beauty&truth MATH

Mathematics in a Charlotte Mason Education

ARITHMETIC

SAMPLE

YEAR 2 BUNDLE

SAMPLE

Beauty & Truth Math

- Mathematics in a Charlotte Mason Education -

ARITHMETIC

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Used in conjunction with

STRAYER-UPTON PRACTICAL ARITHMETICS, FIRST BOOK

by George Drayton Strayer and Clifford Brewster Upton

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"Never are the operations of Reason more perfect and more delightful than in mathematics. Here, men do not begin to reason with a notion that causes them to lean to this side or to that. By degrees, absolute truth unfolds itself. We are so made that truth, absolute and certain truth, is a perfect joy to us; and that is the joy that mathematics affords."
(Charlotte Mason, Vol. 4, pp. 62-63)

"How sad that this subject, ethereal as faery and powerful beyond telling, should find no other adjective than 'useful' to justify us in imparting it to our children. Number to the philosophers of old was a touchstone of learning; it was worthy of their greatest respect and deepest thought. Let us take this gift with the others they have given us; this thought of Number as worthy of our best, aesthetically satisfying as an art, beckoning onward as a science, and luring us ever forward towards increasingly enchanting prospects ahead."
(Stephens, Number: A Figure and a Step Onward, p. 4)

"And if our boys and girls can be brought to feel that arithmetic is a game—a noble game—one of the noblest though not one of the most spectacular that the human race has played—and that it is an honour and a privilege to play at it; and if we can keep that feeling alive by the right exercise and the apt stimulus, cunningly applied with a smile and a jest, as becomes so noble a game, the arithmetic lesson will cease to be a dismal grind and become a grand pursuit full of glamour and excitement."
(Ballard, Teaching the Essentials of Arithmetic, p. 34)

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WELCOME

Thank you for purchasing this full-year guide! We are humbled and honored by your support. Please read through this introduction carefully. Understanding our approach is vital to maximizing the benefits of each guide.

THE VISION

Beauty & Truth Math exists to assist students AND teachers in the realm of mathematics in a Charlotte Mason education. It is possible to simply read the scripted lessons and check your students' answers. However, this keeps the teacher from being an engaged and involved partner in the learning process.

These lessons are written with the idea that the teacher will be *working with* the students, asking questions, having discussions, and monitoring progress. Each lesson is an opportunity for building relationships between you, your students, and the Lord. Please make the most of this time together, walking beside your students in exploring and understanding mathematical ideas.

We thoroughly believe that math done completely in isolation misses opportunities to make deep connections. Just like a foreign language needs to be communicated and spoken to make connections, math is its own language with its own big ideas that are best learned through discussion.

You are working with *living* born persons; our aim is to provide a *living* education. *Living* involves changes and adaptations. These lessons are guides and servants, not masters you must follow. Please use the Spirit's wisdom when discerning what you should modify, skip altogether, push forward on, or slow down on as you and your students are on this journey.

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These guides have been a labor of love. Please respect our hard work and do not share any content and links that are not publicly available on our site.

WEBSITE LINKS DISCLAIMER

PLEASE PREVIEW LINKS BEFORE USING! While we have done our best to ensure all sites we link to are appropriate, we do not have any control over changes made to them.

We are thankful for the free resources other sites make available and want to support them whenever possible. As they generate revenue through traffic on their sites, we link directly to their pages.

In many cases, there will be multiple worksheets provided on the pages linked. Most of the time, we will specify which worksheet is needed in the guide. Sometimes, you will need to choose the worksheet. This will be stated in the guide as well.

It is the teacher's final responsibility to ensure the content is age-appropriate for the lessons. Please email us at contact@beautyandtruthmath.com to report broken links.

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READY, SET, GO!

"Putting in the work up front to make the school days run easy."

We have created three folders to easily access the entire year of teacher help documents and printables included in this guide. Their unique QR codes and links are included in multiple places in this introduction and are shown here for easy identification.

We will walk you through how to use these linked folders in the following few pages, so please don't worry about viewing them now. This page is simply an introduction to them.

Important Teacher Helps – This folder contains helpful resources to assist and support you as you implement math in a Charlotte Mason education. It includes the following documents:

- A CHARLOTTE MASON MATH EDUCATION lays out a vision for a Charlotte Mason math education.
- THE ARITHMETIC PROGRESSION provides an overview of arithmetic in the Beauty & Truth Math Guides using Charlotte Mason's philosophy. Sources include PR articles & books recommended in the PUS Programmes.
- ALL ABOUT THE GUIDES is everything you need to know about the guide's setup.
- FORMS 1&2 REVIEW ACTIVITIES is a treasure trove of various review activities organized by topic. Use these to keep review time lively and engaging.
- FAQs is a list of questions we frequently answer from our customers. This document is a living document and will be updated occasionally.
- SUPPORT VIDEOS LIST is a compiled, linked list of support videos in this guide.
- ADDITIONAL SUPPLEMENTAL RESOURCES provide extra teacher support.

