frac{1}{2} > \frac{2}{3}$

C $\frac{1}{2} = \frac{2}{3}$

D $\frac{1}{2} < \frac{1}{3}$

6 In which group are EXACTLY $\frac{3}{8}$ of the cabinet doors open?



Standard	MATH 2.4 The student will a) count forward by twos, fives, and tens to 100, starting at various multiples of 2, 5, or 10; b) count backward by tens from 100; and c) recognize even and odd numbers. Timeframe: 4 days, 1 day spiraling Q1 1 day (spiral) Q3			Essential Understandings All students should <ul style="list-style-type: none"> • Understand that collections of objects can be grouped and skip counting can be used to count the collection. • Describe patterns in skip counting and use those patterns to predict the next number in the counting sequence. • Understand that the starting point for skip counting by 2 does not always begin at 2. • Understand that the starting point for skip counting by 5 does not always begin at 5. • Understand that the starting point for skip counting by 10 does not always begin at 10. • Understand that every counting number is either even or odd. Teacher Notes <ul style="list-style-type: none"> • The patterns developed as a result of grouping and/or skip counting are precursors for recognizing numeric patterns, functional relationships, and concepts underlying money, time telling, multiplication, and division. Powerful models for developing these concepts include counters, hundred chart, and calculators. • Skip counting by twos supports the development of the concept of even numbers. • Skip counting by fives lays the foundation for reading a clock effectively and telling time to the nearest five minutes, counting money, and developing the multiplication facts for five.
	Strand	Number and Number Sense		
Essential Knowledge and Skills	a) Determine patterns created by counting by twos, fives, and tens on a hundred chart. b) Skip count by twos, fives, and tens to 100, using manipulatives, a hundred chart, mental mathematics, a calculator, and/or paper and pencil. c) Skip count by twos, fives, and tens to 100. d) Count backward by tens from 100. e) Use objects to determine whether a number is odd or even.			
Resources	Resource Materials	Released Test Items	Individual Teacher Notes	
	Envision Math <ul style="list-style-type: none"> • Topic 4 Enhanced Scope and Sequence Plus www.ttaonline.com	Gr. 3 2002 – 11 (2.4 a) Gr. 3 2004-3 (2.4 c) Gr. 3 2007-6 (2.4 e)		

	<ul style="list-style-type: none"> • Estimation Jar (2.4 a c) • Magic Number Machine (2.4 a) <p>5 A Day (located on the share drive)</p>			<ul style="list-style-type: none"> • Skip counting by tens is a precursor for use of place value, addition, counting money, and multiplying by multiples of 10. • Calculators can be used to display the numeric patterns resulting from skip counting. Use the constant feature of the four-function calculator to display the numbers in the sequence when skip counting by that constant. • Odd and even numbers can be explored in different ways (e.g., dividing collections of objects into two equal groups or pairing objects).
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Essential New Vocabulary

- count forward
- twos
- fives
- tens
- count backward
- skip counting
- odd numbers
- even numbers
- group
- multiples
- pattern
- hundred chart

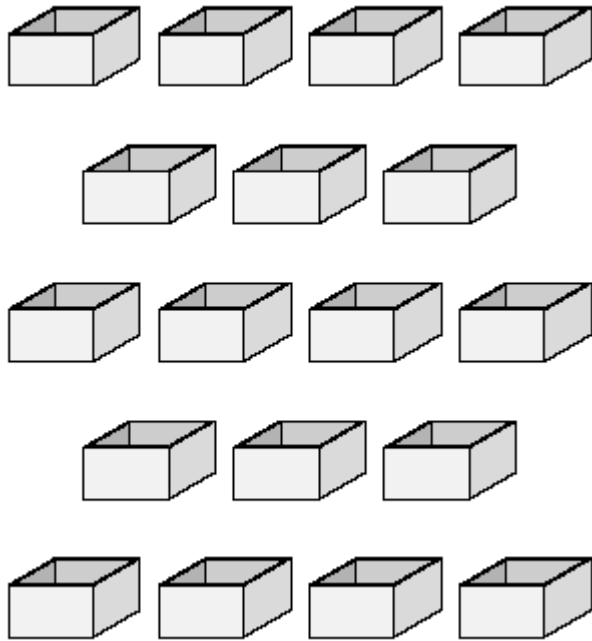
3 There are 5 pennies in each stack shown below.



How many pennies are there in all?

- A 90
- B 85
- C 80
- D 18

11

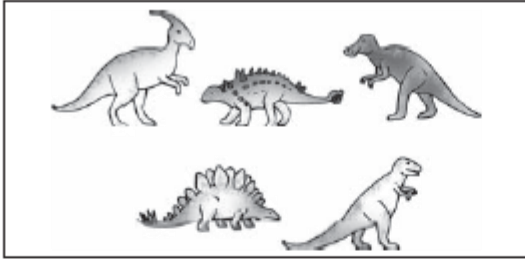


Ben put 5 cookies in each box for the bake sale. How many cookies did he use in all?

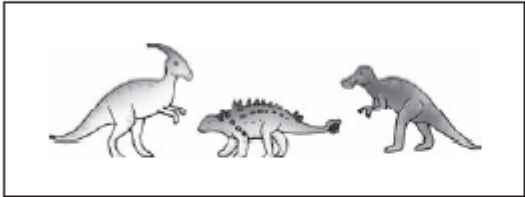
- A 18
- B 45
- C 90
- D 95

6 In which picture is there an even number of dinosaurs?

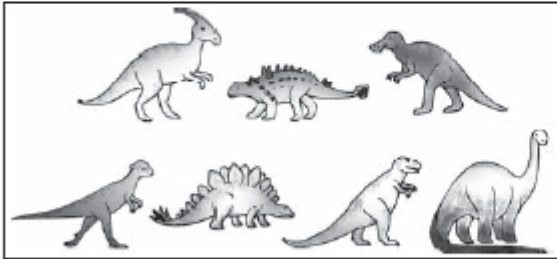
F



G



H



J



Standard	MATH 2.5 The student will recall addition facts with sums to 20 or less and the corresponding subtraction facts. Timeframe: 7 days Q1 1 day spiraling Q1 1 day spiraling Q2			Essential Understandings All students should <ul style="list-style-type: none"> • Understand that addition involves combining and subtraction involves separating. • Develop fluency in recalling facts for addition and subtraction. Teacher Notes See next page for notes.
Strand	Computation and Estimation			
Essential Knowledge and Skills	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to recall and write the basic addition facts for sums to 20 or less and the corresponding subtraction facts, when addition or subtraction problems are presented in either horizontal or vertical written format.			
Resources	Resource Materials	Released Test Items	Individual Teacher Notes	
	Envision Math <ul style="list-style-type: none"> • Topic 1, 2, 3 Enhanced Scope and Sequence Plus www.ttaonline.com <ul style="list-style-type: none"> • Fact Family Patterns 5 A Day (located on the share drive)	See below		

Teacher Notes

- Associate the terms *addition*, *adding*, and *sum* with the concept of joining or combining.
- Associate the terms *subtraction*, *subtracting*, *minus*, and *difference* with the process of “taking away” or separating (i.e., removing a set of objects from the given set of objects, finding the difference between two numbers, or comparing two numbers).
- Provide practice in the use and selection of strategies. Encourage students to develop efficient strategies. Examples of strategies for developing the basic addition and subtraction facts include
 - counting on
 - counting back
 - “one-more-than,” “two-more-than” facts
 - “one-less-than,” “two-less-than” facts
 - “doubles” to recall addition facts (e.g., $2 + 2 = \underline{\quad}$; $3 + 3 = \underline{\quad}$)
 - “near doubles” [e.g., $3 + 4 = (3 + 3) + 1 = \underline{\quad}$]
 - “make-ten” facts (e.g., at least one addend of 8 or 9)
 - “think addition for subtraction,” (e.g., for $9 - 5 = \underline{\quad}$, think “5 and what number makes 9?”)
 - use of the commutative property, without naming the property (e.g., $4 + 3$ is the same as $3 + 4$)
 - use of related facts (e.g., $4 + 3 = 7$, $3 + 4 = 7$, $7 - 4 = 3$, and $7 - 3 = 4$)
 - use of the additive identity property (e.g., $4 + 0 = 4$), without naming the property but saying, “When you add zero to a number, you always get the original number.”
- Manipulatives should be used initially to develop an understanding of addition and subtraction facts and to engage students in meaningful memorization.
- Rote recall of the facts is often achieved through constant practice and may come from a variety of formats, including presentation through counting on, related facts, flash cards, practice sheets, and/or games.

