

A Correlation of

Scott Foresman • Addison Wesley

en**Vision**MATH™

to the

Ohio
Academic Content
Standards for Mathematics
Grade Level Indicators
Grades K-6

PEARSON

G/M-253A

Correlation Introduction

This correlation is designed to show the close alignment between Scott Foresman-Addison Wesley enVisionMATH and the Ohio Academic Content Standards, and Grade-Level Indicators. Correlation page references are to the Teacher’s Edition and Student Edition.

The en**Vision**MATH™ program is based around scientific research on how children learn mathematics as well as on classroom-based evidence that validates proven reliability.

Personalized Curriculum

en**Vision**MATH™ provides 20 (16 in Kindergarten) focused topics that are coherent, digestible groups of lessons focusing on one or a few related content areas. A flexible sequence of topics is small enough for a district to rearrange into a personalized curriculum that matches the sequence preferred by the district. The curriculum is designed so that all standards can be taught before the major mathematics testing.

Instructional Design

en**Vision**MATH™ teaches for deep conceptual understanding using research-based best practices. Essential understandings connected by Big Ideas are explicitly stated in the Teacher’s Edition. Daily Spiral Review and the Problem of the Day focus foundational skills and allow for ongoing practice with a variety of problem types. Daily interactive concept development encourages students to interact with teachers and other students to develop conceptual understanding.

Visual Learning allows students to benefit from seeing math ideas portrayed pictorially as well as being able to see connections between ideas. en**Vision**MATH™ created a Visual Learning Bridge which is a step-by-step bridge between the interactive learning activity and the lesson exercises to help students focus on one idea at a time and see the connections within the sequence of ideas. The strong sequential visual/verbal connections deepen conceptual understanding for students of all learning modalities and are particularly effective with English language learners and struggling readers. Guiding questions in blue type help the teacher guide students through the examples, ask probing questions to stimulate higher order thinking, and allow for checking of understanding.

Differentiated Instruction

en**Vision**MATH™ engages and interests all students with leveled activities for ongoing differentiated instruction. A Teacher-Directed Intervention activity at the end of every lesson provides immediate opportunities to get students on track. In addition, ready made leveled learning centers for each lesson allow different students to do the same activity at different levels at the same time giving the teacher uninterrupted time to focus on reteaching students who require intervention. All centers can be used repeatedly due to the inclusion of a “Try Again” at the end. They can also be used for ongoing review and they can be used year after year. Topic-specific considerations for EL, Special Education, At-Risk, and Advanced students enable the teacher to accommodate the diverse learners in the classroom.

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**Scott Foresman - Addison Wesley enVisionMATH
to the
Ohio Academic Content Standards for Mathematics
Grade Level Indicators**

Kindergarten

Number, Number Sense and Operations Standard

Students demonstrate number sense including an understanding of number systems and operations, and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.

Number and Number Systems

- 1. Compare and order whole numbers up to 10.**
SE/TE: 93–94, 259–260
277–278, 279–280
- 2. Explain rules of counting, such as each object should be counted once and that order does not change the number.**
SE/TE: 51-52, 55-56
- 3. Count to twenty; e.g., in play situations or while reading number books.**
SE/TE: 219
- 4. Determine “how many” in sets (groups) of 10 or fewer objects.**
SE/TE: 51–52, 53–54, 55–56, 57–58, 59–60, 63–64, 65–66, 67–68, 75–76, 79–80, 81–82, 85–86, 87–88, 91–92, 95–96, 101–102, 103–104, 107–108, 109–110
177–178, 179–180, 181–182, 183–184, 185–186, 187–188, 189–190
- 5. Relate, read and write numerals for single-digit numbers (0 to 9).**
SE/TE: 53–54, 57–58, 69–70, 79–80, 85–86, 91–92, 93–94, 95–96, 101–102, 103–104, 107–108, 109–110
177–178, 179–180, 181–182, 183–184, 185–186, 187–188, 189–190
- 6. Construct multiple sets of objects each containing the same number of objects.**
SE/TE: 51–52, 55–56, 59–60, 75–76, 81–82, 87–88

7. Compare the number of objects in two or more sets when one set has one or two more, or one or two fewer objects.

SE/TE: 63–64, 65–66, 67–68, 95–96, 101–102, 103–104, 105–106, 107–108, 109–110, 199–200, 289–290

8. Represent and use whole numbers in flexible ways, including relating, composing and decomposing numbers; e.g., 5 marbles can be 2 red and 3 green or 1 red and 4 green.

SE/TE: 61-62, 69-70, 77-78, 83-84, 89-90

9. Identify and state the value of a penny, nickel and dime.

SE/TE: 237–238, 239–240, 241–242

Meaning of Operations

10. Model and represent addition as combining sets and counting on, and subtraction as take-away and comparison. For example:

- a. Combine and separate small sets of objects in contextual situations; e.g., add or subtract one, two, or another small amount.

SE/TE: 177–178, 179–180, 181–182, 183–184, 185–186, 187–188, 189–190 195–196, 197–198, 199–200, 201–202, 203–204, 205–206, 207–208

- b. Count on (forward) and count back (backward) on a number line between 0 and 10.

SE/TE: 177-178, 179-180, 181-182, 183-184, 185-186, 187-188, 189-190 195-196, 197-198, 201-202, 203-204, 205-206, 207-208

11. Demonstrate joining multiple groups of objects, each containing the same number of objects; e.g., combining 3 bags of candy, each containing 2 pieces.

SE/TE: 227–228, 229-230

12. Partition or share a small set of objects into groups of equal size; e.g., sharing 6 stickers equally among 3 children.

SE/TE: 131-132

Computation and Estimation

13. Recognize the number or quantity of sets up to 5 without counting; e.g., recognize without counting the dot arrangement on a domino as 5.
SE/TE: 57-58, 101-102, 103-104

Measurement Standard

Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.

Measurement Units

1. Identify units of time (day, week, month, year) and compare calendar elements; e.g., weeks are longer than days.
SE/TE: 271–272, 273–274, 275–276, 277–278, 279–280

Use Measurement Techniques and Tools

2. Compare and order objects of different lengths, areas, weights and capacities; and use relative terms, such as longer, shorter, bigger, smaller, heavier, lighter, more and less.
SE/TE: 153-154, 155-156, 157-158, 161-162, 163-164, 167-168
3. Measure length and volume (capacity) using uniform objects in the environment. For example, find:
- a. how many paper clips long is a pencil;
SE/TE: 159–160
 - b. how many small containers it takes to fill one big container using sand, rice, beans.
SE/TE: 165–166
4. Order events based on time. For example:
- a. activities that take a long or short time;
SE/TE: 253–254
 - b. review what we do first, next, last;
SE/TE: 255–256, 257–258, 263–264

- c. recall what we did or plan to do yesterday, today, tomorrow.
SE/TE: 275–276, 277–278

Geometry and Spatial Sense Standard

Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two-, and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects and transformations to analyze mathematical situations and solve problems.

Characteristics and Properties

1. Identify and sort two-dimensional shapes and three-dimensional objects.
For example:
 - a. Identify and describe two-dimensional figures and three-dimensional objects from the environment using the child’s own vocabulary.
SE/TE: 115–116, 117–118, 125–126, 127–128, 131–132, 137–138, 139–140
3–4, 5–6, 7–8, 9–10, 11–12
 - b. Sort shapes and objects into groups based on student-defined categories.
SE/TE: 7–8
5–6
 - c. Select all shapes or objects of one type from a group.
SE/TE: 9–10, 115–116, 117–118, 125–126, 127–128, 131–132
11–12
 - d. Build two-dimensional figures using paper shapes or tangrams; build simple three-dimensional objects using blocks.
SE/TE: 119–120

Spatial Relationships

2. Name and demonstrate the relative position of objects as follows:
 - a. place objects over, under, inside, outside, on, beside, between, above, below, on top of, upside-down, behind, in back of, in front of;
SE/TE: 17–18, 19–20, 21–22, 23–24, 25–26, 27–28, 147–148
 - b. describe placement of objects with terms, such as on, inside, outside, above, below, over, under, beside, between, in front of, behind.
SE/TE: 17–18, 19–20, 21–22, 23–24, 25–26, 27–28

Patterns, Functions and Algebra Standard

Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.

Use Patterns, Relations and Functions

- 1. Sort, classify and order objects by size, number and other properties. For example:**
 - a. Identify how objects are alike and different.
SE/TE: 3–4, 283–284**
 - b. Order three events or objects according to a given attribute, such as time or size.
SE/TE: 257–258, 265–266**
 - c. Recognize and explain how objects can be classified in more than one way.
SE/TE: 7–8**
 - d. Identify what attribute was used to sort groups of objects that have already been sorted.
SE/TE: 5–6, 9–10, 11–12**
- 2. Identify, create, extend and copy sequences of sounds (such as musical notes), shapes (such as buttons, leaves or blocks), motions (such as hops or skips), and numbers from 1 to 10.
SE/TE: 33–34, 37–38, 39–40, 41–42, 43–44, 45–46, 93–94**
- 3. Describe orally the pattern of a given sequence.
SE/TE: 33–34, 35–36, 37–38, 39–40, 41–42, 43–44, 45–46, 231–232**

Use Algebraic Representations

- 4. Model a problem situation using physical materials.
SE/TE: 27–28, 109–110, 141–142, 147–148, 161–162, 171–172, 177–178, 179–180, 181–182, 183–184, 185–186, 187–188, 189–190, 207–208, 247–248**

Data Analysis and Probability Standard

Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.

