Kindergarten

Eureka Essentials

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Overview

How to Read **Eureka Essentials**

How to Approach Pacing

- ➢ Cover Major Cluster Standards more thoroughly and move through other Standards more quickly
  - **Major Clusters**: Modules 1, 3-5
  - **Additional/Supporting Clusters**: Modules 2, 6
- ➢ Use lesson connections (in purple text) to foresee when and how certain concepts will be revisited or further developed in later lessons
- ➢ Embed "reteaching" into the next lesson's activities (Fluency Practice, Application Problems, Concept Development, etc.) rather than repeat a prior lesson
- ➢ Omit or differentiate lessons labelled ↻ **Review/reinforce** based on students' strengths and needs
- ➢ Follow suggestions for omission or consolidation of lessons labelled  **Cut/consolidate** based on students' strengths and needs

References

- Great Minds Eureka Math Teacher Edition version 3.0 (2015)
- California Common Core State Standards (2013)
- Mathematics Framework for California Public Schools: Kindergarten Through Grade Twelve (2016)

Module 1: Numbers to 10

Summary:

- Progression of learning:
  - counting → decomposition
  - objects → pictorial → symbols (numerals & equations)

Definitions:

- **Plus sign** (**+**): “2 + 1” means “2 and 1”
- **Zero**, **0**: none
- **“One more than”**: “one more than 3” means “how many all together when one is added to 3”
- **“One less than”**: “one less than 3” means “how many left when one is taken from 3”

Key Ideas:

- “One more than 3” is “the next number we count after 3” (4)
- “One less than 3” is “the number we count right before 3” (2)

Materials:

- Sets of objects that are identical, similar, or share common feature [Topics A-B]
- Linking or snap cubes [Topics B-H]
- Pattern blocks [Topic F]

Topic A: Attributes of Two Related Objects

Suggestions: Review/practice counting to 4 (e.g., with Fluency Practice activities) in preparation for Topic B

Same and Similar Objects

Cut/consolidate: Can consolidate with Lesson 2

Goals:

- Distinguish objects that are the same on all characteristics (“exactly the same”) from objects that are similar but differ by at least one characteristic (“not exactly the same”; for example, socks of different size but same color/design, pair of shoes but one for left foot and one for right foot)

Similar Objects

Goals:

- Identify a characteristic that differs between two (nearly) same objects
    - Example: Two pencils from the same box but one has been used and one has not

Matching Objects

Goals:

- Match objects of common pattern (e.g., stripes), color, or function (e.g., pencil and paper)

Topic B: Classify to Make Categories and Count

Sorting into Two Categories

Goals:

- Sort objects into two categories of an attribute like size, shape, or color (e.g., large vs. small toys, children with laced shoes vs. children with non-laced shoes)

Notes to teacher:

- Problem Set involves cutting and pasting “cutouts”

Sorting into Three Categories

Goals:

- Sort objects into three categories of a theme like season/weather condition

Sorting Based on Size of Set

Goals:

- Sort sets of objects by whether they have 2, 3, or 4 objects in the set

Topic C: Numbers to 5 in Different Configurations, Math Drawings, and Expressions

Counting to 5

Goals:

- Count 1 to 5 objects and match to numerals
- Recognize number stays the same regardless of orientation (e.g., horizontal vs. vertical 5-cube stick)

Counting to 5: Arrays and Fingers

Goals:

- Build on **Lesson 7**: Identify “how many” objects (i.e., number of objects; up to 5) in various arrays (e.g., horizontal row, 2 by 2) or shown with fingers

Decomposition of 3-5: Arrays

Goals:

- Count and decompose numbers 3, 4, and 5 into two addends (“hidden partners”) in dot configurations
    - Example: Decompose 5 into 3 and 2 (5 = 3 + 2)

Decomposition of 3-5: Circular and Scattered

Goals:

- Build on **Lesson 9**: Count and decompose numbers 3, 4, and 5 in circular or scattered arrangement
- Recognize number stays the same regardless of which object you start counting on

Decomposition of 3: Objects, Drawings, and Symbols

Goals:

- Model decompositions of 3 (1 + 2 and 2 + 1) with objects and drawings
- Define plus sign (+)
- Identify sum __ + __ to represent decomposition

Notes to teacher:

- Will revisit/reinforce in **Lessons 14 and 16** for decompositions of 3-5

Topic D: The Concept of Zero and Working with Numbers 0-5

Number 0

Goals:

- Define zero

Writing Numerals 0-3 in Order

Goals:

- Write numerals 0-3 in increasing or decreasing order

Writing Decomposition of 3

Goals:

- Build on **Lesson 11**:
  - Write equations 3 = 2 + 1 and 3 = 1 + 2 to represent decomposition of 3 (and represent with objects and drawings)
  - ↻ **Review/reinforce** writing numerals 0-3

Notes to teacher:

- Will revisit/reinforce decomposition of 3 with number bonds, word sentences, and equations in Module 4 Topic A

Writing Numerals 1-5 in Order

Goals:

- **Echo** Lesson 13 for numerals 1-5:
  - Write numerals 1-5 in increasing or decreasing order
  - ↻ **Review/reinforce** counting 4-5 objects

Decomposition of 4-5: Objects and Drawings

Goals:

- Build on **Lessons 9-11**:
  - Model decompositions of 4 and 5 with objects and drawings
  - For Concept Development: ↻ **Review/reinforce** Lesson 15

Notes to teacher:

- Will revisit/reinforce decompositions of 2-5 with number bonds, word sentences, and equations in Module 4 Topic A

Topic E: Working with Numbers 6-8 in Different Configurations

Counting to 6: Arrays

Goals:

- Build on **Lessons 7-8**:
  - Count 3-6 in array, or partial array, configurations (vertical or horizontal row, 5-groups or 10-frame)
  - Match 6 objects to the numeral 6

 **Suggestions**: Include counting to 6 with fingers in preparation for Problem Set and for continuity between counting to 5 and counting to 7 with fingers

Counting to 6: Circular and Scattered

Goals:

- Build on **Lesson 17**:
  - Count 6 objects in circular or scattered arrangement
  - Count 6 objects from a larger set
  - Write numerals 1-6 in increasing order

Counting to 7 and Decomposition of 6-7: Arrays and Fingers

Goals:

- Build on **Lessons 9 and 17**:

- Count 6 and 7 objects in array configurations (row or column, 5-groups or 10-frame) by counting on from 5 (e.g., count on 2 from 5 to get 7)
  - Decompose 6 into 5 and 1, 7 into 5 and 2
- Match 7 objects to the numeral 7
- Write numerals 1-7 in increasing or decreasing order

Notes to teacher:

- Will revisit/reinforce decompositions of 6-7 with number bonds, word sentences, and equations in Module 4 Topic B

Counting to 7: Circular and Scattered

Goals:

- Build on **Lesson 18**:
  - Count 7 objects in circular or scattered arrangement
  - Count 7 objects from a larger set
  - Recognize number stays the same regardless of configuration or counting path
  - ↻ **Review/reinforce** writing numerals 1-7

Counting to 8 and Decomposition of 8: Arrays

Goals:

- Build on **Lesson 19**:
  - Count 8 objects in array configurations (row or column, 5-groups or 10-frame) by counting on from 5 (count on 3 from 5 to get 8)
    - Decompose 8 into 5 and 3
  - Write the numeral 8

Notes to teacher:

- Will revisit/reinforce decomposition of 8 with number bonds, word sentences, and equations in Module 4 Topic B

Suggestions: Include counting to 8 with fingers to continue finger counting representation

Counting to 8: Circular and Scattered

Goals:

- Echo Lesson 20 for counting to 8:
  - Count 8 objects in circular or scattered arrangement
  - Count 8 objects from a larger set
  - Recognize number stays the same regardless of configuration or counting path
  - ↻ Review/reinforce writing numerals 1-8

Topic F: Working with Numbers 9-10 in Different Configurations

Counting to 9 and Decomposition of 9: Arrays

Goals:

- Echo Lesson 21 for counting to 9:
  - Count 9 objects in array configurations (row or column, 5-groups or 10-frame) by counting on from 5 (count on 4 from 5 to get 9)
    - Decompose 9 into 5 and 4
  - Write the numeral 9
- Recognize that from 9 it will take 1 more to fill the second 5-group (or whole 10-frame; i.e., 9 + 1 = 10)

Notes to teacher:

- Will revisit/reinforce decomposition of 9 with number bonds, word sentences, and equations in Module 4 Topic E

Suggestions: Include counting to 9 with fingers to continue finger counting representation

Counting to 9: Circular and Scattered

Goals:

- Echo Lesson 22 for counting to 9:
  - Count 9 objects in circular or scattered arrangement
  - Count 9 objects from a larger set
  - Recognize number stays the same regardless of configuration or counting path
  - ↻ Review/reinforce writing numerals 1-9

Counting to 10 and Decomposition of 10: Arrays

Goals:

- Echo Lesson 23 for counting to 10:
  - Count 10 objects in array configurations (row or column, 5-groups or 10-frame) by counting on from 5 (count on 5 from 5 to get 10)
    - Decompose 10 into 5 and 5, 9 and 1
  - Write the numeral 10
- Observe number stays the same when array is rotated by 90 degrees

Counting to 10 and Decomposition of 10: Arrays (Continued)

Goals:

- ↻ Review/reinforce Lesson 25

Counting to 10: Circular and Scattered

Goals:

- Echo Lesson 24 for counting to 10:
  - Count 10 objects in circular or scattered arrangement
  - Count 10 objects from a larger set
  - Recognize number stays the same regardless of configuration or counting path
  - ↻ Review/reinforce writing numerals 1-10

Decomposition of 3-10: Story Problems

Goals:

- Decompose 3-10 in different ways (e.g., 10 = 5 + 5, 10 = 8 + 2) with action and drawings
- Find sums within 10 in the context of story problems

Notes to teacher:

- Will revisit/reinforce story problems involving decomposition of 3-10 in Module 4

Topic G: *One More Than* with Numbers 0-10

"One More Than": Dots and 5-Groups (10-Frames)

Goals:

- Define "one more than"
- Use above definition with dots and 5-groups (10-frames) to find "one more than" and observe:

  Key Ideas: "One more than __" is "the next number we count **after** __"

"One More Than": Stairs (Tower Cubes)

Cut/consolidate: Can consolidate with Lesson 31

Goals:

- Build on **Lesson 29**:
  - Use definition of "one more than" with tower cubes to find "one more than" and observe:

    Key Ideas: "One more than __" is "the next number we count **after** __"

"One More Than": Circular and Scattered

Goals:

- Build on **Lessons 29-30**:

- Use above definition with objects in circular or scattered arrangement to find "one more than" and observe:

  Key Ideas: "One more than __" is "the next number we count **after** __"

"One More Than" Sequences Starting Above 1

Goals:

- Build on **Lessons 29-31** to find "one more than" in sequences starting above 1

Topic H: *One Less Than* with Numbers 0-10

One Removed: Dots and 5-Groups (10-Frames)

Goals:

- Echo Lesson 29 for "one removed (crossed out)"
  - Count the number of objects (dots) when one is removed (crossed out) and observe that the result is the preceding counting number (e.g., when 1 object is removed from 3, the number is now 2)

"One Less Than": Circular and Scattered

Goals:

- Echo Lesson 31 for "one less than":
  - Define "one less than"
  - Use above definition with objects in circular or scattered arrangement to find "one less than" and observe:

    Key Ideas: "One less than __" is "the number we count right **before** __"

“One Less Than”: Stairs (Tower Cubes)

Goals:

- Echo Lesson 30 for “one less than”:
  - Use definition of “one less than” with tower cubes to find “one less than” and observe:
    Key Ideas: “One less than __” is “the number we count right **before** __”

“One Less Than”: Different Configurations

Goals:

- ↻ Review/reinforce Lessons 33-35

End-of-Module Task

Goals:

- ↻ Review/reinforce Lessons 1-36:
  - Count 1-10
  - Represent a number in various ways (e.g., 5-group card, cubes, beans, pictures)
  - Order numbers 1-10
  - Identify missing number in a sequence of 1 to 10

Module 2: Two-Dimensional and Three-Dimensional Geometric Shapes

Summary:

- Two-dimensional “flat” shapes [Lessons 1-5, 9-10]
- Three-dimensional “solid” shapes [Lessons 6-10]
- Purpose of terminologies/vocabulary and definitions:
    - The name of a shape is shorthand for the shape’s list of attributes
- Use precision (MP.6) and reasoning (MP.3) to sort and classify shapes

Definitions:

- Two-dimensional “flat” shapes:
    - **Triangle**: a closed flat shape with three straight (and non-overlapping) sides and three corners
    - **Rectangle**: a closed flat shape with four straight (and non-overlapping) sides and four corners that are L-shaped
    - **Square**: a rectangle with all sides the same length
    - **Hexagon**: a closed flat shape with six straight (and non-overlapping) sides and six corners
    - **Circle**: a closed, curved flat shape with no straight side (and equidistant from the center)
- Three-dimensional “solid” shapes:
    - **Face**: a flat part of a solid shape
    - **Cone**: a solid shape with only one circle face
    - **Cube**: a solid shape with (six) square faces
    - **Cylinder**: a solid shape with two circle faces and “straight” sides
    - **Sphere**: a curved solid shape with no face or point

Materials:

- Attribute blocks [Topics A, C]
- Pattern blocks [Topics A, C]
- Geometric solids [Topics B-C]

Topic A: Two-Dimensional Flat Shapes

Flat Shapes: Description

Goals:

- Describe attributes of shapes (e.g., corners, curves, straight lines, number and length of sides, "missing pieces")
  Resources: Sample document to guide discussion
- Observe common attribute: all flat shapes

Notes to teacher:

- "Lesson 1 Template" (p. 26 of Teacher Edition) has one more trapezoid than the shapes in students' Problem Set
- Focus on *attributes* of shapes, reserve naming shapes for subsequent lessons

Triangles

Goals:

- Define triangle
- Distinguish triangles from other figures by using above definition
  Resources: Sample slide to guide discussion

Notes to teacher:

- Fluency Practice activities "Making 3 with Triangles" and "Make a Shape" may be good for previewing the Concept Development

Rectangles and Squares

Goals:

- Define rectangle, square
- Distinguish rectangles and squares from other figures by using above definitions

Notes to teacher:

- Fluency Practice activities "Making 4 with Squares and Beans" or "Triangle or Not" (end with rectangle) may be good for previewing the Concept Development

Hexagons and Circles

Goals:

- Define hexagon, circle
- Distinguish hexagons and circles from other figures by using above definitions

Notes to teacher:

- Fluency Practice activities "Rectangle or Not" (end with hexagon) or "Make a Shape" may be good for previewing the Concept Development

Positions of Flat Shapes

✂ **Cut/consolidate**: Can omit and "embed experiences with position words in other content areas and through the students' day" (*Eureka Math's Notes on Pacing*)

Goals:

- Describe relative positions of flat shapes using the terms *above*, *below*, *beside*, *in front of*, *next to*, and *behind*
  - ↻ **Review/reinforce** Lessons 1-4

Topic B: Three-Dimensional Solid Shapes

Solid Shapes: Description

Goals:

- Describe attributes of shapes (e.g., corners, curves, straight lines, number and length of edges)
- Observe common attributes:
  - From birds-eye-view, see shape of square or circle
  - All **solids**: *not* flat (stick up)

Notes to teacher:

- Focus on *attributes* of shapes, reserve naming shapes for next lesson

 **Suggestions**: Include Application Problem before or after Concept Development to expand observations of shapes

Solid Shapes: Classification

Goals:

- Define face, cone, cube, cylinder, sphere
- Sort shapes based on attributes (e.g., roll vs. slide, stackable, corners/points, edges, number of faces, shape of face, shape from birds-eye-view)
- Classify shapes using above definitions

Notes to teacher:

- Fluency Practice activity "Show Me Shapes" may be good for previewing the Concept Development

Positions of Solid Shapes

 **Cut/consolidate**: Can omit and "embed experiences with position words in other content areas and through the students' day" (*Eureka Math's Notes on Pacing*)

Goals:

- Build on **Lessons 5 and 7** to describe relative positions of solid shapes using the terms *above*, *below*, *beside*, *in front of*, *next to*, and *behind*
    - ↻ **Review/reinforce** Lessons 6-7

Topic C: Two-Dimensional and Three-Dimensional Shapes

Review of Two-Dimensional and Three-Dimensional Shapes

Goals:

- ↻ **Review/reinforce** Lessons 1-4, 6
    - Sort flat and solid shapes by attributes (e.g., shape from birds-eye-view, flat vs. solid, curves vs. straight)

End-of-Module Task

Goals:

- ↻ **Review/reinforce** Lessons 1-4, 6
  - Represent a shape in various ways (e.g., picture, cut-out, clay)
  - Generate examples and non-examples of a shape
  - Find common attribute(s) between a flat shape and solid shape

Module 3: Comparison of Length, Weight, Capacity, and Numbers to 10

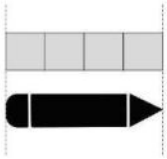
Summary:

- Compare: length/height, weight, volume (capacity) → sets of objects → numerals

Attribute	Lessons	Reference or Support Tool(s)	Vocabulary
Length, height	Lessons 1-7, 20, 31	String Cube stick (5-stick)	Longer than Shorter than Same as
Weight	Lessons 8-12, 30	Balance Unit weights (e.g., coins)	Heavier than Lighter than Same as
Volume (capacity)	Lessons 13-15, 29	Scoop (e.g., coffee scoop)	More than Less than Same as
Sets of objects	Lessons 17-27		More than Fewer than Same as
Numerals	Lessons 19-28	Objects Drawings	More (greater) than Less than (Equal to)

Definitions:

- **Compare lengths** (or **heights**): to identify which object is taller/longer, shorter
  - To compare lengths, **endpoints** of objects must line up (and the objects must extend in the same direction)
  - Length of object stays the same even when its location changes
- **Smaller** (**less**): a number that comes before when counting
  - Example: “3 is a smaller number than 5” means “3 comes before 5 when counting”
- **Larger** (**greater**): a number that comes after when counting
  - Example: “8 is a larger number than 5” means “8 comes after 5 when counting”
- **Same length**: both sets of endpoints line up with each other