Essential New Vocabulary

- addend
- addition
- addition fact
- altogether

- left
- less than
- minus
- more than

- combining
- count on/back
- difference
- doubles
- equals
- fact families
- fewer
- greater
- in all
- inverse operations
- joining

- plus
- related fact
- number sentence
- separating
- subtracting
- subtraction
- subtraction fact
- sum
- taking away
- total

Grade 3- 2010

3 Which number sentence can be completed by using the basic fact sentence $17 - 8 = 9$?

A $17 + 8 = \underline{\quad}$

B $17 + 9 = \underline{\quad}$

C $9 + 8 = \underline{\quad}$

D $9 - 8 = \underline{\quad}$

<p>Standard</p>	<p>MATH 2.6</p> <p>The student, given two whole numbers whose sum is 99 or less, will</p> <p>a) estimate the sum b) find the sum, using various methods of calculation.</p> <p>Timeframe: 5 days no regrouping Q2 1 day spiraling no regrouping Q3 4 days regrouping Q3</p>			<p>Essential Understandings</p> <p>All students should</p> <ul style="list-style-type: none"> • Understand that estimation skills are valuable, time-saving tools particularly in practical situations when exact answers are not required or needed. • Understand that estimation skills are also valuable in determining the reasonableness of the sum when solving for the exact answer is needed. • Understand that addition is used to join groups in practical situations when exact answers are needed. • Develop flexible methods of adding whole numbers by combining numbers in a variety of ways to find the sum, most depending on place values.
<p>Strand</p>	<p>Computation and Estimation</p>			
<p>Essential Knowledge and Skills</p>	<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <p>a) Regroup 10 ones for 1 ten, using Base-10 models, when finding the sum of two whole numbers whose sum is 99 or less.</p> <p>b) Estimate the sum of two whole numbers whose sum is 99 or less and recognize whether the estimation is reasonable.</p> <p>c) Find the sum of two whole numbers whose sum is 99 or less, using Base-10 models, such as Base-10 blocks and bundles of tens.</p> <p>d) Solve problems presented vertically or horizontally that require finding the sum of two whole numbers whose sum is 99 or less, using paper and pencil.</p> <p>e) Solve problems, using mental computation strategies, involving addition of two whole numbers whose sum is 99 or less.</p>			<p>Teacher Notes</p> <ul style="list-style-type: none"> • Estimation is a number sense skill used instead of finding an exact answer. When an actual computation is not necessary, an estimate will suffice. • Rounding is one strategy used to estimate. • Estimation is also used before solving a problem to check the reasonableness of the sum when an exact answer is required. • By estimating the result of an addition problem, a place value orientation for the answer is established. • Strategies for mentally adding two-digit numbers include student-invented strategies, making-ten, partial sums, and counting on, among others.
<p>Resources</p>	<p>Resource Materials</p> <p>Envision Math Topic 8 • addition/subtraction</p>	<p>Released Test Items</p> <p>Gr. 3 2004 – 20 (2.6 b)</p>	<p>Individual Teacher Notes</p>	

	<p>Topic 10</p> <ul style="list-style-type: none"> estimating <p>Enhanced Scope and Sequence Plus</p> <p>www.ttaonline.com</p> <ul style="list-style-type: none"> Estimation Jar (2.6 a) Two-Digit Addition Using Cafeteria Lunches (2.6 a b) <p>5 A Day (located on the share drive)</p>	<p>Gr. 3 2005 – 16 (2.6 b)</p> <p>Gr. 3 2000 – 18 (2.6 a)</p> <p>Gr. 3 2001 – 22 (2.6 b)</p>		<ul style="list-style-type: none"> – partial sums: $56 + 41 = \underline{\quad}$ $50 + 40 = 90$ $6 + 1 = 7$ $90 + 7 = 97$ – counting on: $36 + 62 = \underline{\quad}$ $36 + 60 = 96$ $96 + 2 = 98$ • Addition means to combine or join quantities. • The terms used in addition are $23 \rightarrow \textit{addend}$ $+ 46 \rightarrow \textit{addend}$ $69 \rightarrow \textit{sum}$ • Strategies for adding two-digit numbers can include, but are not limited to, using a hundreds chart, number line, and invented strategies. • Building an understanding of the algorithm by first using concrete materials and then a do-and-write approach connects it to the written form of the algorithm. • The traditional algorithm for two-digit numbers is contrary to the natural inclination to begin with the left-hand number. • Regrouping is used in addition when a sum in a particular place value is 10 or greater.
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Essential New Vocabulary

- about
- add
- addend
- addition
- adding
- approximate sum
- joining
- combining
- estimate
- regrouping
- rounding
- estimation
- addition fact
- nearest
- ones
- place value
- sum
- tens
- hundreds

Released Test Items

20 The chart shows the number of stickers four friends bought.

Name	Number of Stickers
Nina	19
Carlos	18
Katie	27
Joel	23

How many stickers did Joel and Katie buy all together?

- F 23
- G 27
- H 40
- J 50

16 Last year, there were exactly 2,467 students attending Lee Elementary School. This year, there are 310 more students attending the school. How many students are attending Lee Elementary School this year?

- F 5,567
- G 5,477
- H 2,777
- J 2,157

18

	Number of Tickets Sold
Friday	4,806
Saturday	3,179

The table shows the number of tickets sold for the last two Dribblers' basketball games. About how many tickets were sold for those two games all together?

- F 5,000
- G 6,000
- H 8,000
- J 10,000

22 On the first day of their vacation, the Barry family drove 628 miles. On the second day, they drove 602 miles. How many miles did the Barry family drive in these two days?

- F 1,226
- G 1,230
- H 1,248
- J 1,330

<p>Standard</p>	<p>MATH 2.7</p> <p>The student, given two whole numbers, each of which is 99 or less, will</p> <p>a) estimate the difference</p> <p>b) find the difference, using various methods of calculation.</p> <p>Timeframe:</p> <p>5 days no regrouping/estimating Q2</p> <p>1 day spiraling no regrouping/estimating Q3</p> <p>4 days regrouping/estimating Q3</p>	<p>Essential Understandings</p> <p>All students should</p> <ul style="list-style-type: none"> • Understand that estimation skills are valuable, time-saving tools particularly in practical situations when exact answers are not required or needed. • Understand that estimation skills are also valuable in determining the reasonableness of the difference when solving for the exact answer is needed. • Understand that subtraction is used in practical situations when exact answers are needed. • Develop flexible methods of subtracting whole numbers to find the difference, by combining numbers in a variety of ways, most depending on place values.
<p>Strand</p>	<p>Computation and Estimation</p>	
<p>Essential Knowledge and Skills</p>	<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <p>a) Regroup 1 ten for 10 ones, using Base-10 models, such as Base-10 blocks and bundles of tens.</p> <p>b) Estimate the difference of two whole numbers each 99 or less and recognize whether the estimation is reasonable.</p> <p>c) Find the difference of two whole numbers each 99 or less, using Base-10 models, such as Base-10 blocks and bundles of tens.</p> <p>d) Solve problems presented vertically or horizontally that require finding the difference between two whole numbers each 99 or less, using paper and pencil.</p> <p>e) Solve problems, using mental computation strategies, involving subtraction of two whole numbers each 99 or less.</p>	<p>Teacher Notes</p> <p>See next page for notes.</p> <p>Essential New Vocabulary</p> <ul style="list-style-type: none"> • about • minus • subtraction • subtracting • difference

	Resource Materials	Released Test Items	Individual Teacher Notes	
Resources	<p>Envision Math</p> <ul style="list-style-type: none"> • Topic 9 <p>Enhanced Scope and Sequence Plus</p> <p>www.ttaonline.com</p> <ul style="list-style-type: none"> • Estimation Jar (2.7 a) <p>5 A Day (located on the share drive)</p>	See below		<ul style="list-style-type: none"> • taking away • separating • estimate • rounding • estimation • regroup • subtraction fact • ones • tens • hundreds • place value

Teacher Notes

- Estimation is a number sense skill used instead of finding an exact answer. When an estimate is needed, the actual computation is not necessary.
- Rounding is one strategy used to estimate.
- Estimation is also used before solving a problem to check the reasonableness of the sum when an exact answer is required.
- By estimating the result of a subtraction problem, a place value orientation for the answer is established.
- Subtraction is the inverse operation of addition and is used for different reasons:
 - to remove one amount from another
 - to compare one amount to another
 - to find the missing quantity when the whole quantity and part of the quantity are known.
- Three terms often used in subtraction are
minuend → 98

subtrahend → 41

difference → 57

- Regrouping is a process of renaming a number to make subtraction easier.
- An understanding of the subtraction algorithm should be built by first using concrete materials and then employing a do-and-write approach (i.e., use the manipulatives, then record what you have done). This connects the activity to the written form of the algorithm.
- Mental computational strategies for subtracting two-digit numbers might include
 - lead-digit or front-end strategy:
 - $56 - 21 = \underline{\quad}$
 - $50 - 20 = 30$
 - $6 - 1 = 5$
 - $30 + 5 = 35$
 - counting up:
 - $87 - 25 = \underline{\quad}$
 - $20 + 60 = 80$
 - $5 + 2 = 7$
 - $60 + 2 = 62$
 - or
 - $87 - 25 = \underline{\quad}$
 - $25 + 60 = 85$
 - $85 + 2 = 87$
 - $60 + 2 = 62$
 - or
 - $87 - 25 = \underline{\quad}$
 - $25 + 2 = 27$
 - $27 + 60 = 87$
 - $2 + 60 = 62$
 - partial differences:
 - $98 - 41 = \underline{\quad}$
 - $90 - 40 = 50$
 - $8 - 1 = 7$
 - $50 + 7 = 57.$
- Strategies for subtracting two-digit numbers may include using a hundreds chart, number line, and invented strategies.

20 There are 9 hooks on a coat rack. Only one coat can hang on each hook. If 4 hooks are NOT used, how many coats are hanging on the coat rack?

- F** 5
- G** 6
- H** 13
- J** 14

24 There were 12 puppies on a farm. If 8 of the puppies were brown and the rest were spotted, how many of the 12 puppies were spotted?