Data Collection

- 1. Gather and sort data in response to questions posed by teacher and students; e.g., how many sisters and brothers, what color shoes.
SE/TE: 95–96, 291–292**
- 2. Arrange objects in a floor or table graph according to attributes, such as use, size, color or shape.
SE/TE: 293–294, 295–296, 297–298, 301–302**

Statistical Methods

- 3. Select the category or categories that have the most or fewest objects in a floor or table graph.
SE/TE: 293–294, 295–296, 297–298, 301–302**

**Scott Foresman - Addison Wesley enVisionMATH
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Ohio Academic Content Standards for Mathematics
Grade Level Indicators**

Grade One

Number, Number Sense and Operations Standard

Students demonstrate number sense including an understanding of number systems and operations, and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.

Number and Number Systems

- 1. Use ordinal numbers to order objects; e.g., first, second, third.**
SE/TE: 287–290, 359–362

- 2. Recognize and generate equivalent forms for the same number using physical models, words and number expressions; e.g., concept of ten is described by “10 blocks”, full tens frame, numeral 10, $5 + 5$, $15 - 5$, one less than 11, my brother’s age.**
SE/TE: 19–22, 51–54, 55–58, 59–62, 83–86, 87–90, 91–94, 119–122, 123–126, 127–130, 131–134, 135–138, 159–162, 263–266, 303–306, 307–310, 311–314, 315–318, 319–322, 323–326, 489–492, 497–500, 501–504, 521–524, 517–520

- 3. Read and write the numerals for numbers to 100.**
SE/TE: 3–6, 7–10, 11–14, 15–18, 19–22, 23–26, 39–42, 43–46, 119–122, 123–126, 263–266, 267–270, 271–274, 275–278, 279–282, 307–310, 315–318, 319–322, 323–326, 331–334, 303–306, 311–314

- 4. Count forward to 100, count backwards from 100, and count forward or backward starting at any number between 1 and 100.**
SE/TE: 271–274, 275–278, 335–338, 343–346, 351–354, 613–616, 625–628

5. Use place value concepts to represent whole numbers using numerals, words, expanded notation and physical models with ones and tens. For example:
 - a. Develop a system to group and count by twos, fives and tens.
SE/TE: 271–274, 275–278, 279–282, 291–294, 307–310, 609–612
 - b. Identify patterns and groupings in a 100's chart and relate to place value concepts.
SE/TE: 275–278, 335–338, 343–346, 351–354, 613–616, 625–628
 - c. Recognize the first digit of a two digit number as the most important to indicate size of a number and the nearness to 10 or 100.
SE/TE: 347–350, 355–358
303–306
6. Identify and state the value of a penny, nickel, dime, quarter and dollar.
SE/TE: 367–370, 371–374, 375–378, 379–382, 383–386
7. Determine the value of a small collection of coins (with a total value up to one dollar) using 1 or 2 different type coins, including pennies, nickels, dimes and quarters.
SE/TE: 367–370, 371–374, 375–378, 379–382, 383–386
8. Show different combinations of coins that have the same value.
SE/TE: 382
9. Represent commonly used fractions using words and physical models for halves, thirds and fourths, recognizing fractions are represented by equal size parts of a whole and of a set of objects.
SE/TE: 585–588, 589–592, 593–596, 597–600

Meaning of Operations

10. Model, represent and explain addition as combining sets (part + part = whole) and counting on. For example:
 - a. Model and explain addition using physical materials in contextual situations.
SE/TE: 75–78, 155–158, 637–640
159–162, 367–370, 509–512, 517–520, 521–524

- b. Draw pictures to model addition.**
SE/TE: 11–14, 15–18, 19–22, 75–78, 143–146, 147–150, 151–154, 159–162, 163–166, 533–536
51–54, 55–58, 59–62, 63–66, 71–74, 155–158, 175–178, 517–520
- c. Write number sentences to represent addition.**
SE/TE: 63–66, 67–70, 71–74, 143–146, 147–150, 151–154, 155–158, 159–162, 163–166, 387–390, 481–484, 485–488, 517–520, 533–536, 609–612, 613–616, 617–620, 621–624
107–110, 493–496, 521–524
- d. Explain that adding two whole numbers yields a larger whole number.**
SE/TE: 55–58, 63–66, 67–70
617–620, 621–624, 637–640
- 11. Model, represent and explain subtraction as take-away and comparison. For example:**
- a. Model and explain subtraction using physical materials in contextual situations.**
SE/TE: 99–102, 103–106, 111–114
521–524
- b. Draw pictures to model subtraction.**
SE/TE: 83–86, 87–90, 91–94, 187–190, 529–532, 533–536
- c. Write number sentences to represent subtraction.**
SE/TE: 95–98, 99–102, 103–106, 107–110, 111–114, 171–174, 187–190, 517–520, 533–536, 625–628, 629–632, 633–636
493–496, 521–524
- d. Explain that subtraction of whole numbers yields an answer smaller than the original number.**
SE/TE: 95–98, 99–102
629–632, 633–636
- 12. Use conventional symbols to represent the operations of addition and subtraction.**
SE/TE: 63–66, 67–70, 609–612, 613–616, 617–620, 621–624
625–628, 629–632, 633–636
107–110, 111–114, 147–150, 155–158, 163–166, 171–174, 175–178, 179–182, 183–186, 187–190, 481–484

13. Model and represent multiplication as repeated addition and rectangular arrays in contextual situations; e.g., four people will be at my party and if I want to give 3 balloons to each person, how many balloons will I need to buy?

TE: 278, 282

14. Model and represent division as sharing equally in contextual situations; e.g., sharing cookies.

TE: 176

15. Demonstrate that equal means “the same as” using visual representations.

SE/TE: 342

Computation and Estimation

16. Develop strategies for basic addition facts, such as:

a. counting all;

**SE/TE: 7–10, 51–54, 55–58, 59–62, 63–66, 127–130, 163–166, 525–528
3–6**

b. counting on;

SE/TE: 7–10, 131–134, 143–146, 147–150, 151–154, 159–162, 163–166

c. one more, two more;

**SE/TE: 7–10, 11–14, 19–22, 143–146, 267–270, 331–334, 489–492
119–122, 123–126**

d. doubles;

**SE/TE: 55–58, 147–150, 175–178, 481–484, 485–488, 489–492, 505–508
19–22**

e. doubles plus or minus one;

SE/TE: 151–154, 175–178, 485–488, 489–492

f. make ten;

SE/TE: 127–130, 135–138, 497–500, 501–504, 505–508

g. using tens frames;

**SE/TE: 11–14, 127–130, 155–158, 159–162, 497–500
119–122, 123–126, 263–266**

- h. identity property (adding zero).**
SE/TE: 71-74, 135-138, 143-146

17. Develop strategies for basic subtraction facts, such as:

- a. relating to addition (for example, think of $7 - 3 = ?$ as “3 plus ? equals 7”);**
SE/TE: 107-110, 131-134, 175-178, 179-182, 183-186, 517-520, 521-524,
525-528, 529-532
83-86, 87-90, 91-94
- b. one less, two less;**
SE/TE: 171-174, 175-178, 267-270, 331-334
- c. all but one (for example, $8 - 7$, $5 - 4$);**
SE/TE: 83-86, 87-90, 91-94, 171-174, 175-178, 179-182, 183-186, 187-190
- d. using tens frames;**
SE/TE: 123-126, 130
- e. missing addends.**
SE/TE: 83-86, 87-90, 91-94, 131-134, 521-524, 525-528, 529-532

Measurement Standard

Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.

Measurement Units

- 1. Recognize and explain the need for fixed units and tools for measuring length and weight; e.g., rulers and balance scales.**
SE/TE: 407-410, 411-414
403-406, 415-418
- 2. Tell time to the hour and half hour on digital and analog (dial) timepieces.**
SE/TE: 453-456, 457-460, 461-464
- 3. Order a sequence of events with respect to time; e.g., summer, fall, winter and spring; morning, afternoon and night.**
SE/TE: 465-468, 469-472, 473-476
461-464

Use Measurement Techniques and Tools

- 4. Estimate and measure weight using non-standard units; e.g., blocks of uniform size.
SE/TE: 431–434**
- 5. Estimate and measure lengths using non-standard and standard units; i.e., centimeters, inches and feet.
SE/TE: 399–402, 403–406, 407–410, 411–414, 415–418**

Geometry and Spatial Sense Standard

Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two-, and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects and transformations to analyze mathematical situations and solve problems.