- **Compare weights**: to identify which object is heavier, lighter
- **Compare volumes** (**capacities**): to identify which object can "fit" more, less, or the same amount of "stuff"
- **More "A's" than "B's"**: there is extra or leftover A when each B gets one A, or there are not enough Bs to have each A go with one B
- **Same number of "A's" as "B's"**: there is just enough for each A to go with one B
- **Fewer "A's" than "B's"**: there are not enough As to have each B get one A, or there is extra or leftover B when each A goes with one B
    - Corollary: "There are more B's than A's"

Materials:

- Objects of different lengths like pencils, strips of color paper [Topics A-B]
- String for each student, scissors for each pair/group [Topic A]
- Linking or snap cubes [Topic B]
- Objects of different weights like erasers, markers [Topic C]
    - Include objects that are tall and light (e.g., bag of rice cakes), short and heavy (e.g., can of beans)
- Balance [Topic C]
- Clay, or another object that can be configured in different ways, like snap cubes [Topics C, H]
- Plastic cups or containers of different volumes [Topics D, H]
- Rice, or other item, to fill cups/containers [Topic D]
- "Scoop" like a coffee scoop [Topic D]

Topic A: Comparison of Length and Height

Comparing Length

Goals:

- Define compare lengths (or heights)
- Compare lengths using definition

Notes to teacher:

- Application Problem may be good for introducing the topic of comparing objects and specifying the attribute of comparison

  Resources: Sample slide for buildings

Suggestions: In preparation for Problem Set, give an example where the objects are spaced apart with non-aligned endpoints

Comparing Length to String

Goals:

- Compare lengths of classroom objects to a string

Notes to teacher:

- Students record data on Lesson 2 Template 2

Sorting Objects Based on Length

Goals:

- Sort a set of objects (e.g., eraser, toy car) into two categories (“longer than,” “shorter than”) based on comparing lengths to a reference object (e.g., popsicle stick)

Topic B: Comparison of Length and Height of Linking Cube Sticks Within 10

Cut/consolidate: Can omit Lesson 7 if embed comparison of objects of same length in Lessons 4-6

Sorting Cube Sticks Based on Length

Goals:

- Sort cube sticks of lengths 1 to 10 by comparing lengths to a 5-stick
- Observe shorter sticks have fewer (smaller number of) cubes, longer sticks have more (larger number of) cubes

Notes to teacher:

- Will revisit/reinforce in **Lesson 20**

Ordering and Comparing Lengths of Cube Sticks

Goals:

- Arrange in increasing or decreasing order cube sticks of lengths 1 to 10
- Compare lengths of pairs of cube sticks

Comparing Lengths of Objects and Cube Sticks

Goals:

- Compare lengths of classroom objects to cube sticks of lengths 1 to 10

Comparing Same Length

Goals:

- Define same length
- Compare lengths using definition

Topic C: Comparison of Weight

Comparing Weight

 **Cut/consolidate**: Can consolidate with Lesson 9. “To bridge their understanding, have students model the movement of the balance scale with their arms and hands.” (*Eureka Math's Notes on Pacing*)

Goals:

- Define compare weights
- Compare weights using definition

 **Suggestions**:

- Include objects that are close in weight (e.g., balloon and cotton ball) to motivate need for a more precise measurement tool (**Lesson 9**)
- Have students first predict by only looking at the objects and then test/verify by holding the objects in their hands

Comparing Weight with Balance Scale

Goals:

- Use balance (scale) to compare weights
    - Lower means heavier
    - Higher means lighter
    - Even/flat/straight across means same weight

Notes to teacher:

- Students record data on Lesson 9 Template

 **Suggestions**: Have students predict by looking (and/or holding) before test/verify with balance

Measuring Weight with Unit Weights

Goals:

- Find the number of unit weights (e.g., coins) with the same weight as a given object

Notes to teacher:

- Students record data on Lesson 10 Template

Conservation of Weight

Goals:

- Observe that weight stays the same even when the object is configured differently

Measuring Weight with Unit Weights (Continued)

Goals:

- Extend Lesson 10 to various unit weights (e.g., linking cubes, beans)

Notes to teacher:

- Students record data on Lesson 12 Template

Topic D: Comparison of Volume

Cut/consolidate: Can consolidate Lessons 13-15 into a series of whole-class demonstrations and then do independent hands-on explorations later (e.g., in centers). Can omit Lessons 14-15 if students study volume in science. (*Eureka Math's Notes on Pacing*)

Comparing Volume

Goals:

- Define compare volumes
- Compare volumes using definition
- Observe that when "stuff" is poured from object A to B
  - Under the top means A has less volume/capacity than B
  - At the top (fit without overflowing) means A has same volume/capacity as B
  - Over the top (overflowing) means A has more volume/capacity than B

 **Suggestions**: Have students predict by looking before test/verify by pouring "stuff" from one object into another

Conservation of Volume

Goals:

- Observe that volume of "stuff" stays the same even when transferred into different objects

Measuring Volume with "Scoops" (Unit)

Goals:

- Find the number of "scoops" it takes to fill a given object
    - Fewer (smaller number of) scoops means less volume/capacity
    - More (larger number of) scoops means more volume/capacity

Notes to teacher:

- Students record data on Lesson 15 Template

Topic E: Are There Enough?

Exploring Area

 **Cut/consolidate**: Can omit because not necessary for subsequent lessons

Goals:

- Develop basic notion of area as finding the number of squares (or circles, beans, etc.) that can fit inside a figure

Comparing: Enough

Goals:

- Make one-to-one correspondence to determine if number of objects is enough, too many, or not enough (too few)

Notes to teacher:

- Rulers are for drawing straight lines to show one-to-one correspondence in Problem Set and Homework

Comparing: More or Same

Goals:

- Define "more ... than ...", "same number of ... as ... "
- Build on **Lesson 17** to make comparisons using above definitions

Notes to teacher:

- Rulers are for drawing straight lines to show one-to-one correspondence in Problem Set and Homework

Comparing: Fewer or Same

Goals:

- Define "fewer … than …"
- Build on **Lessons 17-18** to make comparisons using above definitions
- Observe that when the number of objects are counted
    - Smaller number means fewer objects
    - Larger number means more objects

Topic F: Comparison of Sets Within 10

Comparing Length and Numbers

Goals:

- ↻ **Review/reinforce** Lessons 4 and 19

- Observe shorter sticks have fewer (smaller set of) cubes, longer sticks have more (larger set of) cubes
- Transfer the relationship between two sets of objects to the relationship between their respective numbers
  - Ex: A set of 7 cubes is more than a set of 3 cubes so 7 is more than 3.