- F** 20
- G** 16
- H** 8
- J** 4

Standard	MATH 2.8 The student will create and solve one- and two-step addition and subtraction problems, using data from simple tables, picture graphs, and bar graphs. Timeframe: 7 days Q1 1 day spiraling Q1 2 days Q3			Essential Understandings All students should <ul style="list-style-type: none"> • Develop strategies for solving practical problems. • Enhance problem solving skills by creating their own problems. Teacher Notes <ul style="list-style-type: none"> • Problem solving means engaging in a task for which a solution or a method of solution is not known in advance. Solving problems using data and graphs offers a natural way to connect mathematics to practical situations. • The ability to retrieve information from simple charts and picture graphs is a necessary prerequisite to solving problems. • An example of an approach to solving problems is Polya’s four-step plan: <ul style="list-style-type: none"> – Understand: Retell the problem. – Plan: Decide what the operation is. – Solve: Write a number sentence. – Look back: Does the answer make sense? • The problem solving process is enhanced when students <ul style="list-style-type: none"> – create their own story problems; and – model word problems, using manipulatives or drawings.
Strand	Computation and Estimation			
Essential Knowledge and Skills	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to <ol style="list-style-type: none"> a) Identify the appropriate data and the operation needed to solve an addition or subtraction problem where the data are presented in a simple table, picture graph, or bar graph. b) Solve addition and subtraction problems requiring a one- or two-step solution, using data from simple tables, picture graphs, bar graphs, and everyday life situations. c) Create a one- or two-step addition or subtraction problem using data from simple tables, picture graphs, and bar graphs whose sum is 99 or less. 			
Resources	Resource Materials	Released Test Items	Individual Teacher Notes	
	Envision Math <ul style="list-style-type: none"> • Topic 1,2, 3, 16 Enhanced Scope and Sequence Plus	See below		

www.ttaonline.com

- Problem Solving Using Tables, Picture Graphs, and Bar Graphs

5 A Day (located on the share drive)





Essential New Vocabulary


- add
- addition
- adding
- sum
- joining
- combining
- minus
- subtraction
- subtracting
- difference
- taking away
- separating
- estimate
- regroup
- addition fact
- subtraction fact
- bar graph
- chart
- data
- less
- more
- operation
- picture graph
- problem solving
- table
- most
- least
- tally marks
- solution

Released Test Items

37 This graph shows the number of boxes of popcorn sold at a theater during a 4-day period.

Boxes of Popcorn

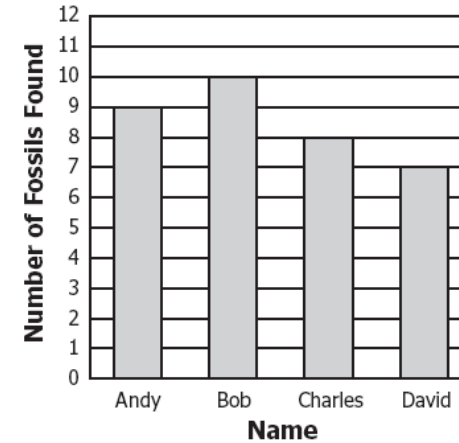
Day of the Week	Number Sold
Thursday	
Friday	
Saturday	
Sunday	

Key:  = 5 boxes

Based on the data in the graph, what was the total number of boxes of popcorn sold on Friday and Saturday?

37 Andy, Bob, Charles, and David went on a fossil hunt. The graph shows the number of fossils each boy found.

Results of Fossil Hunt



Based on the data in the graph, what was the total number of fossils found altogether?

- A 34
- B 31
- C 27
- D 24

Standard	MATH 2.9 The student will recognize and describe the related facts that represent and describe the inverse relationship between addition and subtraction. Timeframe: 7 days Q1 1 day spiraling Q1			Essential Understandings All students should understand how addition and subtraction relate to one another.
Strand	Computation and Estimation			Teacher Notes
Essential Knowledge and Skills	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to a) Determine the missing number in a number sentence (e.g., $3 + _ = 5$ or $_ + 2 = 5$; $5 - _ = 3$ or $5 - 2 = _$). b) Write the related facts for a given addition or subtraction fact (e.g., given $3 + 4 = 7$, write $7 - 4 = 3$ and $7 - 3 = 4$).			<ul style="list-style-type: none"> Addition and subtraction are inverse operations, that is, one undoes the other: $3 + 4 = 7$ $7 - 3 = 4$ $7 - 4 = 3$ $4 + 3 = 7$ For each addition fact, there is a related subtraction fact. Developing strategies for solving missing addends problems and the missing part of subtraction facts builds an understanding of the link between addition and subtraction. To solve $9 - 5 = _$, think $5 + _ = 9$.
Resources	Resource Materials	Released Test Items	Individual Teacher Notes	<ul style="list-style-type: none"> Demonstrate joining and separating sets to investigate the relationship between addition and subtraction.
	Envision Math <ul style="list-style-type: none"> Topic 1,2,3 Enhanced Scope and Sequence Plus www.ttaonline.com <ul style="list-style-type: none"> Fact Family Patterns 5 A Day (located on the share drive)	Gr. 3 2010– 3 (2.9 b) Gr. 3 2010 – 18 (2.9 b) Gr. 3 2009– 45 (2.9 a) Gr. 3 2008 – 4 (2.9 a)		

Essential New Vocabulary

- add
- addition
- adding
- sum
- joining
- combining
- minus
- subtraction
- subtracting
- difference
- taking away
- separating
- inverse operations
- addition fact
- subtraction fact
- missing addend
- number sentence
- related fact
- fact family

3 Which number sentence can be completed by using the basic fact sentence $17 - 8 = 9$?

A $17 + 8 = \underline{\quad}$

B $17 + 9 = \underline{\quad}$

C $9 + 8 = \underline{\quad}$

D $9 - 8 = \underline{\quad}$

18 Which is a related fact to this number sentence?

$$\square + 5 = 12$$

F $5 + \square = 7$

G $12 + 7 = \square$

H $12 + 5 = \square$

J $5 + \square = 12$

45 What number belongs in the box to make this number sentence true?

$$15 - \square = 7$$

- A** 23
- B** 22
- C** 8
- D** 7

4 The number sentence below is true.

$$6 + 8 = 14$$

Which number makes the following number sentence true?

$$14 - \underline{\quad} = 6$$

- F** 6
- G** 8
- H** 20
- J** 84

<p>Standard</p>	<p>MATH 2.10</p> <p>The student will</p> <p>a) count and compare a collection of pennies, nickels, dimes, and quarters whose total value is \$2.00 or less; and</p> <p>b) correctly use the cent symbol (¢), dollar symbol (\$), and decimal point (.).</p> <p>Timeframe: 5 days Q3</p>	<p>Essential Understandings</p> <p>All students should</p> <ul style="list-style-type: none"> • Understand how to count and compare a collection of coins and one-dollar bills whose total value is \$2.00 or less. • Understand the proper use of the cent symbol (¢), dollar sign (\$), and decimal point (.).
<p>Strand</p>	<p>Measurement</p>	
<p>Essential Knowledge and Skills</p>	<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <p>a) Determine the value of a collection of coins and one-dollar bills whose total value is \$2.00 or less.</p> <p>b) Compare the values of two sets of coins and one-dollar bills (each set having a total value of \$2.00 or less), using the terms <i>greater than</i>, <i>less than</i>, or <i>equal to</i>.</p> <p>c) Simulate everyday opportunities to count and compare a collection of coins and one-dollar bills whose total value is \$2.00 or less.</p> <p>d) Use the cent (¢) and dollar (\$) symbols and decimal point (.) to write a value of money which is \$2.00 or less.</p>	<p>Teacher Notes</p> <ul style="list-style-type: none"> • The money system used in the United States consists of coins and bills based on ones, fives, and tens, making it easy to count money. • The dollar is the basic unit. • Emphasis is placed on the verbal expression of the symbols for cents and dollars (e.g., \$0.35 and 35¢ are both read as “thirty-five cents”; \$3.00 is read as “three dollars”). • Money can be counted by grouping coins and bills to determine the value of each group and then adding to determine the total value. • The most common way to add amounts of money is to “count on” the amount to be added.

	Resource Materials	Released Test Items	Individual Teacher Notes
Resources	Envision Math <ul style="list-style-type: none"> • Topic 5 Enhanced Scope and Sequence Plus www.ttaonline.com <ul style="list-style-type: none"> • Let's Go Shopping 5 A Day (located on the share drive)	See below	

Essential New Vocabulary

- money
- penny (pennies)
- nickel (nickels)
- dime (dimes)
- quarter (quarters)
- cent (cents)
- cent symbol (c)
- dollar
- dollar symbol (\$)
- decimal point
- decimal point symbol (.) value
- greater than
- less than
- equal to
- compare
- collection
- amount
- combination

- 26 Priscilla cleaned her mom's car and found the coins shown in the picture.



What is the total amount of money Priscilla found?

- F 47¢
- G 52¢
- H 57¢
- J 62¢

- 30 Which means twenty-eight cents?