Characteristics and Properties

- 1. Identify, compare and sort two-dimensional shapes; i.e., square, circle, ellipse, triangle, rectangle, rhombus, trapezoid, parallelogram, pentagon and hexagon. For example:**
 - a. Recognize and identify triangles and rhombuses independent of position, shape or size;
SE/TE: 195–198, 207–210, 211–214**
 - b. Describe two-dimensional shapes using attributes such as number of sides and number of vertices (corners or angles).
SE/TE: 199–202**
- 2. Create new shapes by combining or cutting apart existing shapes.
SE/TE: 203–206, 207–210, 223–226**
- 3. Identify the shapes of the faces of three-dimensional objects.
SE/TE: 195-198, 199–202, 203–206, 207–210**

Spatial Relationships

4. **Extend the use of location words to include distance (near, far, close to) and directional words (left, right).**
SE/TE: 553–556
5. **Copy figures and draw simple two-dimensional shapes from memory.**
SE/TE: 195-198, 199-202, 211-214, 215-218, 219-222

Patterns, Functions and Algebra Standard

Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.

Use Patterns, Relations and Functions

1. **Sort, classify and order objects by two or more attributes, such as color and shape, and explain how objects were sorted.**
SE/TE: 195–198, 199–202, 235–238
597–600
2. **Extend sequences of sounds, shapes or simple number patterns, and create and record similar patterns. For example:**
 - a. **Analyze and describe patterns with multiple attributes using numbers and shapes; e.g., AA, B, aa, b, AA, B, aa, b,...**
SE/TE: 247–250, 251–254, 255–258
203–206, 223–226
 - b. **Continue repeating and growing patterns with materials, pictures and geometric items; e.g., XO, XOO, XOOO, XOOOO.**
SE/TE: 271–274, 291–294, 295–298
23–26
3. **Describe orally the basic unit or general plan of a repeating or growing pattern.**
SE/TE: 243–246, 247–250, 251–254, 255–258, 291–294
275–278, 279–282, 295–298, 343–346

Use Algebraic Representations

- 4. Solve open sentences by representing an expression in more than one way using the commutative property; e.g., $4 + 5 = 5 + 4$ or the number of blue balls plus red balls is the same as the number of red balls plus blue balls ($R + B = B + R$).**

SE/TE: 143–146, 521–524

- 5. Describe orally and model a problem situation using words, objects or number phrase or sentence.**

SE/TE: 3–6, 15–18, 19–22, 23–26, 39–42, 43–46, 63–66, 67–70, 71–74, 75–78, 95–98, 99–102, 103–106, 111–114, 151–154, 155–158, 163–166, 171–174, 175–178, 179–182, 183–186, 187–190, 223–226, 255–258, 323–326, 367–370, 371–374, 387–390, 493–496, 585–588, 589–592, 593–596, 597–600, 637–640
51–54, 55–58, 59–62, 83–86, 87–90, 91–94, 143–146, 147–150, 159–162, 263–266, 267–270, 481–484, 485–488, 489–492, 497–500, 501–504, 505–508, 517–520, 521–524, 525–528, 529–532, 533–536

Data Analysis and Probability Standard

Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.

Data Collection

- 1. Identify multiple categories for sorting data.**

SE/TE: 557–560, 601–604

509–512, 597–600

- 2. Collect and organize data into charts using tally marks.**

SE/TE: 557–560, 561–564, 577–580

565–568

- 3. Display data in picture graphs with units of 1 and bar graphs with intervals of 1.**

SE/TE: 561–564, 565–568, 569–572, 601–604

- 4. Read and interpret charts, picture graphs and bar graphs as sources of information to identify main ideas, draw conclusions, and make predictions.**

SE/TE: 545–548, 549–552, 569–572, 601–604

- 5. Construct a question that can be answered by using information from a graph.**

SE/TE: 601–604

541–544, 545–548, 549–552, 557–560, 565–568

Statistical Methods

- 6. Arrange five objects by an attribute, such as size or weight, and identify the ordinal position of each object.**

SE/TE: 235–238

- 7. Answer questions about the number of objects represented in a picture graph, bar graph or table graph; e.g., category with most, how many more in a category compared to another, how many altogether in two categories.**

SE/TE: 541–544, 545–548, 549–552, 557–560, 565–568, 569–572

561–564

Probability

- 8. Describe the likelihood of simple events as possible/impossible and more likely/less likely; e.g., when using spinners or number cubes in classroom activities.**

SE/TE: 573–576, 577–580, 601–604

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Grade Level Indicators**

Grade Two

Number, Number Sense and Operations Standard

Students demonstrate number sense including an understanding of number systems and operations, and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.

Number and Number Systems

- 1. Use place value concepts to represent, compare and order whole numbers using physical models, numerals and words, with ones, tens and hundreds. For example:**
 - a. Recognize 10 can mean “10 ones” or a single entity (1 ten) through physical models and trading games.
SE/TE: 99–102, 111-114, 219–222, 227–230, 231–234, 235–238, 511–514, 515–518**
 - b. Read and write 3-digit numerals (e.g., 243 as two hundred forty three, 24 tens and 3 ones, or 2 hundreds and 43 ones, etc.) and construct models to represent each.
SE/TE: 103–106, 107–110, 115-118, 119-122, 123-126, 127-130, 135-138, 519–522, 523-526, 527-530, 531-534, 535-538, 539-542, 543-546, 559–562, 563–566, 575–578, 579–582**
- 2. Recognize and classify numbers as even or odd.
SE/TE: 131–134**
- 3. Count money and make change using coins and a dollar bill.
TE: 168**
- 4. Represent and write the value of money using the ¢ sign and in decimal form when using the \$ sign.
SE/TE: 143–146, 147–150, 151–154, 155–158, 159–162, 163–166, 307–310**

5. Represent fractions (halves, thirds, fourths, sixths and eighths), using words, numerals and physical models. For example:
- a. Recognize that a fractional part can mean different amounts depending on the original quantity.
SE/TE : 371-374
 - b. Recognize that a fractional part of a rectangle does not have to be shaded with contiguous parts.
SE/TE : 355-358, 359-362, 367-370, 371-374
 - c. Identify and illustrate parts of a whole and parts of sets of objects.
SE/TE: 351-354, 355-358, 359-362, 367-370, 371-374
 - d. Compare and order physical models of halves, thirds and fourths in relations to 0 and 1.
SE/TE: 363-366, 367-370

Meaning of Operations

6. Model, represent and explain subtraction as comparison, take-away and part-to-whole; e.g., solve missing addend problems by counting up or subtracting, such as “I had six baseball cards, my sister gave me more, and I now have ten. How many did she give me?” can be represented as $6 + ? = 10$ or $10 - 6 = ?$.
SE/TE: 11-14, 15-18, 19-22, 23-26, 27-30, 71-74, 75-78, 79-82, 83-86, 87-90, 91-94, 111-114, 195-198, 199-202, 203-206, 207-210, 211-214, 251-254, 255-258, 259-262, 263-266, 267-270, 271-274, 275-278, 295-298, 299-302, 303-306, 471-474
307-310
7. Model, represent and explain multiplication as repeated addition, rectangular arrays and skip counting.
SE/TE: 591-594, 595-598, 599-602, 603-606, 607-610, 611-614
127-130

8. Model, represent and explain division as sharing equally and repeated subtraction.
SE/TE: 619–622, 623–626, 627–630, 631–634, 635–638
9. Model and use the commutative property for addition.
SE/TE: 47–50

Computation and Estimation

10. Demonstrate fluency in addition facts with addends through 9 and corresponding subtractions; e.g., $9 + 9 = 18$, $18 - 9 = 9$.
SE/TE: 3–6, 7–10, 11–14, 15–18, 19–22, 23–26, 27–30, 35–38, 39–42, 43–46, 47–50, 51–54, 55–58, 59–62, 63–66, 71–74, 75–78, 79–82, 83–86, 87–90, 91–94, 171–174, 187–190, 195–198, 211–214, 223–226, 275–278, 471–474
175–178, 179–182, 183–186, 199–202, 203–206, 207–210, 219–222, 227–230, 231–234, 235–238, 239–242, 243–246, 251–254, 255–258, 259–262, 263–266, 267–270, 271–274
11. Add and subtract multiples of 10.
SE/TE: 171–174, 195–198, 523–526, 527–530, 551–554, 567–570, 583–586
187–190
12. Demonstrate multiple strategies for adding and subtracting 2- or 3-digit whole numbers, such as:
- a. compatible numbers;
SE/TE: 175–178, 179–182, 183–186
 - b. compensatory numbers;
SE/TE: 239–242; TE: 92
 - c. informal use of commutative and associative properties of addition.
SE/TE: 239–242
13. Estimate the results of whole number addition and subtraction problems using front-end estimation, and judge the reasonableness of the answers.
SE/TE: 287–290, 299–302, 555–558, 571–574

Measurement Standard

Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.