Comparing Sizes of Sets

Goals:

- Identify sets of shapes and compare the number of shapes in each set
  - ↻ **Review/reinforce** Module 2: Identify two-dimensional (flat) shapes

Notes to teacher:

- Print/cut Lesson 21 Template 1 (pp. 225-226 of Teacher Edition) or duplicate/use this doc
- Students record data on Lesson 21 Template 2

Creating Set with Same Number

Goals:

- Identify the number of objects in a set and create another set with the same number of objects

Creating Set with One More

Goals:

- Identify the number of objects in a set and create another set with one more object
  - ↻ **Review/reinforce** Module 1: Count “one more”

Creating Set with One Less

Goals:

- Identify the number of objects in a set and create another set with one fewer object
    - ↻ **Review/reinforce** Module 1: Count “one less”

Topic G: Comparison of Numerals

Comparing Numbers: More

Goals:

- Transfer comparing number of objects to comparing numbers:
    - “8 is more than 7” means “8 objects is more than 7 objects”
    - ↻ **Review/reinforce** Lessons 17 and 20

Comparing Numbers: Less

Goals:

- Transfer comparing number of objects to comparing numbers:
    - “8 is less than 10” means “8 objects is less (fewer) than 10 objects”
    - ↻ **Review/reinforce** Lessons 17 and 20

Review of Comparing (and Creating) Sets

Goals:

- ↻ **Review/reinforce** Lessons 20, 25-26: compare two sets of objects
- For Problem Set & Homework (not in Concept Development narrative):
    - Build on **Lessons 22-24** to identify the number of objects in a set and create another set with more or fewer objects

Comparing Numbers Mentally

Goals:

- Mentally visualize objects to compare numbers (numerals)

Topic H: Clarification of Measureable Attributes

✂ **Cut/consolidate**: Can omit Topic H (Lessons 29-32), which is review/synthesis of module (*Eureka Math's Notes on Pacing*)

Conservation of Volume (Continued)

Goals:

- ↻ **Review/reinforce** (build on) Lesson 14

Conservation of Weight (Continued)

Goals:

- ↻ **Review/reinforce** (build on) Lesson 11

Notes to teacher:

- Homework is extension of Module 1 skills and preview of Module 4 Lessons 39-40 (finding the number to make ten)

Comparing Length (Continued)

Goals:

- ↻ **Review/reinforce** Lessons 3 and 7

End-of-Module Task

Goals:

- ↻ **Review/reinforce** Lessons 1-15:
    - Describe and compare measureable attributes of different objects

Module 4: Number Pairs, Addition and Subtraction to 10

Summary:

- Progression of learning:
  objects → pictorial & 5-group drawings → number bonds → word sentences & equations

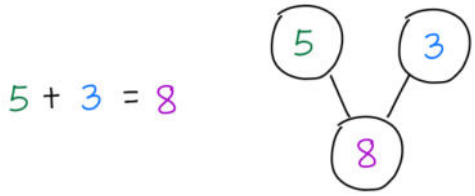
Definitions:

- **Addition**:

  (# of things start with) + (# of things add on)

  # of things all together

  - Word sentences & equations
    - "8 = 5 + 3" means "8 is the same number as 5 and 3 all together"
  - Number bonds & equations
    - Part + Part = Whole

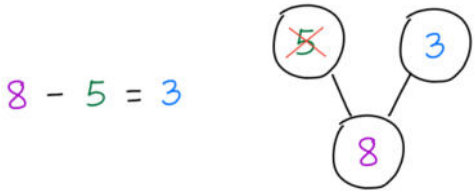


- **Subtraction**:

  (# of things start with) - (# of things take away)

  # of things leftover

  - Word sentences & equations
    - "8 - 5 = 3" means "the leftover of 8 take away 5 is the same number as 3"
  - Number bonds & equations
    - Whole - Part = Part



Materials:

- Hula hoops and tape to make physical number bonds [Topic A]
- Linking or snap cubes [Topics A-H]
- Pattern blocks [Topic B]
- Attribute blocks [Topic C]

Topic A: Compositions and Decompositions of 2, 3, 4, and 5

Number Bonds

Goals:

- Introduce number bond as a way to represent composition or decomposition of a number (i.e., represent a number as a sum)
  - Lines always go between “part” and “whole”, not between “parts”
  - Lesson 1 Template 2 Number Bond (p. 26 of Teacher Edition)
  - ↻ **Review/reinforce** Module 1 (composition and decomposition of 2 to 5) using pictorial number bonds

Number Bonds (Continued)

Cut/consolidate: Can consolidate with Lesson 5

Goals:

- Build on **Lesson 1** using linking/snap cubes and fingers

Number Bonds and Composition Story Situations

Goals:

- Use pictorial number bond to represent story situation involving composition up to 5 (from parts to whole)
- Transition from pictorial number bond to numeric number bond
- Recognize that orientation of number bond does not matter (e.g., whether whole is on left and parts on right, or parts on left and whole on right, or whole on top and parts on bottom, etc.)

Number Bonds and Decomposition Story Situations

Goals:

- Use pictorial number bond to represent story situation involving decomposition up to 5 (from whole to parts)
- Transition from pictorial number bond to numeric number bond

 Suggestions: Save Homework for after Lesson 5 when word sentences are revisited

Number Bonds and Word (and Number) Sentences

Goals:

- For Concept Development and Homework:
  - Use word sentence ("__ is the same as __ and __"; "__ and __ make __") and equation ("__ + __ = __"; "__ = __ + __") to represent composition and decomposition up to 5
- For Problem Set:
  - ↻ Review/reinforce Lessons 1-2

Notes to teacher:

- Will revisit/reinforce word sentences and equations in **Lessons 7-9** for decompositions of 6-8

Numbers Bonds and Creating Story Situations

Goals:

- Create a story represented by a number bond

Topic B: Decompositions of 6, 7, and 8 into Number Paths

Decomposition of 6

Goals:

- Build on **Lessons 4-5** for decomposition of 6:
  - Use objects (e.g., linking/snap cubes) and number bond to represent story situation involving decomposition of 6 (from whole to parts)
  - Use word sentence ("__ is the same as __ and __") and equation ("__ = __ + __") to represent decomposition of 6

Decomposition of 7

✂ **Cut/consolidate**: Can consolidate with Lesson 9

Goals:

- **Echo** Lesson 7 for decomposition of 7:
  - Use sets of objects (e.g., pattern blocks) and number bond to represent story situation involving decomposition of 7 (from whole to parts)
  - Use word sentence ("__ is the same as __ and __") and equation ("__ = __ + __") to represent decomposition of 7

Decomposition of 8

Goals:

- **Echo** Lessons 7-8 for decomposition of 8:
  - Use drawing of array (rows and/or columns) and number bond to represent story situation involving decomposition of 8 (from whole to parts)
  - Use word sentence ("__ is the same as __ and __") and equation ("__ = __ + __") to represent decomposition of 8

Decompositions of 6-8

Goals:

- ↻ **Review/reinforce** (build on) Lessons 7-9: Decompose 6, 7, and 8 systematically by taking one from the first part (addend) and putting it on the second part (addend)
  - Example: 5 + 1 = 6, 4 + 2 = 6, 3 + 3 = 6, etc.

- Observe that the first part (addend) gets smaller by one and the second part (addend) gets bigger by one but the whole (sum) stays the same

Horizontal and Vertical Number Bonds

Goals:

- ↻ **Review/reinforce** Lessons 7-10 using horizontal and vertical number bonds

Decompositions of 6-8 and 5-Groups

Goals:

- Use 5-groups to represent 6, 7, and 8 as 5 + *n*: 5 + 1 = 6, 5 + 2 = 7, 5 + 3 = 8

Notes to teacher:

- Lesson 12 Template Two 5-group Mat (p. 124 of Teacher Edition)

Topic C: Addition with Totals of 6, 7, and 8

Composition and Decomposition Story Situations to 6

Goals:

- Build on **Lesson 7**: Transition to using equations ("__ + __ = __"; "__ = __ + __") to represent story situation involving composition or decomposition of 6

Composition and Decomposition Story Situations to 7

✂ **Cut/consolidate**: Can consolidate with Lesson 15

Goals:

- Echo Lesson 13 for composition/decomposition of 7:
  - Build on **Lesson 8**: Transition to using equations ("__ + __ = __"; "__ = __ + __") to represent story situation involving composition or decomposition of 7

Composition and Decomposition Story Situations to 8

Goals:

- Echo Lessons 13-14 for composition/decomposition of 8:
  - Build on **Lesson 9**: Transition to using equations ("__ + __ = __"; "__ = __ + __") to represent story situation involving composition or decomposition of 8

Addition Word Problems to 8: Unknown Sum

Goals:

- Solve "add to with result unknown" word problems up to 8 by writing equations (and drawing pictures)

Addition Word Problems to 8: Unknown Sum (Continued)

Goals:

- Solve "put together with total unknown" word problems up to 8 by writing equations (and drawing pictures)

Addition Word Problems to 8: Unknown Addends

Goals:

- Build on **Lesson 10**: Complete equations (and draw pictures) given the total (sum) up to 8

Topic D: Subtraction from Numbers to 8

"Take Away"

Goals:

- Cross out objects in drawing or lower finger to represent "take away" (subtraction) and count "how many are left" (difference)

Subtraction

Goals:

- Define subtraction and introduce **minus sign** (-)
- Identify or write the equation that corresponds with a subtraction drawing

Subtraction Story Problems

Goals:

- Solve word problems involving subtraction by using objects (e.g., linking/snap cubes), drawings, word sentences, and equations

Subtraction from 6

Goals:

- Transition from pictorial drawing to 5-group drawing of subtraction from 6
- Represent subtraction with number bond:
  - # start with = whole
  - # take away = part
  - # leftover = part
- ↻ **Review/reinforce** writing subtraction equation

Subtraction from 7

Cut/consolidate: Can consolidate with Lesson 24

Goals:

- Echo Lesson 22 for subtraction from 7:
  - Transition from pictorial drawing to 5-group drawing of subtraction from 7
  - Represent subtraction with number bond
  - ↻ Review/reinforce writing subtraction equation

Subtraction from 8

Goals:

- Echo Lessons 22-23 for subtraction from 8:
  - Transition from pictorial drawing to 5-group drawing of subtraction from 8
  - Represent subtraction with number bond
  - ↻ Review/reinforce writing subtraction equation

Topic E: Decompositions of 9 and 10 into Number Pairs

Decomposition of 9

Goals:

- Use objects (e.g., counters, loose linking/snap cubes) and number bond to represent story situation involving decomposition of 9 (from whole to parts)

Decomposition of 9 (Continued)

Goals:

- ↻ Review/reinforce (build on) Lesson 25:
  - Use fingers or linking/snap cubes and number bond to represent story situation involving decomposition of 9 (from whole to parts)

- Echo Lesson 10: Decompose 9 systematically by taking one from the first part (addend) and putting it on the second part (addend)
  - Example: 8 + 1 = 9, 7 + 2 = 9, 6 + 3 = 9, etc.
  - Observe that the first part (addend) gets smaller by one and the second part (addend) gets bigger by one but the whole (sum) stays the same

Decomposition of 10

Goals:

- Echo Lesson 25 for decomposition of 10:
  - Use objects (e.g., beads) and number bond to represent story situation involving decomposition of 10 (from whole to parts)

Notes to teacher:

- See materials and procedure for bead bracelet on pp. 263-264 of Teacher Edition

Decomposition of 10 (Continued)

Goals:

- ↻ Review/reinforce (build on) Lesson 27:
  - Use fingers, linking/snap cubes, dominoes (objects that display numbers more systematically) and number bond to represent story situation involving decomposition of 10 (from whole to parts)
  - Echo Lesson 10: Decompose 10 systematically by taking one from the first part (addend) and putting it on the second part (addend)
    - Example: 9 + 1 = 10, 8 + 2 = 10, 7 + 3 = 10, etc.