- F \$28.00
- G \$2.80
- H \$2.08
- J \$0.28

<p>Standard</p>	<p>MATH 2.11</p> <p>The student will estimate and measure</p> <p>a) length to the nearest centimeter and inch b) weight/mass of objects in pounds/ounces and kilograms/grams, using a scale c) liquid volume in cups, pints, quarts, gallons, and liters.</p> <p>Timeframe: 12 days Q4</p>			<p>Essential Understandings</p> <p>All students should</p> <ul style="list-style-type: none"> • Understand that centimeters/inches are units used to measure length. • Understand how to estimate and measure to determine a linear measure to the nearest centimeter and inch. • Understand that pounds/ounces and kilograms/grams are units used to measure weight/mass. • Understand how to use a scale to determine the weight/mass of an object and use the appropriate unit for measuring weight/mass. • Understand that cups, pints, quarts, gallons, and liters are units used to measure liquid volume. • Understand how to use measuring devices to determine liquid volume in both metric and customary units.
<p>Strand</p>	<p>Measurement</p>			
<p>Essential Knowledge and Skills</p>	<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <p>a) Estimate and measure the length of various line segments and objects to the nearest inch and centimeter.</p> <p>b) Estimate and then measure the weight/mass of objects to the nearest pounds/ounces and kilograms/grams, using a scale.</p> <p>c) Estimate and measure liquid volume in cups, pints, quarts, gallons, and liters.</p>			<p>Teacher Notes</p> <ul style="list-style-type: none"> • A clear concept of the size of one unit is necessary before one can measure to the nearest unit. • Knowledge of the exact relationships within the metric or U.S. Customary system of measurement for measuring liquid volume, such as 4 cups to a quart, is not required at this grade level. • Practical experiences measuring liquid volume, using a variety of actual measuring devices (e.g., containers for a cup, pint, quart, gallon, and liter), will help students build a foundation for estimating liquid volume with these measures.
<p>Resources</p>	<p>Resource Materials</p>	<p>Released Test Items</p>	<p>Individual Teacher Notes</p>	
	<p>Envision Math</p> <ul style="list-style-type: none"> • Topic 13 (length) • Topic 14 (weight/capacity) <p>Enhanced Scope and Sequence Plus</p>	<p>Gr. 3 2010-26 (2.11 c)</p> <p>Gr. 3 2010-28 (2.11 a)</p> <p>Gr. 3 2010-34 (2.11 b)</p> <p>Gr. 3 2009-28 (2.11 a)</p> <p>Gr. 3 2005 – 29 (2.11 c)</p>		

	<p>www.ttaonline.com</p> <ul style="list-style-type: none"> • A Weigh We Will Go (2.11 b) • Does Volume Really Matter? (2.11 c) <p>5 A Day (located on the share drive)</p>	<p>Gr. 3 2004 – 26 (2.11 a)</p> <p>Gr. 3 2004 – 34 (2.11 b)</p>		<ul style="list-style-type: none"> • The experience of making a ruler can lead to greater understanding of using one. • Proper placement of a ruler when measuring length (i.e., placing the end of the ruler at one end of the item to be measured) should be demonstrated. • Weight and mass are different. Mass is the amount of matter in an object. Weight is determined by the pull of gravity on the mass of an object. The mass of an object remains the same regardless of its location. The weight of an object changes dependent on the gravitational pull at its location. In everyday life, most people are actually interested in determining an object’s mass, although they use the term <i>weight</i> (e.g., “How much does it weigh?” versus “What is its mass?”).
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<p>Essential New Vocabulary</p> <ul style="list-style-type: none"> • length • centimeter • inch • weight/mass • pounds/ounces • kilograms/grams • scale • liquid volume 	<ul style="list-style-type: none"> • cups • pints • quarts • gallons • liters • equivalent • closest
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Released Test Items

- 26 Mr. Franklin bought a bottle of cooking oil like the one shown in the picture.



Which is CLOSEST to the amount of cooking oil Mr. Franklin bought?

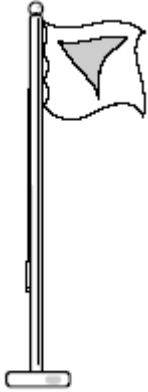
- F 1 cup
 - G 50 cups
 - H 1 gallon
 - J 10 gallons
- 26 Which is CLOSEST to the amount of water Peter's glass will hold when full?



- F 2 gallons
- G 2 pints
- H 2 quarts
- J 2 cups

26 Use your inch ruler to help you answer this question.

Which is CLOSEST to the height of the flagpole in the picture below?



- F 1 inch**
- G 2 inches**
- H 3 inches**
- J 4 inches**

34 Wade is in third grade.



Which is **CLOSEST** to the amount Wade weighs?

- F 5 ounces
- G 50 ounces
- H 5 pounds
- J 50 pounds

<p>Standard</p>	<p>MATH 2.12</p> <p>The student will tell and write time to the nearest five minutes, using analog and digital clocks.</p> <p>Timeframe: 10 days (hour/half hour/quarter hour) Q2 4 days (5 minutes) Q3</p>			<p>Essential Understandings</p> <p>All students should</p> <ul style="list-style-type: none"> Apply an appropriate technique to determine time to the nearest five minutes, using analog and digital clocks. Demonstrate an understanding of counting by fives to predict five five minute intervals when telling time to the nearest five minutes. <p>Teacher Notes</p> <ul style="list-style-type: none"> Telling time requires reading a clock. The position of the two hands on an analog clock is read to tell the time. A digital clock shows the time by displaying the time in numbers which are read as the hour and minutes. The use of a demonstration clock with gears ensures that the positions of the hour hand and the minute hand are precise at all times. The face of an analog clock can be divided into 4 equal parts, called <i>quarter hours</i>, of 15 minutes each.
<p>Strand</p>	<p>Measurement</p>			
<p>Essential Knowledge and Skills</p>	<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <p>a) Show, tell, and write time to the nearest five minutes, using an analog and digital clock. b) Match a written time to a time shown on a clock face to the nearest five minutes.</p>			
<p>Resources</p>	<p>Resource Materials</p>	<p>Released Test Items</p>	<p>Individual Teacher Notes</p>	
	<p>Envision Math</p> <ul style="list-style-type: none"> Topic 15 <p>Enhanced Scope and Sequence Plus</p> <p>www.ttaonline.com</p> <ul style="list-style-type: none"> Time’s A-Tickin’ <p>5 A Day (located on the share drive)</p>	<p>See Below</p>		

Essential New Vocabulary

- analog clock
- digital clock
- hour
- minutes
- quarter hours (quarter past, quarter til, half past)
- calendar
- days
- weeks
- months

Gr 3 2010

35 This watch shows the time Liam's school bus arrived.



Which is closest to the time Liam's school bus arrived?

- A 8:04
- B 8:10
- C 8:20
- D 8:40

33 Which is CLOSEST to the time shown on the clock?



- A 4:05
- B 4:25
- C 5:20
- D 5:40

Standard	MATH 2.13 The student will a) determine past and future days of the week b) identify specific days and dates on a given calendar. Timeframe: 2.13 a 1 day Q2 2.13 b 3 days Q1			Essential Understandings All students should understand how to use a calendar as a way to measure time. Teacher Notes <ul style="list-style-type: none"> • The calendar is a way to represent units of time (e.g., days, weeks, and months). • Using a calendar develops the concept of day as a 24-hour period rather than a period of time from sunrise to sunset. • Practical situations are appropriate to develop a sense of the interval of time between events (e.g., Boy Scout meetings occur every week on Monday: there is a week between meetings).
Strand	Measurement			
Essential Knowledge and Skills	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to a) Determine the days/dates before and after a given day/date. b) Determine the day that is a specific number of days or weeks in the past or in the future from a given date, using a calendar. c) Identify specific days and dates (e.g., the third Monday in a given month or what day of the week does May 11 fall on).			Essential New Vocabulary
Resources	Resource Materials	Released Test Items	Individual Teacher Notes	<ul style="list-style-type: none"> • calendar • days • weeks • months • past • future • date • before • after • ago
	Envision Math <ul style="list-style-type: none"> • Topic 15 Enhanced Scope and Sequence Plus www.ttaonline.com <ul style="list-style-type: none"> • Let's Make a Date 5 A Day (located on the share drive)	See Below		

Released Test Items

Gr 3 2000

38 A television station will show a program about bear cubs on September 10. They will show the program again exactly 2 weeks after that. When will the program be shown again?

SEPTEMBER

S	M	T	W	T	F	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

- F September 12
- G September 17
- H September 24
- J September 25

Gr 3 2008

30 Using the calendar shown below, what is the date of the fourth Monday of the month?

September

Sun.	Mon.	Tue.	Wed.	Thu.	Fri.	Sat.
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

- F September 4
- G September 14
- H September 21
- J September 28

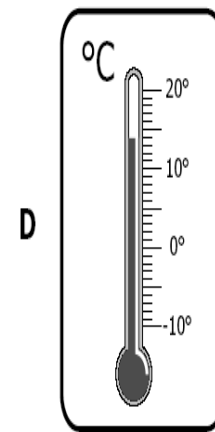
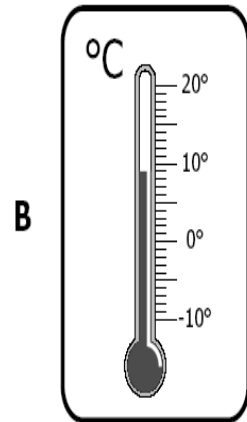
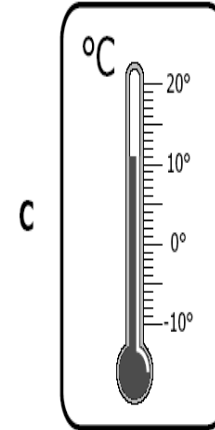
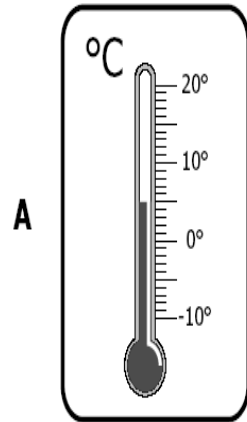
Wendy is making this calendar for the bulletin board. What day of the week should January 22 be on?