Measurement Units

- 1. Identify and select appropriate units of measure for:**
 - a. length – centimeters, meters, inches, feet or yards;
SE/TE: 391–394, 395–398, 443–446**
 - b. volume (capacity) – liters, cups, pints or quarts;
SE/TE: 423–426, 427–430, 443–446**
 - c. weight – grams, ounces or pounds;
SE/TE: 435–438, 439–442, 443–446**
 - d. time – hours, half-hours, quarter-hours or minutes and time designations,
a.m. or p.m.
SE/TE: 451–454, 455–458, 459–462**
- 2. Establish personal or common referents for units of measure to make estimates and comparisons; e.g., the width of a finger is a centimeter, a large bottle of soda pop is 2 liters, a small paper clip weighs about one gram.
SE/TE: 391–394, 395–398, 415–418, 423–426, 427–430, 435–438, 439–442, 443–446, 459–462**
- 3. Describe and compare the relationships among units of measure, such as centimeters and meters; inches, feet and yards; cups, pints and quarts; ounces and pounds; and hours, half-hours, and quarter-hours; e.g., how many inches in a foot?
SE/TE: 423–426, 435–438, 439–442**
- 4. Tell time to the nearest minute interval on digital and to the nearest 5-minute interval on analog (dial) timepieces.
SE/TE: 451–454, 455–458, 471–474**
- 5. Estimate and measure the length and weight of common objects, using metric and U.S. customary units, accurate to the nearest unit.
SE/TE: 435–438, 439–442, 443–446**

6. **Select and use appropriate measurement tools; e.g., a ruler to draw a segment 3 inches long, a measuring cup to place 2 cups of rice in a bowl, a scale to weigh 50 grams of candy.**
SE/TE: 379–382, 383–386, 387–390, 419–422, 423–426, 427–430, 431–434, 435–438, 439–442, 443–446
7. **Make and test predictions about measurements, using different units to measure the same length or volume.**
SE/TE: 387–390

Geometry and Spatial Sense Standard

Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two-, and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects and transformations to analyze mathematical situations and solve problems.

Characteristics and Properties

1. **Identify, describe, compare and sort three-dimensional objects (i.e., cubes, spheres, prisms, cones, cylinders and pyramids) according to the shape of the faces or the numbers of faces, edges or vertices.**
SE/TE: 315-318, 319–322, 343-346
2. **Predict what new shapes will be formed by combining or cutting apart existing shapes.**
SE/TE: 323–326, 327–330, 343–346
3. **Recognize two-dimensional shapes and three-dimensional objects from different positions.**
SE/TE: 335–338
315–318, 319–322, 323–326, 327–330, 331–334, 343–346

Spatial Relationships

4. Identify and determine whether two-dimensional shapes are congruent (same shape and size) or similar (same shape different size) by copying or using superposition (lay one thing on top of another).

**SE/TE: 331–334
335–338**

Transformations and Symmetry

5. Create and identify two-dimensional figures with line symmetry; e.g., what letter shapes, logos, polygons are symmetrical?

SE/TE: 339-342

Patterns, Functions and Algebra Standard

Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.

Use Patterns, Relations and Functions

1. Extend simple number patterns (both repeating and growing patterns), and create similar patterns using different objects, such as using physical materials or shapes to represent numerical patterns.

SE/TE: 127–130, 171–174, 187–190, 543–546, 635–638

2. Use patterns to make generalizations and predictions; e.g., determine a missing element in a pattern.

SE/TE: 171–174, 187–190, 527–530, 635–638

3. Create new patterns with consistent rules or plans, and describe the rule or general plan of existing patterns.

**SE/TE: 127–130, 187–190, 527–530, 543–546
635–638**

Use Algebraic Representations

- 4. Use objects, pictures, numbers and other symbols to represent a problem situation.**

SE/TE: 3–6, 7–10, 11–14, 15–18, 19–22, 23–26, 27–30, 35–38, 39–42, 43–46, 47–50, 51–54, 55–58, 59–62, 63–66, 71–74, 75–78, 79–82, 83–86, 87–90, 91–94, 99–102, 103–106, 107–110, 111–114, 115–118, 119–122, 123–126, 131–134, 135–138, 143–146, 147–150, 151–154, 155–158, 159–162, 163–166, 171–174, 187–190, 195–198, 211–214, 223–226, 231–234, 243–246, 251–254, 255–258, 263–266, 275–278, 283–286, 287–290, 299–302, 307–310, 451–454, 455–458, 459–462, 471–474, 551–554, 555–558, 567–570, 571–574, 583–586, 591–594, 595–598, 599–602, 603–606, 607–610, 611–614, 619–622, 623–626, 627–630, 631–634, 635–638

175–178, 199–202, 219–222, 235–238, 259–262, 291–294, 351–354, 355–358, 359–362, 363–366, 383–386, 479–482, 483–486, 487–490, 511–514, 515–518, 519–522, 523–526, 527–530, 559–562

- 5. Understand equivalence and extend the concept to situations involving symbols; e.g., $4 + 5 = 9$ and $9 = 4 + 5$, and $4 + 5 = 3 + 6 = \triangle + \square \dots$**

SE/TE: 11–14

- 6. Use symbols to represent unknown quantities and identify values for symbols in an expression or equation using addition and subtraction; e.g.,**

$\square + \circ = 10$, $\triangle - 2 = 4$.

SE/TE: 87–90, 567–570

91–94, 195–198

Analyze Change

- 5. Describe qualitative and quantitative changes, especially those involving addition and subtraction; e.g., a student growing taller versus a student growing two inches in one year.**

TE: 468

Data Analysis and Probability Standard

Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.

Data Collection

- 1. Pose questions, use observations, interviews and surveys to collect data, and organize data in charts, picture graphs and bar graphs.**
SE/TE: 479–482, 483–486, 487–490, 503–506
- 2. Read, interpret and make comparisons and predictions from data represented in charts, line plots, picture graphs and bar graphs.**
SE/TE: 135–138, 479–482, 483–486, 487–490, 503–506, 583–586
- 3. Read and construct simple timelines to sequence events.**
TE: 492

Statistical Methods

- 4. Write a few sentences to describe and compare categories of data represented in a chart or graph, and make statements about the data as a whole.**
SE/TE: 479–482, 483–486, 487–490, 503–506
TE: 492
- 5. Identify untrue or inappropriate statements about a given set of data.**
SE/TE: 487–490
- 6. Recognize that data may vary from one population to another; e.g., favorite TV shows of students and of parents.**
SE/TE: 487–490

Probability

- 7. List some of the possible outcomes of a simple experiment, and predict whether given outcomes are more, less or equally likely to occur.**
SE/TE: 495–498
- 8. Use physical models and pictures to represent possible arrangements of 2 or 3 objects.**
SE/TE: 539–542

**Scott Foresman - Addison Wesley enVisionMATH
to the
Ohio Academic Content Standards for Mathematics
Grade Level Indicators**

Grade Three

Number, Number Sense and Operations Standard

Students demonstrate number sense including an understanding of number systems and operations, and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.

Number and Number Systems

- 1. Identify and generate equivalent forms of whole numbers; e.g., 36, $30 + 6$, 9×4 , $46 - 10$, number of inches in a yard.
SE/TE: 8–9, 10–11, 32–33, 36–38, 72–73, 98–100
50–52**

- 2. Use place value concepts to represent whole numbers and decimals using numerals, words, expanded notation and physical models. For example:**
 - a. Recognize 100 means “10 tens” as well as a single entity (1 hundred) through physical models and trading games.
SE/TE: 4–5, 6–7, 10–11, 12–13, 34–35, 36–38, 40–42, 44–46, 50–52, 68–70, 72–73, 74–76, 86–87, 88–89, 90–91, 92–94, 96–97, 98–100, 440–443
48–49, 54–55**

 - b. Describe the multiplicative nature of the number system; e.g., the structure of 3205 as 3×1000 plus 2×100 plus 5×1 .
TE: 50**

 - c. Model the size of 1000 in multiple ways; e.g., packaging 1000 objects into 10 boxes of 100, modeling a meter with centimeter and decimeter strips, or gathering 1000 pop-can tabs.
SE/TE: 4–5, 6–7, 306–307**

- d. Explain the concept of tenths and hundredths using physical models, such as metric pieces, base ten blocks, decimal squares or money.
SE/TE: 306–307, 308–311
3. Use mathematical language and symbols to compare and order; e.g., less than, greater than, at most, at least, $<$, $>$, $=$, \approx , \approx .
SE/TE: 12–13, 16–17, 43, 215, 288–289, 290–293
122–124, 130–131
4. Count money and make change using coins and paper bills to ten dollars.
SE/TE: 18–21, 22–23
5. Represent fractions and mixed numbers using words, numerals and physical models.
SE/TE: 316–318
6. Compare and order commonly used fractions and mixed numbers using number lines, models (such as fraction circles or bars), points of reference (such as more or less than $\frac{1}{2}$), and equivalent forms found using physical or visual models.
SE/TE: 282–283, 288–289, 290–293
7. Recognize and use decimal and fraction concepts and notations as related ways of representing parts of a whole or a set; e.g., 3 of 10 marbles are red can also be described as $\frac{3}{10}$ and 3 tenths are red.
SE/TE: 278–279, 280–281, 306–307, 308–311, 316–318

Meaning of Operations

8. Model, represent and explain multiplication; e.g., repeated addition, skip counting, rectangular arrays and area model. For example:
- a. Use conventional mathematical symbols to write equations for word problems involving multiplication.
SE/TE: 108–109, 110–112, 114–115, 412–413, 414–415, 416–417, 418–419, 420–421, 422–424, 426–428