Topic F: Addition with Totals of 9 and 10

Composition and Decomposition Story Situations to 9

Cut/consolidate: Can consolidate with Lesson 30

Goals:

- **Echo** Lesson 13 for addition to 9:
    - Use 5-group drawing, number bond, and equation to represent story situation involving composition or decomposition of 9 (addition to 9)

Composition and Decomposition Story Situations to 10

Goals:

- **Echo** Lesson 29 for addition to 10:
    - Use 5-group drawing, number bond, and equation to represent story situation involving composition or decomposition of 10 (addition to 10)

Addition Word Problems to 9 and 10: Unknown Sum

Goals:

- **Echo** Lessons 16-17 for addition to 9 and 10:
    - Solve “add to with result unknown” and “put together with total unknown” word problems up to 9 and 10 by drawing pictures and writing equations

Notes to teacher:

- Lesson 31 Template (p. 319 of Teacher Edition)

Addition Word Problems to 9 and 10: Unknown Addends

Goals:

- **Echo** Lesson 18 for addition to 9 and 10:
    - Build on **Lessons 26 and 28**: Write equations (and draw pictures) given the total (sum) up to 9 or 10

Topic G: Subtraction from 9 and 10

Subtraction from 9 and 10

Goals:

- Echo Lessons 19-20 for subtraction from 9 and 10:
  - Separate objects or cross out in drawing to represent “take away” (subtraction) and count “how many are left” (difference)
  - Identify or write the equation (and number bond) that corresponds with a subtraction drawing

Subtraction Story Problems

Goals:

- Echo Lesson 21 for subtraction from 9 and 10:
  - Solve word problems involving subtraction by using objects (e.g., counters, linking/snap cubes), drawings, number bonds, and equations

Subtraction from 9

Cut/consolidate: can consolidate with Lesson 36

Goals:

- Echo Lesson 22 for subtraction from 9:
  - Transition from pictorial drawing to 5-group drawing of subtraction from 9
  - ↻ Review/reinforce representing subtraction with number bond and writing subtraction equation

Subtraction from 10

Goals:

- Echo Lesson 35 for subtraction from 10:
  - Transition from pictorial drawing to 5-group drawing of subtraction from 10
  - ↻ Review/reinforce representing subtraction with number bond and writing subtraction equation

Topic H: Patterns with Adding 0 and 1 and Making 10

Addition and Subtraction of Same Number (and 0)

Goals:

- Observe that adding and then subtracting the same number (or vice versa) results in original number
  - Example: 5 + 3 - 3 = 5; 5 - 3 + 3 = 5
- For last quarter page of Problem Set:
  - Build on Module 1 **Lesson 12** (definition of zero) to write equations and solve word problems that involve addition or subtraction of 0
    - Example: 6 + 0 = 6; 6 - 0 = 6

Suggestions: Include 0 before 1 on number path and start at 0 when counting first number

Addition of 1

Goals:

- Represent addition of 1 with number path, 5-group drawing, and equation
- Observe that adding 1 results in the next number. Example: 4 + 1 = 5 (next number after 4)

Making 10

Goals:

- Use 5-group drawing and number bond to find number to “make 10” (in preparation for the “make 10” strategy of addition in Grade 1 and on). Example: 6 + ? = 10

Making 10 (Continued)

Goals:

- Build on **Lesson 39** by using 5-group drawing to find number to “make 10” and represent as addition equation

End-of-Module Task

Goals:

- ↻ **Review/reinforce** Lessons 1-40:
  - Represent composition or decomposition of 10 in multiple ways (e.g., linking/snap cubes, drawing, number bond, story situation, word sentence, equation)

Module 5: Numbers 10–20 and Counting to 100

Summary:

- Progression of learning:
  objects → pictorial → symbolic (numeral, equations)

Materials:

- Sets of 20 objects such as counters, erasers, crayons, pennies [Topics A, C, E]
- Linking or snap cubes [Topics A, C, E]
- Hide zero cards or place value strips [Topic B]
- Centimeter cubes [Topic E]

Topic A: Count 10 Ones and Some Ones

Counting to 10 Objects

Goals:

- Count sets of 8, 9, or 10 objects and identify if a set has 10 objects or not

Notes to teacher:

- See materials on p. 15 of Teacher Edition

 Suggestions:

- If straws are not available, use linking/snap cubes (one cube to replace one straw and connect them to form 10-cube sticks)
- If egg cartons are not available, use ten-frames

Counting 10 within Set of 10-20 Objects

Goals:

- Count sets of 10 to 20 objects
- Describe numbers as “10 ones and __ ones”

Notes to teacher:

- See materials on p. 29 of Teacher Edition

Counting 10 within Set of 10-20 Objects (Continued)

Goals:

- Build on **Lesson 2**:
  - Count and circle 10 objects in a set of 10 to 20 objects
  - Describe numbers as “10 ones and __ ones”

Counting to 10-19 as ten and ones

Goals:

- Decompose a set of 10 to 19 objects into a group of 10 and a group of remaining ones
- Describe numbers 10 to 19 using the “Say Ten Way.” Example: 12 is “ten two”

Counting to 10-20 as ten and ones

Goals:

- Echo Lesson 4 for counting to 20:
  - Decompose a set of 10 to 20 objects into a group of 10 and a group of remaining ones
  - Describe numbers 10 to 20 using the “Say Ten Way.” Example: 20 is “two tens”

Topic B: Compose Numbers 11-20 from 10 Ones and Some Ones; Represent and Write Teen Numbers

Place Value

Goals:

- Introduce tens and ones place values (“Hide Zero”)
- Count and represent numbers 10 to 20 with linking cubes, 5-groups or 10-frames, numerals

Notes to teacher:

- Can use place value strips instead of hide zero cards

Number Bonds

Goals:

- Build on **Lessons 5-6** by using number bonds to represent decompositions of numbers 10 to 20 into 10 and remaining ones

Representing Numbers 10-20

Goals:

- Reverse direction of **Lessons 5-6** (start with numeral only): Represent numbers 10 to 20 with concrete objects and 5-group (10-frame) drawings

Representing Numbers 10-20 (Continued)

Goals:

- ↻ **Review/reinforce** Lesson 8

Topic C: Decompose Numbers 11-20, and Count to Answer "How Many?" Questions in Varied Configurations

Rekenrek

Goals:

- Represent numbers 10 to 20 with Rekenrek beads

Notes to teacher:

- See materials on pp. 150-151 in Teacher Edition

Cube Stick Towers: Increasing

Goals:

- Represent numbers 10 to 20 in INCREASING order with two-color tower configurations (first 10 cubes in one color, remaining ones with another color)
- Build on Module 1 **Lessons 29-32** by extending meaning of "one more than" to numbers 10 to 20

Cube Stick Towers: Decreasing

Goals:

- Build on **Lesson 11** by representing numbers 20 to 10 in DECREASING order with two-color tower configurations (first 10 cubes in one color, remaining ones with another color)
- Build on Module 1 **Lessons 33-36** by extending meaning of "one less than" to numbers 10 to 20

Array Configuration

Goals:

- Represent numbers 10 to 20 in array configuration (5-groups or 10-frames for Homework)

Notes to teacher:

- First page of Problem Set is review of past lessons (counting numbers 11 to 20 in increasing order) and not directly relevant to this lesson

Circular Configuration

Goals:

- Count sets of 10 to 20 objects in circular configuration

Topic D: Extend the Say Ten and Regular Count Sequence to 100

Cut/consolidate: Can consolidate Lessons 15-17 into one or two lessons if omit Problem Sets and Homework (*Eureka Math's Notes on Pacing*); see **Notes to teacher** below

Counting to 100 by Tens

Goals:

- Count up and down to 100 by tens (represented by Rekenrek rows or ten-frames)
- Describe multiples of 10 (up to 100) using the “Say Ten Way”

Notes to teacher:

- Problem Set and Homework require students to *write* multiples of 10 (up to 100), which is a Grade 1 Standard (1.NBT.1), so only assign if students are ready

Counting Within Multiples of 10 by Ones

Goals:

- Count up (and down) by ones between multiples of 10 (up to 100)
    - Examples:
        - 30 to 40: 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40
        - 45 to 49: 45, 46, 47, 48, 49

Notes to teacher:

- Like Lesson 15, Problem Set and Homework require students to *write* numbers between 21 and 100, which is a Grade 1 Standard (1.NBT.1), so only assign if students are ready

Counting to 40 by Ones

Goals:

- Build on **Lesson 16** by counting up to 40 (using a Rekenrek)

Notes to teacher:

- Like Lessons 15-16, Problem Set and page 1 of Homework require students to *write* numbers between 21 and 100, which is a Grade 1 Standard (1.NBT.1), so only assign if students are ready
- If Rekenrek is not available, use other materials such as ten frames or linking/snap cubes

Counting to 100 by Ones

Goals:

- Build on **Lesson 17** by counting up to 100 (using a Rekenrek and ten-frames)

Notes to teacher:

- Directions for Problem Set on p. 243 of Teacher Edition

Rekenrek Exploration

Cut/consolidate: Can omit (optional lesson)

Topic E: Represent and Apply Compositions and Decompositions of Teen Numbers

Representing Numbers 11-19 as Addition Equation

Goals:

- Represent composition or decomposition of numbers 11 to 19 as addition equation

Missing Part of Number Bond or Equation

Goals:

- Build on **Lesson 20** by completing the missing parts of a number bond or addition equation that represents the composition or decomposition of numbers 11 to 19

Comparing Numbers

Goals:

- Build on Module 3 **Lessons 18-19** to compare numbers between 11 and 19
    - Strategy: Decompose each number into 10 and remaining ones, and then compare the remaining ones

Story Situations

Goals:

- Use a number bond and an addition equation to represent and find the total in a story situation

End-of-Module Task

Goals:

- ↻ **Review/reinforce** Lessons 1-20:
    - Represent composition or decomposition of numbers 11 to 20 in multiple ways (e.g., linking/snap cubes, ten-frame drawings, number bond, addition equation)

Module 6: Analyzing, Comparing, and Composing Shapes (Module 2 Continued)

Summary:

- Construct and draw shapes [Lessons 1-3]
- Compose (and decompose) larger shapes from (into) smaller shapes [Lessons 5-7]

Materials:

- Per student: 15 coffee sticks (or spaghetti, etc.), small ball of clay [Topic A]
- Geometric solids [Topic A]
- Pattern blocks [Topic B]
- Rulers [Topic B]

Topic A: Building and Drawing Flat and Solid Shapes

Ordering the Steps of Constructing Flat Shapes

✂ **Cut/consolidate**: Can omit because not part of California's Kindergarten standards

Goals:

- Use ordinal numbers (first, second, third, etc.) to describe or follow steps of constructing two-dimensional (flat) shapes

Constructing Flat Shapes

Goals:

- Construct and draw flat shapes (Module 2: triangle, rectangle, square, hexagon) with different side lengths

Notes to teacher:

- Include construction of square if omitted Lesson 1

Constructing Solid Shapes

Goals:

- Construct solid shapes (cube, cylinder) with sticks and from net (Problem Set)
  - ↻ **Review/reinforce** Module 2 Lesson 7: Classify and describe attributes of solid shapes (cone, cube, cylinder, sphere)
- For Homework: draw solid shapes and identify shape of face

Ordering the Positions of Objects

✂ **Cut/consolidate**: Can omit because not part of California's Kindergarten standards

Goals:

- Identify order of up to ten objects, from first to tenth

Topic B: Composing and Decomposing Shapes

Composing Flat Shapes with Patterns Blocks

Goals:

- Compose flat shapes using pattern blocks and trace composed shape


Suggestions: Only assign Homework if students can take home patterns blocks (1 hexagon, 2 triangles, 3 rhombuses); otherwise, do in class (for example, as warm-up for Lesson 6)

Decomposing Flat Shapes with Pattern Blocks

Goals:

- Decompose flat shapes with pattern blocks and trace the decomposition


Suggestions: Replace Concept Development whole-class instruction (pp. 77-78 of Teacher Edition) with page 1 of Problem Set and other activities (for example, have students compose a shape with five specified blocks, trace the composed shape, trade with partner and decompose partner's shape)

Decomposing and Composing Flat Shapes with Various Shapes

Goals:

- Decompose larger shapes into various smaller shapes by drawing and cutting lines and then compose back into original shapes

Notes to teacher:

- Lesson 7 Template (one template can be used for every two students if students use frames in Problem Set)

End-of-Year Task

Goals:

- ↻ **Review/reinforce** Modules 1-6