- A Sunday
- B Monday
- C Wednesday
- D Friday

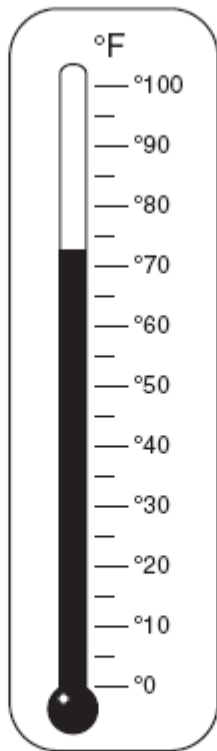
Standard	MATH 2.14 The student will read the temperature on a Celsius and/or Fahrenheit thermometer to the nearest 10 degrees. Timeframe: 1 day Q4			Essential Understandings All students should <ul style="list-style-type: none"> Understand how to measure temperature in Celsius and Fahrenheit with a thermometer. Teacher Notes <ul style="list-style-type: none"> The symbols for degrees in Celsius (°C) and degrees in Fahrenheit (°F) should be used to write temperatures. Celsius and Fahrenheit temperatures should be related to everyday occurrences by measuring the temperature of the classroom, the outside, liquids, body temperature, and other things found in the environment. Estimating and measuring temperatures in the environment in Fahrenheit and Celsius require the use of real thermometers. A physical model can be used to represent the temperature determined by a real thermometer. Essential New Vocabulary <ul style="list-style-type: none"> temperature degrees Celsius (C) Fahrenheit (F) thermometer
Strand	Measurement			
Essential Knowledge and Skills	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to read temperature to the nearest 10 degrees from real Celsius and Fahrenheit thermometers and from physical models (including pictorial representations) of such thermometers.			
Resources	Resource Materials	Released Test Items	Individual Teacher Notes	
	Envision Math <ul style="list-style-type: none"> Topic 15 Enhanced Scope and Sequence Plus www.ttaonline.com <ul style="list-style-type: none"> Feelin' Hot, Hot, Hot 5 A Day (located on the share drive)	See Below		

Released Test Items

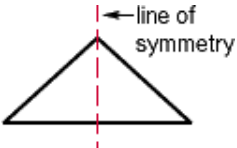
31 Which thermometer shows a temperature closest to 9°C ?



28 Which is CLOSEST to the temperature shown on the thermometer?



- F** 80°F
- G** 70°F
- H** 65°F
- J** 60°F

Standard	MATH 2.15 The student will a) draw a line of symmetry in a figure b) identify and create figures with at least one line of symmetry. Timeframe: 5 days Q4			Essential Understandings All students should <ul style="list-style-type: none"> • Develop strategies to determine whether or not a figure has at least one line of symmetry. • Develop strategies to create figures with at least one line of symmetry. • Understand that some figures may have more than one line of symmetry. Teacher Notes <ul style="list-style-type: none"> • A figure is symmetric along a line when one-half of the figure is the mirror image of the other half. • A line of symmetry divides a symmetrical figure, object, or arrangement of objects into two parts that are congruent if one part is reflected over the line of symmetry. <div style="text-align: center;">  </div> <ul style="list-style-type: none"> • Children learn about symmetry through hands-on experiences with geometric figures and the creation of geometric pictures and patterns. • Guided explorations of the study of symmetry by using mirrors, miras, paper folding, and pattern blocks will enhance students' understanding of the attributes of symmetrical figures.
Strand	Geometry			
Essential Knowledge and Skills	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to <ol style="list-style-type: none"> Identify figures with at least one line of symmetry, using various concrete materials. Draw a line of symmetry — horizontal, vertical, and diagonal — in a figure. Create figures with at least one line of symmetry using various concrete materials. 			
Resources	Resource Materials	Released Test Items	Individual Teacher Notes	
	Envision Math <ul style="list-style-type: none"> • Topic 11 Enhanced Scope and Sequence Plus www.ttaonline.com <ul style="list-style-type: none"> • Defining Symmetry 	See Below		

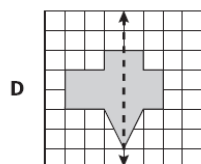
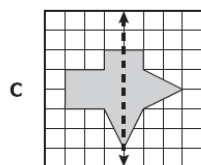
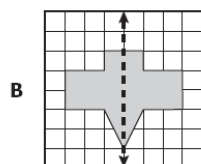
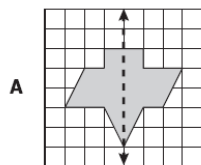
	5 A Day (located on the share drive)			<ul style="list-style-type: none"> • While investigating symmetry, children move figures, such as pattern blocks, intuitively, thereby exploring transformations of those figures. • A transformation is the movement of a figure — either a translation, rotation, or reflection. <ul style="list-style-type: none"> – A translation is the result of sliding a figure in any direction. – A rotation-is the result of turning a figure around a point or a vertex. – A reflection is the result of flipping a figure over a line.
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Essential New Vocabulary

- | | |
|--|--|
| <ul style="list-style-type: none"> • figure (figures) • symmetric • line of symmetry • symmetrical • reflected • figures • reflection • horizontal • vertical • diagonal | <ul style="list-style-type: none"> • solid geometric figures • circle • square • rectangle • plane • faces • sides • equal • mirror image |
|--|--|

Gr 3-2007

33 On which of the following does the heavy dotted line appear to be a line of symmetry of the shaded figure?



25 Which of the figures below appears to have a line of symmetry?



Standard	MATH 2.16 The student will identify, describe, compare, and contrast plane and solid geometric figures (circle/sphere, square/cube, and rectangle/rectangular prism). Timeframe: 7 days Q3			Essential Understandings All students should <ul style="list-style-type: none"> • Understand the differences between plane and solid figures while recognizing the inter-relatedness of the two. • Understand that a solid figure is made up of a set of plane figures. Teacher Notes See next page for notes.
Strand	Geometry			
Essential Knowledge and Skills	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to <ol style="list-style-type: none"> Determine similarities and differences between related plane and solid figures (e.g., circle/sphere, square/cube, rectangle/rectangular prism), using models and cutouts. Trace faces of solid figures (e.g., cube and rectangular solid) to create the set of plane figures related to the solid figure. Identify and describe plane and solid figures (e.g., circle/sphere, square/cube, and rectangle/rectangular prism), according to the number and shape of their faces, edges, and vertices using models. Compare and contrast plane and solid geometric figures (e.g., circle/sphere, square/cube, and rectangle/rectangular prism) according to the number and shape of their faces (sides, bases), edges, vertices, and angles. 			
Resources	Resource Materials	Released Test Items	Individual Teacher Notes	
	Envision Math <ul style="list-style-type: none"> • Topic 11 Enhanced Scope and Sequence Plus	See Below		

	www.ttaonline.com <ul style="list-style-type: none"> Comparing Figures <p>5 A Day (located on the share drive)</p>			

Teacher Notes

- The van Hiele theory of geometric understanding describes how students learn geometry and provides a framework for structuring student experiences that should lead to conceptual growth and understanding.
 - Level 0: Pre-recognition.** Geometric figures are not recognized. For example, students cannot differentiate between three-sided and four-sided polygons.
 - Level 1: Visualization.** Geometric figures are recognized as entities, without any awareness of parts of figures or relationships between components of a figure. Students should recognize and name figures and distinguish a given figure from others that look somewhat the same (e.g., "I know it's a rectangle because it looks like a door, and I know that a door is a rectangle.>").
 - Level 2: Analysis.** Properties are perceived but are isolated and unrelated. Students should recognize and name properties of geometric figures (e.g., "I know it's a rectangle because it is closed; it has four sides and four right angles, and opposite sides are parallel.>").
- An important part of geometry is naming and describing figures in two-dimensions (plane figures) and three-dimensions (solid figures).
- A vertex is a point where two or more line segments, lines, or rays meet to form an angle.
- An angle is two rays that share an endpoint.
- Plane figures are two-dimensional figures formed by lines that are curved, straight, or a combination of both. They have angles and sides.
- The identification of plane and solid figures is accomplished by working with and handling objects.
- Tracing faces of solid figures is valuable to understanding the set of plane figures related to the solid figure (e.g., cube and rectangular prism).
- A circle is a closed curve in a plane with all its points the same distance from the center.
- A sphere is a solid figure with all of its points the same distance from its center.
- A square is a rectangle with four sides of equal length.

- A rectangular prism is a solid in which all six faces are rectangles. A rectangular prism has 8 vertices and 12 edges.
- A cube is a solid figure with six congruent, square faces. All edges are the same length. A cube has 8 vertices and 12 edges. It is a rectangular prism.
- A rectangle is a plane figure with four right angles. A square is a rectangle.
- The edge is the line segment where two faces of a solid figure intersect.
- A face is a polygon that serves as one side of a solid figure (e.g., a square is a face of a cube).
- A base is a special face of a solid figure.
- The relationship between plane and solid geometric figures, such as the square and the cube or the rectangle and the rectangular prism helps build the foundation for future geometric study of faces, edges, angles, and vertices.