- b. Understand that, unlike addition and subtraction, the factors in multiplication and division may have different units; e.g., 3 boxes of 5 cookies each.**
SE/TE: 122–124, 126–127, 128–129, 130–131, 132–133, 412–413, 414–415, 416–417, 418–419, 420–421, 422–424, 426–428
- 9. Model, represent and explain division; e.g., sharing equally, repeated subtraction, rectangular arrays and area model. For example:**
- a. Translate contextual situations involving division into conventional mathematical symbols.**
SE/TE: 164–165, 166–168, 170–171, 172–173, 440–443
- b. Explain how a remainder may impact an answer in a real-world situation; e.g., 14 cookies being shared by 4 children.**
SE/TE: 166–168, 436–437, 446–447
- 10. Explain and use relationships between operations, such as:**
- a. relate addition and subtraction as inverse operations;**
SE/TE: 66–67, 184–185
- b. relate multiplication and division as inverse operations;**
SE/TE: 184–185
- c. relate addition to multiplication (repeated addition);**
SE/TE: 108–109, 110–112, 114–115, 116–117, 118–120, 426–428, 414–415
- d. relate subtraction to division (repeated subtraction).**
SE/TE: 68–70
- 11. Model and use the commutative and associative properties for addition and multiplication.**
SE/TE: 32–33, 110–112, 152–153

Computation and Estimation

12. Add and subtract whole numbers with and without regrouping.

SE/TE: 132–133, 154–156, 374–375

110–112, 384–385

13. Demonstrate fluency in multiplication facts through 10 and corresponding division facts.

SE/TE: 122–124, 126–127, 128–129, 130–131, 140–141, 142–143, 144–146, 148–149, 152–153, 186–188, 190–191, 192–193, 194–195, 436–437, 438–439, 444–445, 446–447, 448–450

108–109, 110–112, 114–115, 116–117, 118–120, 132–133, 412–413, 414–415, 416–417, 418–419, 420–421, 422–424, 426–428

14. Multiply and divide 2- and 3-digit numbers by a single-digit number, without remainders for division.

SE/TE: 412–413, 414–415, 416–417, 418–419, 420–421, 422–424, 448–450

426–428

15. Evaluate the reasonableness of computations based upon operations and the numbers involved; e.g., considering relative size, place value and estimates.

SE/TE: 44–46, 48–49, 54–55, 56–57, 74–76, 78–79, 414–415, 426–428, 438–439

88–89, 92–94, 422–424

Measurement Standard

Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.

Measurement Units

1. Identify and select appropriate units for measuring:

a. length – miles, kilometers and other units of measure as appropriate;

SE/TE: 368–369, 370–371, 378–379

384–385

b. volume (capacity) – gallons;

SE/TE: 338–339

- c. weight – ounces, pounds, grams, or kilograms;
SE/TE: 340–341, 358–359
 - d. temperature – degrees (Fahrenheit or Celsius).
SE/TE: 402–403, 404–405
2. Establish personal or common referents to include additional units; e.g., a gallon container of milk; a postage stamp is about a square inch.
SE/TE: 328–331, 332–333, 334–337, 338–339, 340–341, 350–351, 352–354, 356–357, 358–359
 3. Tell time to the nearest minute and find elapsed time using a calendar or a clock.
SE/TE: 392–394, 396–397, 400–401, 404–405
 4. Read thermometers in both Fahrenheit and Celsius scales.
SE/TE: 402, 403, 404–405

Use Measurement Techniques and Tools

5. Estimate and measure length, weight and volume (capacity), using metric and U.S. customary units, accurate to the nearest $\frac{1}{2}$ or $\frac{1}{4}$ unit as appropriate.
SE/TE: 328–331, 332–333, 334–337, 338–339, 340–341, 350–351, 356–357, 358–359
6. Use appropriate measurement tools and techniques to construct a figure or approximate an amount of specified length, weight or volume (capacity); e.g., construct a rectangle with length $2\frac{1}{2}$ inches and width 3 inches, fill a measuring cup to the $\frac{3}{4}$ cup mark.
SE/TE: 372–373
7. Make estimates for perimeter, area and volume using links, tiles, cubes and other models.
SE/TE: 342–343, 378–379

Geometry and Spatial Sense Standard

Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two-, and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects and transformations to analyze mathematical situations and solve problems.

Characteristics and Properties

- 1. Analyze and describe properties of two-dimensional shapes and three-dimensional objects using terms such as vertex, edge, angle, side and face.
SE/TE: 234-237, 238–240, 246-247, 248-249, 250-251, 252-253, 264-265, 266-267, 268-269**
- 2. Identify and describe the relative size of angles with respect to right angles as follows:**
 - a. Use physical models, like straws, to make different sized angles by opening and closing the sides, not by changing the side lengths.
SE/TE: 244–245**
 - b. Identify, classify and draw right, acute, obtuse and straight angles.
SE/TE: 244–245, 248–249**

Spatial Relationships

- 3. Find and name locations on a labeled grid or coordinate system; e.g., a map or graph.
SE/TE: 468–471**

Transformations and Symmetry

- 4. Draw lines of symmetry to verify symmetrical two-dimensional shapes.
SE/TE: 264–265, 266–267, 268–269**

Visualization and Geometric Models

- 5. Build a three-dimensional model of an object composed of cubes; e.g., construct a model based on an illustration or actual object.
SE/TE: 241**

Patterns, Functions and Algebra Standard

Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.

Use Patterns, Relations and Functions

- 1. Extend multiplicative and growing patterns, and describe the pattern or rule in words.**
SE/TE: 118–120, 122–124, 126–127, 128–129, 130–131, 150–151, 208–209, 210–211, 212–214, 218–221, 298–299, 360–361
- 2. Analyze and replicate arithmetic sequences with and without a calculator.**
SE/TE: 150–151, 208–209, 210–211
118–120, 122–124, 126–127, 128–129, 130–131
- 3. Use patterns to make predictions, identify relationships, and solve problems.**
SE/TE: 118–120, 122–124, 126–127, 128–129, 130–131, 150–151, 298–299, 360–361, 436–437

Use Algebraic Representations

- 4. Model problem situations using objects, pictures, tables, numbers, letters and other symbols.**
SE/TE: 110–112, 196–198, 298–299, 316–318, 384–385, 426–428
- 5. Write, solve and explain simple mathematical statements, such as $7 + \square > 8$ or $\triangle + 8 = 10$.**
SE/TE: 98–100, 108–109, 110–112, 116–117, 132–133, 196–198, 224–226, 316–318, 320–321, 352–354, 374–375, 448–450
128–129, 130–131
- 6. Express mathematical relationships as equations and inequalities.**
SE/TE: 98–100, 114–115, 116–117, 130–131, 222–223, 316–318, 320–321, 374–375
108–109, 110–112

Analyze Change

- 7. Create tables to record, organize and analyze data to discover patterns and rules.
SE/TE: 118–120, 210–211, 212–214, 298–299, 352–354, 360–361**
- 8. Identify and describe quantitative changes, especially those involving addition and subtraction; e.g., the height of water in a glass becoming 1 centimeter lower each week due to evaporation.
SE/TE: 118–120**

Data Analysis and Probability Standard

Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.

Data Collection

- 1. Collect and organize data from an experiment, such as recording and classifying observations or measurements, in response to a question posed.
SE/TE: 458–459**
- 2. Draw and interpret picture graphs in which a symbol or picture represents more than one object.
SE/TE: 460–462, 464–465**
- 3. Read, interpret and construct bar graphs with intervals greater than one.
SE/TE: 460–462, 466–467**
- 4. Support a conclusion or prediction orally and in writing, using information in a table or graph.
SE/TE: 482–483**
- 5. Match a set of data with a graphical representation of the data.
SE/TE: 466–467**
- 6. Translate information freely among charts, tables, line plots, picture graphs and bar graphs; e.g., create a bar graph from the information in a chart.
SE/TE: 478–481**

- 7. Analyze and interpret information represented on a timeline.
SE/TE: 468–471**

Statistical Methods

- 8. Identify the mode of a data set and describe the information it gives about a data set.
TE: 464**

Probability

- 9. Conduct a simple experiment or simulation of a simple event, record the results in a chart, table or graph, and use the results to draw conclusions about the likelihood of possible outcomes.
SE/TE: 476–477**
- 10. Use physical models, pictures, diagrams and lists to solve problems involving possible arrangements or combinations of two to four objects.
SE/TE: 316–318**

**Scott Foresman - Addison Wesley enVisionMATH
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Ohio Academic Content Standards for Mathematics
Grade Level Indicators**

Grade Four

Number, Number Sense and Operations Standard

Students demonstrate number sense including an understanding of number systems and operations, and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.

Number and Number Systems

- 1. Identify and generate equivalent forms of fractions and decimals. For example:**
 - a. Connect physical, verbal and symbolic representations of fractions, decimals and whole numbers; e.g., $\frac{1}{2}$, $\frac{5}{10}$, “five tenths,” 0.5, shaded rectangles with half, and five tenths.
SE/TE: 216–218, 220–221, 222–223, 224–226, 228–229, 230–232, 234–235, 238–240, 274–275, 276–278, 280–281, 282–283**
 - b. Understand and explain that ten tenths is the same as one whole in both fraction and decimal form.
SE/TE: 274–275**
- 2. Use place value structure of the base-ten number system to read, write, represent and compare whole numbers through millions and decimals through thousandths.
SE/TE: 4–6, 8–9, 10–13, 268–269, 270–272**
- 3. Round whole numbers to a given place value.
SE/TE: 14–15, 32–33, 100–101, 144–145
152–153**
- 4. Identify and represent factors and multiples of whole numbers through 100, and classify numbers as prime or composite.
SE/TE: 54–56, 58–59, 182–183, 184–185**

5. Use models and points of reference to compare commonly used fractions.
SE/TE: 234–235, 236–237

Meaning of Operations

6. Use associative and distributive properties to simplify and perform computations; e.g., use left to right multiplication and the distributive property to find an exact answer without paper and pencil, such as $5 \times 47 = 5 \times 40 + 5 \times 7 = 200 + 35 = 235$.
SE/TE: 110–112, 146–149, 150–151, 152–153
98–99
7. Recognize that division may be used to solve different types of problem situations and interpret the meaning of remainders; e.g., situations involving measurement, money.
SE/TE: 168–169, 170–172, 178–179, 186–187
166–167

Computation and Estimation

8. Solve problems involving counting money and making change, using both coins and paper bills.
SE/TE: 18–19
9. Estimate the results of computations involving whole numbers, fractions and decimals, using a variety of strategies.
SE/TE: 32–33, 36–38, 40–41, 42–43, 100–101, 102–104, 114–115, 144–145, 146–149, 152–153, 166–167, 174–176, 250–253, 294–295, 296–298, 300–302
106–108, 110–112
10. Use physical models, visual representations, and paper and pencil to add and subtract decimals and commonly used fractions with like denominators.
SE/TE: 250–253, 296–298, 300–302, 308–309
11. Develop and explain strategies for performing computations mentally.
SE/TE: 28–30, 98–99, 142–143, 154–155, 164–165

- 12. Analyze and solve multi-step problems involving addition, subtraction, multiplication and division using an organized approach, and verify and interpret results with respect to the original problem.**

SE/TE: 156–157, 186–187, 392–393

114–115

- 13. Use a variety of methods and appropriate tools for computing with whole numbers; e.g., mental math, paper and pencil, and calculator.**

SE/TE: 28–30, 96–97, 98–99, 116–118, 142–143, 144–145, 150–151, 152–153, 154–155, 166–167, 168–169, 170–172, 174–176, 178–179, 180–181

76–78, 80–81, 82–83, 84–85

- 14. Demonstrate fluency in adding and subtracting whole numbers and in multiplying and dividing whole numbers by 1- and 2-digit numbers and multiples of ten.**

SE/TE: 36–38, 40–41, 42–43, 44–46, 54–56, 58–59, 60–61, 62–63, 64–65, 66–67, 76–78, 80–81, 82–83, 84–85, 96–97, 98–99, 106–108, 110–112, 114–115, 116–118, 142–143, 144–145, 146–149, 150–151, 152–153, 154–155, 156–157, 164–165, 166–167, 168–169, 170–172, 174–176, 178–179, 180–181, 182–183

34–35, 184–185, 186–187

Measurement Standard

Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.

Measurement Units

- 1. Relate the number of units to the size of the units used to measure an object; e.g., compare the number of cups to fill a pitcher to the number of quarts to fill the same pitcher.**
SE/TE: 366–367
- 2. Demonstrate and describe perimeter as surrounding and area as covering a two-dimensional shape, and volume as filling a three-dimensional object.**
SE/TE: 316–317, 318–319, 320–322, 328–330, 354–355
- 3. Identify and select appropriate units to measure:**
 - a. perimeter – string or links (inches or centimeters).**
SE/TE: 328–330, 336–338

b. area – tiles (square inches or square centimeters).

SE/TE: 318–319, 324–325

c. volume – cubes (cubic inches or cubic centimeters).

SE/TE: 354–355

Use Measurement Techniques and Tools

4. Develop and use strategies to find perimeter using string or links, area using tiles or a grid, and volume using cubes; e.g., count squares to find area of regular or irregular shapes on a grid, layer cubes in a box to find its volume.

SE/TE: 316–317, 318–319, 320–322

5. Make simple unit conversions within a measurement system; e.g., inches to feet, kilograms to grams, quarts to gallons.

SE/TE : 370-373, 380-382

6. Write, solve and verify solutions to multi-step problems involving measurement.

SE/TE: 320–322, 324–325, 328–329, 332–333, 336–337, 354–355

Geometry and Spatial Sense Standard

Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two-, and three-dimensional geometric figures and objects.

Students use spatial reasoning, properties of geometric objects and transformations to analyze mathematical situations and solve problems.

Characteristics and Properties

1. Identify, describe and model intersecting, parallel and perpendicular lines and line segments; e.g., use straws or other material to model lines.

SE/TE: 196–197

2. Describe, classify, compare and model two- and three-dimensional objects using their attributes.

SE/TE: 202–203, 346–349, 350–351, 352–353

3. Identify similarities and differences of quadrilaterals; e.g., squares, rectangles, parallelograms and trapezoids.
SE/TE: 202-203, 206–207
4. Identify and define triangles based on angle measures (equiangular, right, acute and obtuse triangles) and side lengths (isosceles, equilateral and scalene triangles).
SE/TE: 204–205

Spatial Relationships

5. Describe points, lines and planes, and identify models in the environment.
SE/TE: 196–197
6. Specify locations and plot ordered pairs on a coordinate plane, using first quadrant points.
SE/TE: 408-409

Transformations and Symmetry

7. Identify, describe and use reflections (flips), rotations (turns), and translations (slides) in solving geometric problems; e.g., use transformations to determine if 2 shapes are congruent.
SE/TE: 448-449, 450-451, 452-453, 454-455, 458-459

Visualization and Geometric Models

8. Use geometric models to solve problems in other areas of mathematics, such as number (multiplication/division) and measurement (area, perimeter, border).
SE/TE: 328-330

Patterns, Functions and Algebra Standard

Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.

Use Patterns, Relations and Functions

- 1. Use models and words to describe, extend and make generalizations of patterns and relationships occurring in computation, numerical patterns, geometry, graphs and other applications.**
SE/TE: 58–59, 68–69, 164–165, 208–209, 356–357
86–88, 142–143, 476–477
- 2. Represent and analyze patterns and functions using words, tables and graphs.**
SE/TE: 128–129, 130-131, 132-133

Use Algebraic Representation

- 3. Construct a table of values to solve problems associated with a mathematical relationship.**
SE/TE: 20–21, 128–129, 130–131, 132–133, 336–338
- 4. Use rules and variables to describe patterns and other relationships.**
SE/TE: 130–131, 132–133
- 5. Represent mathematical relationships with equations or inequalities.**
SE/TE: 44–46, 68–69, 86–88, 116–118, 432–433, 434–435, 436–437

Analyze Change

- 6. Describe how a change in one variable affects the value of a related variable; e.g., as one increases the other increases or as one increases the other decreases.**
SE/TE: 332-333
128–129, 130–131, 132–133

Data Analysis and Probability Standard

Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.

Data Collection

- 1. Create a plan for collecting data for a specific purpose.**
SE/TE: 402–403
- 2. Represent and interpret data using tables, bar graphs, line plots and line graphs.**
SE/TE: 336–338, 404–405, 406–407, 410–411, 420–422
- 3. Interpret and construct Venn diagrams to sort and describe data.**
SE/TE: 174–176
- 4. Compare different representations of the same data to evaluate how well each representation shows important aspects of the data, and identify appropriate ways to display the data.**
SE/TE: 404–405, 406–407
- 5. Propose and explain interpretations and predictions based on data displayed in tables, charts and graphs.**
SE/TE: 402–403, 404–405, 406–407, 410–411

Statistical Methods

- 6. Describe the characteristics of a set of data based on a graphical representation, such as range of the data, clumps of data, and holes in the data.**
SE/TE: 404–405, 406–407
- 7. Identify the median of a set of data and describe what it indicates about the data.**
SE/TE: 414–415
- 8. Use range, median and mode to make comparisons among related sets of data.**
SE/TE: 414–415, 416–417

Probability

- 9. Conduct simple probability experiments and draw conclusions from the results; e.g., rolling number cubes or drawing marbles from a bag.
SE/TE: 470–471**
- 10. Represent the likelihood of possible outcomes for chance situations; e.g., probability of selecting a red marble from a bag containing 3 red and 5 white marbles.
SE/TE: 472–474**
- 11. Relate the concepts of impossible and certain-to-happen events to the numerical values of 0 (impossible) and 1 (certain).
SE/TE: 470–471, 472–474**
- 12. Place events in order of likelihood and use a diagram or appropriate language to compare the chance of each event occurring; e.g., impossible, unlikely, equal, likely, certain.
SE/TE: 472–474**
- 13. List and count all possible combinations using one member from each of several sets, each containing 2 or 3 members; e.g., the number of possible outfits from 3 shirts, 2 shorts and 2 pairs of shoes.
SE/TE: 468–469, 470–471**

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Grade Level Indicators**

Grade Five

Number, Number Sense and Operations Standard

Students demonstrate number sense including an understanding of number systems and operations, and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.