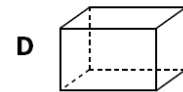
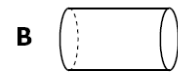
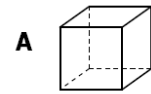
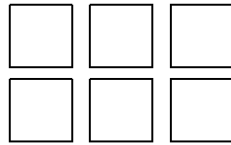
Essential New Vocabulary

- | | |
|-------------------------------|------------------|
| • figure (figures) | • right angles |
| • solid geometric figures | • compare |
| • circle/sphere | • contrast |
| • square/cube | • similar |
| • rectangle/rectangular prism | • polygon |
| • plane and solid | • compare |
| • faces | • contrast |
| • edges | • 2-dimensional |
| • vertex, vertices | • 3-dimensional |
| • sides | • trace |
| • bases | • square corners |

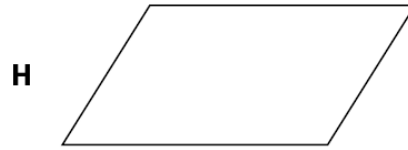
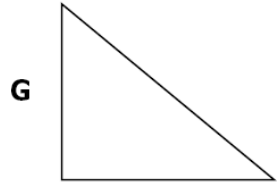
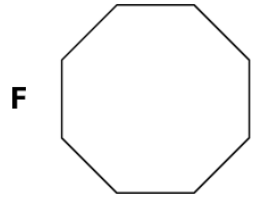
Released Test Items

Gr 3-2010

33 Which solid figure could be formed by the faces shown below?



36 Which shape appears to have 4 square corners?



<p>Standard</p>	<p>MATH 2.17</p> <p>The student will use data from experiments to construct picture graphs, pictographs, and bar graphs.</p> <p>Timeframe: 4 days Q1</p>			<p>Essential Understandings</p> <p>All students should</p> <ul style="list-style-type: none"> • Understand that data may be generated from experiments. • Understand how data can be collected and organized in picture graphs, pictographs, and bar graphs. • Understand that picture graphs use pictures to show and compare data. • Understand that pictographs use a symbol of an object, person, etc. • Understand that bar graphs can be used to compare categorical data. <p>Teacher Notes</p> <p>See next page for notes.</p> <p>Essential New Vocabulary</p> <ul style="list-style-type: none"> • picture graphs • pictographs • bar graphs • data • categories • parallel • horizontal • vertical • axis
<p>Strand</p>	<p>Probability and Statistics</p>			
<p>Essential Knowledge and Skills</p>	<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <p>a) Organize data from experiments, using lists, tables, objects, pictures, symbols, tally marks, and charts, in order to construct a graph.</p> <p>b) Read the information presented horizontally and vertically on picture graphs, pictographs, and bar graphs.</p> <p>c) Collect no more than 16 pieces of data to answer a given question.</p> <p>d) Represent data from experiments by constructing picture graphs, pictographs, and bar graphs.</p> <p>e) Label the axes on a bar graph, limiting the number of categories (categorical data) to four and the increments to multiples of whole numbers (e.g., multiples of 1, 2, or 5).</p> <p>f) On a pictograph, limit the number of categories to four and include a key where appropriate</p>			
<p>Resources</p>	<p>Resource Materials</p>	<p>Released Test Items</p>	<p>Individual Teacher Notes</p>	
	<p>Envision Math</p> <ul style="list-style-type: none"> • Topic 16 <p>Enhanced Scope and Sequence Plus</p> <p>www.ttaonline.com</p>	<p>See Below</p>		

- Problem Solving Using Tables, Picture Graphs, and Bar Graphs
- Let's Picture Who's in Our Class
- Who's in Our Class?

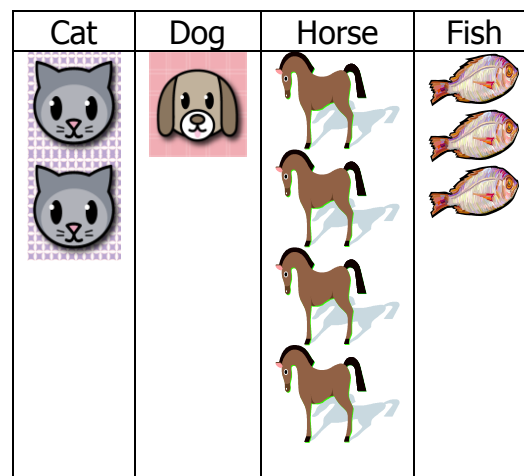
5 A Day (located on the share drive)

- key
- tally marks
- chart
- table
- list
- categories
- title
- symbol

Teacher Notes

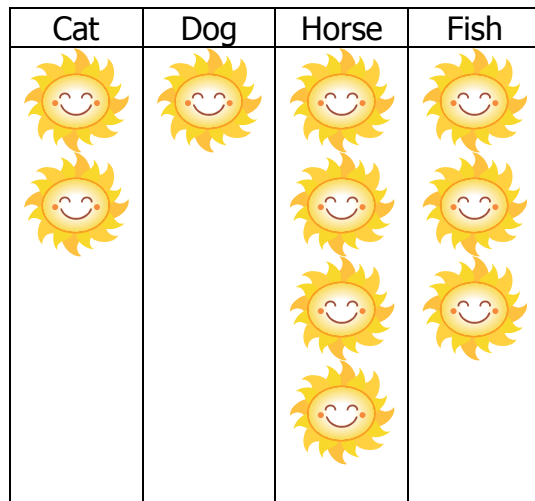
- The purpose of a graph is to represent data gathered to answer a question.
- Picture graphs are graphs that use pictures to show and compare information. An example of a picture graph is:

Our Favorite Pets



- Pictographs are graphs that use symbols to show and compare information. A student can be represented as a stick figure in a pictograph. A key should be used to indicate what the symbol represents (e.g., one picture of a sneaker represents five sneakers in a graph of shoe types). An example of a pictograph is:

Our Favorite Pets



 = 1 student

- Bar graphs are used to compare counts of different categories (categorical data). Using grid paper may ensure more accurate graphs.
 - A bar graph uses parallel, horizontal or vertical bars to represent counts for several categories. One bar is used for each category, with the length of the bar representing the count for that category.
 - There is space before, between, and after the bars.
 - The axis displaying the scale that represents the count for the categories should extend one increment above the greatest recorded piece of data. Second grade students should be collecting data that are recorded in increments of whole numbers, usually multiples of 1, 2, or 5.
 - Each axis should be labeled, and the graph should be given a title.

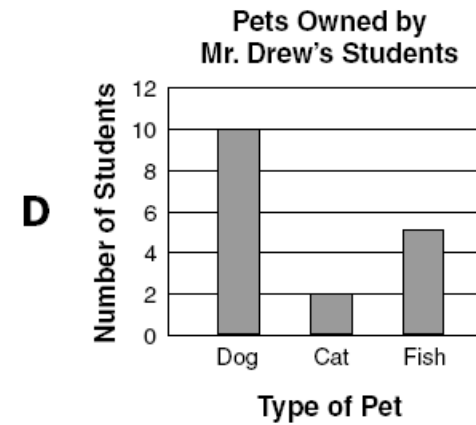
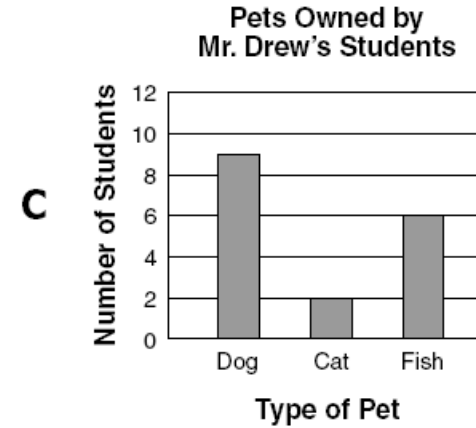
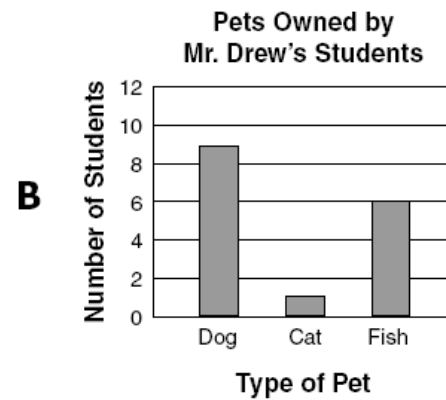
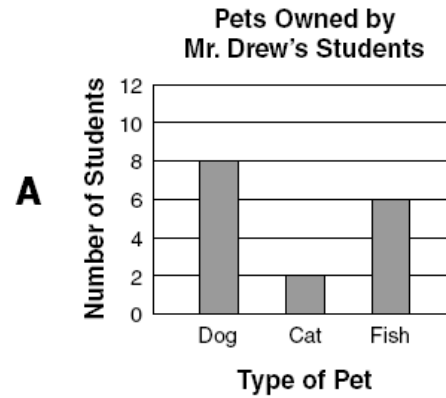
Gr 3-2010

Which bar graph correctly represents these data?

41 Each student in Mr. Drew's class owns one pet. This table shows the number of students who own different pets.

Pets Owned by Mr. Drew's Students

Type of Pet	Number of Students
Dog	9
Cat	2
Fish	6



<p>Standard</p>	<p>MATH 2.18</p> <p>The student will use data from experiments to predict outcomes when the experiment is repeated.</p> <p>Timeframe: 4 days Q2</p>			<p>Essential Understandings</p> <p>All students should</p> <ul style="list-style-type: none"> • Understand that data may be generated from experiments. • Understand that the likelihood of an event occurring is to predict the probability of it happening. <p>Teacher Notes</p> <p>See next page for notes.</p> <p>Essential New Vocabulary</p> <ul style="list-style-type: none"> • experiments • predict outcomes • probability • event • favorable outcomes • possible outcomes • impossible • unlikely • as likely as • unlikely • equally likely • likely • certain • more likely • less likely
<p>Strand</p>	<p>Patterns, Functions and Algebra</p>			
<p>Essential Knowledge and Skills</p>	<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <p>a) Conduct probability experiments, using multicolored spinners, colored tiles, or number cubes and use the data from the experiments to predict outcomes if the experiment is repeated.</p> <p>b) Record the results of probability experiments, using tables, charts, and tally marks.</p> <p>c) Interpret the results of probability experiments (e.g., the two-colored spinner landed on red 5 out of 10 times).</p> <p>d) Predict which of two events is more likely to occur if an experiment is repeated.</p>			
<p>Resources</p>	<p>Resource Materials</p>	<p>Released Test Items</p>	<p>Individual Teacher Notes</p>	
	<p>Envision Math</p> <ul style="list-style-type: none"> • Topic 16 <p>Enhanced Scope and Sequence Plus</p> <p>www.ttaonline.com</p> <ul style="list-style-type: none"> • Make Me a Winner/Make Me a Loser <p>5 A Day (located on the share drive)</p>	<p>See Below</p>		

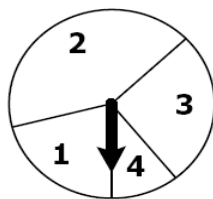
Teacher Notes

- A spirit of investigation and experimentation should permeate probability instruction, where students are actively engaged in investigations and have opportunities to use manipulatives.
- Investigation of experimental probability is continued through informal activities, such as dropping a two-colored counter (usually a chip that has a different color on each side), using a multicolored spinner (a circular spinner that is divided equally into two, three, four or more equal “pie” parts where each part is filled with a different color), using spinners with numbers, or rolling random number generators (dice).
- Probability is the chance of an event occurring (e.g., the probability of landing on a particular color when flipping a two-colored chip is $\frac{1}{2}$, representing one of two possible outcomes).
- An event is a possible outcome in probability. Simple events include the possible outcomes when tossing a coin (heads or tails), when rolling a random number generator (a number cube or a die where there are six equally likely outcomes and the probability of one outcome is $\frac{1}{6}$), or when spinning a spinner.
- If all the outcomes of an event are equally likely to occur, the probability of an event is equal to the number of favorable outcomes divided by the total number of possible outcomes: the probability of the event =
$$\frac{\text{number of favorable outcomes}}{\text{total number of possible outcomes.}}$$
- At this level, students need to understand only this fractional representation of probability (e.g., the probability of getting heads when flipping a coin is $\frac{1}{2}$).
- Students should have opportunities to describe in informal terms (i.e., *impossible*, *unlikely*, *as likely as*, *equally likely*, *likely*, and *certain*) the degree of likelihood of an event occurring. Activities should include practical examples. At this level, students need to understand only this fractional representation of probability (e.g., the probability of getting heads when flipping a coin is $\frac{1}{2}$).
- Students should have opportunities to describe in informal terms (i.e., *impossible*, *unlikely*, *as likely as*, *equally likely*, *likely*, and *certain*) the degree of likelihood of an event occurring. Activities should include practical examples.

Released Test Items

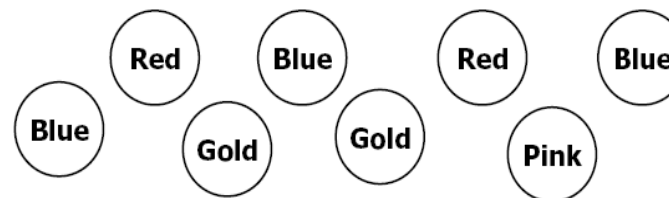
Gr 3- 2010

38 Which section of the spinner is the arrow MOST likely to land on for the next spin?



- F 1
- G 2
- H 3
- J 4

42 Emily placed eight counters, like the ones shown, in a bag.



She selected one counter from the bag without looking. Which color counter is she LEAST likely to select?

F Red

H Gold

G Blue

J Pink

Standard	MATH 2.19 The student will analyze data displayed in picture graphs, pictographs, and bar graphs. Timeframe: 3 days Q3			Essential Understandings All students should <ul style="list-style-type: none"> • Understand how to read the key used in a graph to assist in the analysis of the displayed data. • Understand how to interpret data in order to analyze it. • Understand how to analyze data in order to answer the questions posed, make predictions, and generalizations. Teacher Notes <ul style="list-style-type: none"> • Statements that represent an analysis and interpretation of the characteristics of the data in the graph (e.g., similarities and differences, least and greatest, the categories, and total number of responses) should be discussed with students and written. • When data are displayed in an organized manner, the results of investigations can be described, and the questions posed can be answered.
Strand	Probability and Statistics			
Essential Knowledge and Skills	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to analyze information from simple picture graphs, pictographs, and bar graphs by writing at least one statement that covers one or both of the following: <ol style="list-style-type: none"> Describe the categories of data and the data as a whole (e.g., the total number of responses). Identify parts of the data that have special characteristics, including categories with the greatest, the least, or the same. 			
Resources	Resource Materials	Released Test Items	Individual Teacher Notes	
	Envision Math <ul style="list-style-type: none"> • Topic 16 Enhanced Scope and Sequence Plus www.ttaonline.com <ul style="list-style-type: none"> • Let's Picture Who's in Our Class • Who's in Our Class? 5 A Day (located on the share drive)			





Essential New Vocabulary


- picture graphs
- pictographs
- bar graphs
- data
- categories
- horizontal
- vertical
- axis
- chart
- less
- more
- table
- analyze
- interpret
- key
- symbol
- greatest
- least
- same

Gr 3 2010

- 37 This graph shows the number of boxes of popcorn sold at a theater during a 4-day period.

Boxes of Popcorn

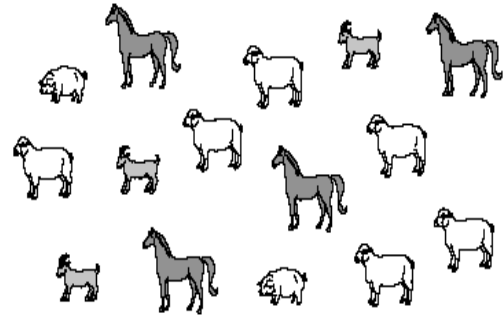
Day of the Week	Number Sold
Thursday	
Friday	
Saturday	
Sunday	

Key:  = 5 boxes

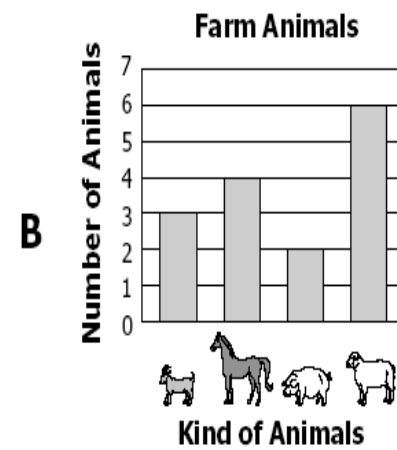
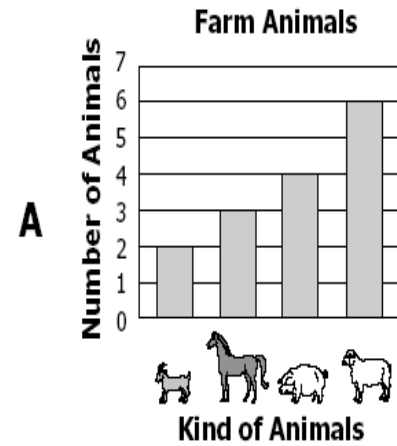
Based on the data in the graph, what was the total number of boxes of popcorn sold on Friday and Saturday?

- A 50
- B 45
- C 40
- D 35

43 These pictures represent the 15 animals on Aunt Bev's farm.

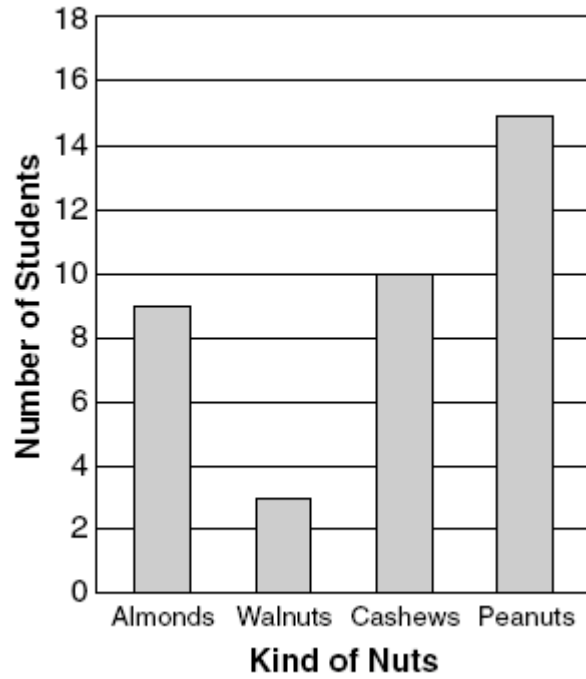


Which bar graph best represents the numbers of each kind of animal on the farm?