Number and Number Systems

- 1. Use models and visual representation to develop the concept of ratio as part-to-part and part-to-whole, and the concept of percent as part-to-whole.
SE/TE: 396–397, 398–399, 400–401**

- 2. Use various forms of “one” to demonstrate the equivalence of fractions;
e.g., $18/24 = 9/12 \times 2/2 = 3/4 \times 6/6$.
SE/TE: 228–229, 234–236
396–397**

- 3. Identify and generate equivalent forms of fractions, decimals and percents.
SE/TE: 226–227, 238–240, 242–243, 244–245, 400–401
446–448**

- 4. Round decimals to a given place value and round fractions (including mixed numbers) to the nearest half.
SE/TE: 28–29**

- 5. Recognize and identify perfect squares and their roots.
TE: 72**

Meaning of Operations

- 6. Represent and compare numbers less than 0 by extending the number line and using familiar applications; e.g., temperature, owing money.
SE/TE: 364–365, 412–413**

7. Use commutative, associative, distributive, identity and inverse properties to simplify and perform computations.
SE/TE: 24–26, 58–59, 60–61, 156–157, 422–423
8. Identify and use relationships between operations to solve problems.
SE/TE: 158–160, 370–377
9. Use order of operations, including use of parentheses, to simplify numerical expressions.
SE/TE: 152–154, 158–160
10. Justify why fractions need common denominators to be added or subtracted.
SE/TE: 256–258
11. Explain how place value is related to addition and subtraction of decimals; e.g., $0.2 + 0.14$; the two tenths is added to the one tenth because they are both tenths.
SE/TE: 30–32, 42–43, 44–45

Computation and Estimation

12. Use physical models, points of reference, and equivalent forms to add and subtract commonly used fractions with like and unlike denominators and decimals.
SE/TE: 42–43, 44–45, 46–48, 256–258, 262–263, 264–265, 266–267, 268–269
13. Estimate the results of computations involving whole numbers, fractions and decimals, using a variety of strategies.
SE/TE: 30–32, 42–43, 44–45, 46–48, 62–63, 86–87, 124–125, 136–137, 174–175, 184–185

Measurement Standard

Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.

Measurement Units

- 1. Identify and select appropriate units to measure angles; i.e., degrees.**
SE/TE: 204–205
- 2. Identify paths between points on a grid or coordinate plane and compare the lengths of the paths; e.g., shortest path, paths of equal length.**
SE/TE: 418–419
- 3. Demonstrate and describe the differences between covering the faces (surface area) and filling the interior (volume) of three-dimensional objects.**
SE/TE: 314-315, 328-329, 332-334
- 4. Demonstrate understanding of the differences among linear units, square units and cubic units.**
SE/TE: 156-157, 296-297, 300-302, 304-305, 314-315, 332-334

Use Measurement Techniques and Tools

- 5. Make conversions within the same measurement system while performing computations.**
SE/TE: 358–360, 362–363
- 6. Use strategies to develop formulas for determining perimeter and area of triangles, rectangles and parallelograms, and volume of rectangular prisms.**
SE/TE: 300–302, 304–305, 306–307, 308–309, 332–334, 336–338
- 7. Use benchmark angles (e.g.; 45° , 90° , 120°) to estimate the measure of angles, and use a tool to measure and draw angles.**
SE/TE: 204–205

Geometry and Spatial Sense Standard

Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two-, and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects and transformations to analyze mathematical situations and solve problems.

Characteristics and Properties

- 1. Draw circles, and identify and determine relationships among the radius, diameter, center and circumference; e.g., radius is half the diameter, the ratio of the circumference of a circle to its diameter is an approximation of π .**
SE/TE: 310–312
- 2. Use standard language to describe line, segment, ray, angle, skew, parallel and perpendicular.**
SE/TE: 200–202, 204-205
- 3. Label vertex, rays, interior and exterior for an angle.**
SE/TE: 200–202, 204–205
- 4. Describe and use properties of congruent figures to solve problems.**
SE/TE: 308, 478–479
212-213
- 5. Use physical models to determine the sum of the interior angles of triangles and quadrilaterals.**
SE/TE: 208–209, 210-211

Spatial Relationships

- 6. Extend understanding of coordinate system to include points whose x or y values may be negative numbers.**
SE/TE: 414–416, 418–419

Visualization and Geometric Models

- 7. Understand that the measure of an angle is determined by the degree of rotation of an angle side rather than the length of either side.**
SE/TE: 204–205

- 8. Predict what three-dimensional object will result from folding a two-dimensional net, then confirm the prediction by folding the net.**

SE/TE: 326–327

Patterns, Functions and Algebra Standard

Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.

Use Patterns, Relations and Functions

- 1. Justify a general rule for a pattern or a function by using physical materials, visual representations, words, tables or graphs.**

SE/TE: 14–16, 148–150, 382–384, 404–405

- 2. Use calculators or computers to develop patterns, and generalize them using tables and graphs.**

SE/TE: 439

Use Algebraic Representation

- 3. Use variables as unknown quantities in general rules when describing patterns and other relationships.**

SE/TE: 34–36, 74–76, 110–112, 146–147, 148–150, 152–154, 156–157, 158–160, 382–384

- 4. Create and interpret the meaning of equations and inequalities representing problem situations.**

SE/TE: 34–36, 74–76, 110–112, 288–289, 386–388

- 5. Model problems with physical materials and visual representations, and use models, graphs and tables to draw conclusions and make predictions.**

SE/TE: 14–16, 34–36, 46–48, 74–76, 110–112, 126–127, 138–139, 162–163, 270– 271, 288–289, 314–315, 340–341, 366–367, 380–381, 386–388, 404–405, 412–413, 494–495

Analyze Change

6. Describe how the quantitative change in a variable affects the value of a related variable; e.g., describe how the rate of growth varies over time, based upon data in a table or graph.
SE/TE: 382–384, 433-435

Data Analysis and Probability Standard

Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.

Data Collection

1. Read, construct and interpret frequency tables, circle graphs and line graphs.
SE/TE: 430–431, 436–438, 446–448, 454–455
2. Select and use a graph that is appropriate for the type of data to be displayed; e.g., numerical vs. categorical data, discrete vs. continuous data.
SE/TE: 433–435, 454–455
3. Read and interpret increasingly complex displays of data, such as double bar graphs.
SE/TE: 433–435, 454–455
4. Determine appropriate data to be collected to answer questions posed by students or teacher, collect and display data, and clearly communicate findings.
SE/TE: 430–431
5. Modify initial conclusions, propose and justify new interpretations and predictions as additional data are collected.
SE/TE: 433–435

Statistical Methods

6. Determine and use the range, mean, median and mode, and explain what each does and does not indicate about the set of data.
SE/TE : 450-451, 452-453

Probability

- 7. List and explain all possible outcomes in a given situation.
SE/TE: 486–487, 488–490**
- 8. Identify the probability of events within a simple experiment, such as three chances out of eight.
SE/TE: 488–490, 492–493**
- 9. Use 0, 1 and ratios between 0 and 1 to represent the probability of outcomes for an event, and associate the ratio with the likelihood of the outcome.
SE/TE: 488–490, 492–493**
- 10. Compare what should happen (theoretical/expected results) with what did happen (experimental/actual results) in a simple experiment.
SE/TE: 486–487**
- 11. Make predictions based on experimental and theoretical probabilities.
SE/TE: 492–493**

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Grade Six

Number, Number Sense and Operations Standard

Students demonstrate number sense including an understanding of number systems and operations, and how they relate to one another. Students compute fluently and make reasonable estimates using paper and pencil, technology-supported and mental methods.

Number and Number Systems

- 1. Decompose and recompose whole numbers using factors and exponents (e.g., $32 = 2 \times 2 \times 2 \times 2 \times 2 = 2^5$), and explain why “squared” means “second power” and “cubed” means “third power.”**

SE/TE: 10–12, 124–125

- 2. Find and use the prime factorization of composite numbers.**

For example:

- a. Use the prime factorization to recognize the greatest common factor (GCF).**

SE/TE: 126–127, 134–135, 190–191

302–304, 306–307, 308–309

- b. Use the prime factorization to recognize the least common multiple (LCM).**

SE/TE: 164–165

- c. Apply the prime factorization to solve problems and explain solutions.**

SE/TE: 120–122, 134–135, 136–137

- 3. Explain why a number is referred to as being “rational,” and recognize that the expression a/b can mean a parts of size $1/b$ each, a divided by b , or the ratio of a to b .**

SE/TE: 144–145, 300–301, 302–304, 306–307, 308–309, 314–315

310–312

4. Describe what it means to find a specific percent of a number, using real-life examples.

SE/TE: 354–356, 358–360, 361–362

5. Use models and pictures to relate concepts of ratio, proportion and percent, including percents less than 1 and greater than 100.