43 The bar graph below shows the favorite kinds of nuts of the students in a class.

Favorite Kinds of Nuts



Peanuts were the favorite nut of how many students?

- A 7
- B 8
- C 14
- D 15

Standard	MATH 2.20 The student will identify, create, and extend a wide variety of patterns. Timeframe: 2.20 c,d 3 days Q2 2.20 a-c 1 day spiraling 2.20 e 2 days Q4			Essential Understandings All students should <ul style="list-style-type: none"> • Understand patterns are a way to recognize order and to predict what comes next in an arrangement. • Analyze how both repeating and growing patterns are generated.
Strand	Patterns, Functions and Algebra			
Essential Knowledge and Skills	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to <ol style="list-style-type: none"> Identify a growing and/or repeating pattern from a given geometric or numeric sequence. Predict the next number, geometric figure, symbol, picture, or object in a given pattern. Extend a given pattern, using numbers, geometric figures, symbols, pictures, or objects. Create a new pattern, using numbers, geometric figures, pictures, symbols, or objects. Recognize the same pattern in different manifestations. 			Teacher Notes See next page for notes.
Resources	Resource Materials	Released Test Items	Individual Teacher Notes	
	Enhanced Scope and Sequence Plus www.ttaonline.com <ul style="list-style-type: none"> • Pattern Predicting and Creating 5 A Day (located on the share drive)	See Below		

Teacher Notes

- Identifying and extending patterns is an important process in mathematical thinking.
- Analysis of patterns in the real world (e.g., patterns on a butterfly’s wings, patterns on a ladybug’s shell) leads to the analysis of mathematical patterns such as number patterns and geometric patterns.
- Reproduction of a given pattern in a different manifestation, using symbols and objects, lays the foundation for writing numbers symbolically or algebraically.
- The simplest types of patterns are repeating patterns. Opportunities to create, recognize, describe, and extend repeating patterns are essential to the primary school experience.
- Growing patterns are more difficult for students to understand than repeating patterns because not only must they determine what comes next, they must also begin the process of generalization. Students need experiences with growing patterns in both arithmetic and geometric formats.
- In numeric patterns, students must determine the difference, called the *common difference*, between each succeeding number in order to determine what is added to each previous number to obtain the next number. Create an arithmetic number pattern. Sample numeric patterns include
 - 6, 9, 12, 15, 18, ... (growing pattern)
 - 20, 18, 16, 14, ... (growing pattern)
 - 1, 2, 4, 7, 11, 16, ... (growing pattern)
 - 1, 3, 5, 1, 3, 5, 1, 3, 5... (repeating pattern)
- In geometric patterns, students must often recognize transformations of a figure, particularly rotation or reflection.
 - Rotation is the result of turning a figure around a point or a vertex.
 - Reflection is the result of flipping a figure over a line.

Essential New Vocabulary

- | | |
|---|---|
| <ul style="list-style-type: none">• patterns• repeating patterns• growing patterns• numeric patterns• common difference• growing numeric pattern | <ul style="list-style-type: none">• repeating numeric pattern• transformations (rotation; reflection; flip)• continue• extend• sequence |
|---|---|

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44 Harper wrote this number pattern.

143, 139, 135, 131, 127, __, __, __

If the pattern continues to decrease following the same rule, what will be the next 3 numbers in Harper's pattern?

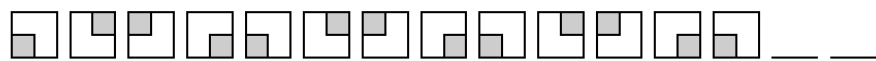
F 123, 119, 115

G 123, 118, 112

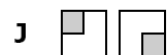
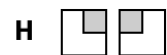
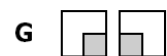
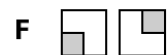
H 122, 117, 112

J 121, 115, 109

46 Look at this repeating pattern of four figures.



The pattern will continue in the same way. What will be the next two figures in the pattern?



- 45** The first five numbers in a pattern are shown below. A subtraction rule was used to find each new number in the pattern.

125 105 85 65 45 ?

If the subtraction pattern is continued in the same way, what will be the next number in the pattern?

- A 25
- B 35
- C 44
- D 46

- 47** Yoshi used a skip counting rule to complete the number pattern shown.

312 315 318 321 324 ____

The skip counting rule continues. What will be the next number in Yoshi's pattern?

- A 325
- B 327
- C 330
- D 332

<p>Standard</p>	<p>MATH 2.21</p> <p>The student will solve problems by completing numerical sentences involving the basic facts for addition and subtraction. The student will create story problems, using the numerical sentences.</p> <p>Timeframe: 1 day Q3</p>			<p>Essential Understandings</p> <p>All students should</p> <ul style="list-style-type: none"> • Use mathematical models to represent and understand quantitative relationships. • Understand various meanings of addition and subtraction and the relationship between the two operations. • Understand how to write missing addend and missing subtrahend sentences. <p>Teacher Notes</p> <ul style="list-style-type: none"> • Recognizing and using patterns and learning to represent situations mathematically are important aspects of primary mathematics. • Discussing what a word problem is saying and writing a number sentence are precursors to solving word problems. • The patterns formed by related basic facts facilitate the solution of problems involving a missing addend in an addition sentence or a missing part (subtrahend) in a subtraction sentence. • Making mathematical models to represent simple addition and subtraction problems facilitates their solution. • By using story problems and numerical sentences, students begin to explore forming equations and representing quantities using variables. • Students can begin to understand the use of a symbol (e.g., $_$, $?$, or \square) to represent an unknown quantity.
<p>Strand</p>	<p>Patterns, Functions, and Algebra</p>			
<p>Essential Knowledge and Skills</p>	<p>The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to</p> <p>a) Solve problems by completing a numerical sentence involving the basic facts for addition and subtraction (e.g., $3 + _ = 7$, or $9 - _ = 2$).</p> <p>b) Create a story problem for a given numerical sentence.</p>			
<p>Resources</p>	<p>Resource Materials</p>	<p>Released Test Items</p>	<p>Individual Teacher Notes</p>	
	<p>Envision Math</p> <ul style="list-style-type: none"> • Topic 10 <p>Enhanced Scope and Sequence Plus</p> <p>www.ttaonline.com</p> <ul style="list-style-type: none"> • Race to 100 • Magic Number Machine <p>5 A Day (located on the share drive)</p>	<p>See Below</p>		

Essential New Vocabulary

- patterns
- equations
- quantities
- symbol
- numeric pattern
- repeating numeric pattern
- addend
- story problem
- numerical sentence
- unknown

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18 Which is a related fact to this number sentence?

$$\square + 5 = 12$$

F $5 + \square = 7$

G $12 + 7 = \square$

H $12 + 5 = \square$

J $5 + \square = 12$

4 Mike's math teacher gave him the clue, $8 + 6 = 14$, to help him solve a related problem. Which could be the problem Mike is trying to solve?

F $14 - \square = 8$

G $8 \times \square = 48$

H $6 \div \square = 2$

J $14 + \square = 20$

Standard	MATH 2.22 The student will demonstrate an understanding of equality by recognizing that the symbol = in an equation indicates equivalent quantities and the symbol ≠ indicates that quantities are not equivalent. Timeframe: 3 days Q4			Essential Understandings All students should <ul style="list-style-type: none"> • Understand that the equal symbol means equivalent (same as) quantities. • The inequality symbol (≠) means not equivalent. Teacher Notes <ul style="list-style-type: none"> • The = symbol means that the values on either side are the same (balanced). • The ≠ symbol means that the values on either side are not the same (not balanced). • In order for students to develop the concept of equality, students need to see the = symbol used in various locations (e.g., $3 + 4 = 7$ and $5 = 2 + 3$). • A number sentence is an equation with numbers (e.g., $6 + 3 = 9$; or $6 + 3 = 4 + 5$).
Strand	Patterns, Functions, and Algebra			
Essential Knowledge and Skills	The student will use problem solving, mathematical communication, mathematical reasoning, connections, and representations to <ol style="list-style-type: none"> Identify the equality (=) and inequality (≠) symbols. Identify equivalent values and equations (e.g., $8 = 8$ and $8 = 4 + 4$). Identify nonequivalent values and equations (e.g., $8 \neq 9$ and $4 + 3 \neq 8$). Identify and use the appropriate symbol to distinguish between equal and not equal quantities (e.g., $8 + 2 = 7 + 3$ and $1 + 4 \neq 6 + 2$). 			
Resources	Resource Materials	Released Test Items	Individual Teacher Notes	
	www.ttaonline.com 5 A Day (located on the share drive)			

Essential New Vocabulary

- | | | |
|------------------|--------------|----------------|
| • equivalent | • values | • balanced |
| • inequality | • equation | • ≠ symbol |
| • symbol | • quantities | • not balanced |
| • not equivalent | • = symbol | |

Additional Math Online Resources

[New York State Released Tests](#) (pdf format)

[VA DOE Training/Technical Assistance](#) (SOL related searches, King George is region 3)

[Making Connections to Content: Essential Vocabulary](#) (Dan Mulligan)

[Illuminations](#) (excellent lesson plans, interactive tools, NCTM standards)

[National Library of Virtual Manipulatives](#)

[Mathematics Activity Types](#) (technology integration with math, The College of William & Mary)

[Open Ended Assessment in Math](#)

[APEC Math Assessment Database](#)

[Math Dictionary for Kids](#)

[SOL Released Tests in Various Formats](#)

[Technology Tools for the 21st Century Classroom](#) (KGES portaportal, math tools)