SE/TE: 314–315, 322–323, 324–325, 328–329, 330–332, 334–336, 344–346, 348–349, 350–351, 354–356, 358–360, 361–362
354–356

Meaning of Operations

6. Use the order of operations, including the use of exponents, decimals and rational numbers, to simplify numerical expressions.

SE/TE: 36–38, 46–47, 80–81

7. Use simple expressions involving integers to represent and solve problems; e.g., if a running back loses 15 yards on the first carry but gains 8 yards on the second carry, what is the net gain/loss?

SE/TE: 230–232, 234–236, 238–239, 250–252

8. Represent multiplication and division situations involving fractions and decimals with models and visual representations; e.g., show with pattern blocks what it means to take $2 \frac{2}{3} \div \frac{1}{6}$.

SE/TE: 70–72, 74–75, 186–187, 190–191, 202–203, 206–207
314–315

9. Give examples of how ratios are used to represent comparisons; e.g., part-to-part, part-to-whole, whole-to-part.

SE/TE: 300–301, 302–304, 306–307, 308–309, 314–315
322–323, 324–325, 344–346

10. Recognize that a quotient may be larger than the dividend when the divisor is a fraction; e.g., $6 \div \frac{1}{2} = 12$.

TE: 202–203, 204–205

Computation and Estimation

- 11. Perform fraction and decimal computations and justify their solutions; e.g., using manipulatives, diagrams, mathematical reasoning.
SE/TE: 64–65, 70–72, 74–75, 76–77, 78–79, 80–81, 84–86, 162–163, 166–168, 172–173, 174–176, 186–187, 190–191, 192–193, 194–195, 202–203, 204–205, 206–207, 210–211, 212–213, 214–215, 350–351**
- 12. Develop and analyze algorithms for computing with fractions and decimals, and demonstrate fluency in their use.
SE/TE: 64–65, 70–72, 74–75, 76–77, 78–79, 80–81, 84–86, 162–163, 166–168, 172–173, 174–176, 186–187, 190–191, 192–193, 194–195, 202–203, 204–205, 206–207, 210–211, 308–309**
- 13. Estimate reasonable solutions to problem situations involving fractions and decimals; e.g., $7/8 + 12/13 \approx 2$ and $4.23 \times 5.8 \approx 25$.
SE/TE: 62–63, 66–68, 78–79, 170–171, 188–189, 192–193, 208–209, 210–211**
- 14. Use proportional reasoning, ratios and percents to represent problem situations and determine the reasonableness of solutions.
SE/TE: 300–301, 302–304, 306–307, 308–309, 310–312, 314–315, 322–323, 324–325, 326–327, 328–329, 330–332, 334–336, 344–346, 350–351, 354–356, 358–360, 361–362**
- 15. Determine the percent of a number and solve related problems; e.g., find the percent markdown if the original price was \$140, and the sale price is \$100.
SE/TE: 354–356**

Measurement Standard

Students estimate and measure to a required degree of accuracy and precision by selecting and using appropriate units, tools and technologies.

Measurement Units

- 1. Understand and describe the difference between surface area and volume.
SE/TE: 466–468**

Use Measurement Techniques and Tools

- 2. Use strategies to develop formulas for finding circumference and area of circles, and to determine the area of sectors; e.g., $1/2$ circle, $2/3$ circle, $1/3$ circle, $1/4$ circle.
SE/TE: 438–440, 442–443**
- 3. Estimate perimeter or circumference and area for circles, triangles and quadrilaterals, and surface area and volume for prisms and cylinders by:**
 - a. estimating lengths using string or links, areas using tiles or grid, and volumes using cubes;
SE/TE: 466–468**
 - b. measuring attributes (diameter, side lengths, or heights) and using established formulas for circles, triangles, rectangles, parallelograms and rectangular prisms.
SE/TE: 194–195, 426–428, 434–436, 438–440, 442–443, 459–460, 462–463, 464–465**
- 4. Determine which measure (perimeter, area, surface area, volume) matches the context for a problem situation; e.g., perimeter is the context for fencing a garden, surface area is the context for painting a room.
SE/TE: 426–428, 430–433**
- 5. Understand the difference between perimeter and area, and demonstrate that two shapes may have the same perimeter, but different areas or may have the same area, but different perimeters.
SE/TE: 430–433, 434–436**
- 6. Describe what happens to the perimeter and area of a two-dimensional shape when the measurements of the shape are changed; e.g. length of sides are doubled.
SE/TE: 426–428**

Geometry and Spatial Sense Standard

Students identify, classify, compare and analyze characteristics, properties and relationships of one-, two-, and three-dimensional geometric figures and objects. Students use spatial reasoning, properties of geometric objects and transformations to analyze mathematical situations and solve problems.

Characteristics and Properties

- 1. Classify and describe two-dimensional and three-dimensional geometric figures and objects by using their properties; e.g., interior angle measures, perpendicular/parallel sides, congruent angles/sides.**
SE/TE: 262–264, 266–268, 270–272, 274–276, 278–281, 282–283, 284–286, 288–289, 454–457
- 2. Use standard language to define geometric vocabulary: vertex, face, altitude, diagonal, isosceles, equilateral, acute, obtuse, etc.**
SE/TE: 262–264, 266–268, 270–272, 274–276, 278–281, 282–283, 284–286, 288–289, 454–457
- 3. Use multiple classification criteria to classify triangles; e.g., right scalene triangle.**
SE/TE: 274–276
- 4. Identify and define relationships between planes; i.e., parallel, perpendicular and intersecting.**
SE/TE: 262–264

Spatial Relationships

- 5. Predict and describe sizes, positions and orientations of two-dimensional shapes after transformations such as reflections, rotations, translations and dilations.**
SE/TE: 284–286, 288–289

Transformations and Symmetry

- 6. Draw similar figures that model proportional relationships; e.g., model similar figures with a 1 to 2 relationship by sketching two of the same figure, one with corresponding sides twice the length of the other.**
SE/TE: 330–332, 334–336

Visualization and Geometric Models

- 7. Build three-dimensional objects with cubes, and sketch the two-dimensional representations of each side; i.e., projection sets.**

SE/TE: 466–468

Patterns, Functions and Algebra Standard

Students use patterns, relations and functions to model, represent and analyze problem situations that involve variable quantities. Students analyze, model and solve problems using various representations such as tables, graphs and equations.

Use Patterns, Relations and Functions

- 1. Represent and analyze patterns, rules and functions, using Physical materials, tables and graphs.**
SE/TE: 10–12, 18–20, 48–49, 50–52, 178–179, 214–215, 290–291, 310–312, 376–377, 380–381, 382–384, 386–388
- 2. Use words and symbols to describe numerical and geometric patterns, rules and functions.**
SE/TE: 48–49, 50–52, 214–215, 290–291, 376–377, 378–379, 386–388

Use Algebraic Representations

- 3. Recognize and generate equivalent forms of algebraic expressions, and explain how the commutative, associative and distributive properties can be used to generate equivalent forms; e.g., perimeter as $2(l + w)$ or $2l + 2w$.**
SE/TE: 34–35, 40–41, 426–428, 462–463
- 4. Solve simple linear equations and inequalities using physical models, paper and pencil, tables and graphs.**
SE/TE: 98–100, 102–104, 106–108, 110–112, 212–213, 242–244, 310–312, 326–327, 330–332, 354–356, 358–360, 372–374, 376–377, 378–379, 380–381, 382–384, 386–388
- 5. Produce and interpret graphs that represent the relationship between two variables.**
SE/TE: 380–381, 382–384, 386–388

6. Evaluate simple expressions by replacing variables with given values, and use formulas in problem-solving situations.

SE/TE: 46–47, 50–52, 98–100, 106–108, 192–193, 210–211, 240–241,
310–312, 378–379, 380–381, 382–384, 426–428, 430–433, 434–436
102–104, 110–112, 242–244

Analyze Change

7. Identify and describe situations with constant or varying rates of change, and compare them.

SE/TE: 310–312

8. Use technology to analyze change; e.g., use computer applications or graphing calculators to display and interpret rate of change.

SE/TE: 385

Data Analysis and Probability Standard

Students pose questions and collect, organize, represent, interpret and analyze data to answer those questions. Students develop and evaluate inferences, predictions and arguments that are based on data.

Data Collection

1. Read, construct and interpret line graphs, circle graphs and histograms.

SE/TE: 476–478, 480–482, 484–486, 494–496
354–356

2. Select, create and use graphical representations that are appropriate for the type of data collected.

SE/TE: 488–489

3. Compare representations of the same data in different types of graphs, such as a bar graph and circle graph.

SE/TE: 484–486

Statistical Methods

4. Understand the different information provided by measures of center (mean, mode and median) and measures of spread (range).

SE/TE: 490–492, 498–499, 500–501, 510–511

5. Describe the frequency distribution of a set of data, as shown in a histogram or frequency table, by general appearance or shape; e.g., number of modes, middle of data, level of symmetry, outliers.

SE/TE: 494–496

6. Make logical inferences from statistical data.

SE/TE: 484–486, 502–504, 506–508

Probability

7. Design an experiment to test a theoretical probability and explain how the results may vary.

SE/TE: 530–532