Cardstock Printables – This folder contains all resources that need to be printed on cardstock, as these will be used with your students multiple times throughout the lessons. You could even laminate these if possible.

Printables – This folder contains all of the consumable printables for your students. Sometimes, you will need several copies.

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GET READY!

- **SEE** the **Materials Needed** section in this guide to determine what materials you have and still need to purchase.

- **CHECK OUT Our Favorites** on our website. This is a list of recommendations we have compiled to help you prepare and organize your materials.

- **PRINT** the FORMS 1&2 REVIEW ACTIVITIES document in the **Important Teacher Helps** folder.
    - We recommend printing it on colored paper to make it easy to find. *You only need to print this document once for all your Form 1&2 students.*

- **PRINT ALL OF THE DOCUMENTS** in the **Cardstock Printables** folder. You will use these documents multiple times, so we recommend using cardstock and/or laminating them. Some may need to be cut apart as well.

- **PRINT AT LEAST THE FIRST TWO WEEKS** of materials in the **Printables** folder. In the **Materials Needed**, we list how many copies you need for the entire year. Feel free to print all of them ahead of time or print them only a week or two in advance. You can find these documents listed under the Special Materials Needed section of the Weekly Resources Pages for Weeks 1 and 2.

- **DECIDE** if you will print the guide or use it on a screen.

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GET SET!

- **READ THROUGH THE FOLLOWING <u>IMPORTANT TEACHER HELPS</u>:**
  - A CHARLOTTE MASON MATH EDUCATION
  - THE ARITHMETIC PROGRESSION
  - ALL ABOUT THE GUIDES

- **Learn how to implement the guides in daily life.** Read through the **<u>Putting It Altogether</u>** section of this guide.
- **Prepare your materials.** There is no one right way to do this! The following list is simply a compilation of ideas Beauty & Truth Math users have found helpful.
  - **Create a student math notebook for each student.**
    - Fill it with grid paper. In general, we recommend ½" squares. Some students may need larger squares based on their writing ability.
    - Create sections in the notebook for daily assignments, a math vocabulary page, and a reference section. It is up to you and your student how to order these. If applicable, create different sections for the different streams of math.
    - Decide if you will have your student write headings for each assignment. Information such as the date and page number are great things to include. Writing the problem number and showing the final answer, either with a box or circle around it, are also strongly encouraged. We recommend starting this in Year 2 or 3.
  - **Put together a teacher math notebook for yourself.**
    - Create sections for your personal calendar, the lessons from the guides, printable & supplementary resources, exams, notes, etc.
  - **Find a place for the Cardstock Printables.**
    - These could be stored in a folder in your teacher notebook or an accordion file folder. The goal is to keep them accessible and in good condition since you will use them often.
  - **Use tabs to label and easily find what you need!**
    - Tab each topic in the FORMS 1&2 REVIEW ACTIVITIES document (from the Important Teacher Helps folder).
    - In the Strayer-Upton books, tab the following:
      - Where you are at for the current lesson, and the corresponding answer key section in the back
      - Review & mental math pages
  - **Have individual containers for each of your students' supplies.**
  - **Decide how to store card sets**.
    - We recommend placing them in plastic bags and storing them in an index card holder or binder pouch.

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GO!

Any author of math textbooks or guides will tell you that we write in order to accommodate as many students as possible, and we provide more than is needed. You have complete freedom not only to modify the lessons, but also to adjust the number of problems assigned to meet the needs of your students.

Each week, you will need to do the following:

- Look over the new lessons to be covered with your student. Understand the big ideas and objectives.
- Choose review assignments to use with your students. These assignments build depth in highlighting and understanding different number relationships. When choosing what to review, consider three things:
    1) What areas do my students require more practice to solidify concepts?
    2) What topics have we not reviewed in a while?
    3) What assignments would give my students a reprieve and easier lesson to build their confidence and enjoyment of math?
- Choose mental math problems to use throughout the week, if needed.
- Take the Beauty & Truth Math Guide Vow – I do solemnly promise that I will remember and implement the following statements:
    - I have permission from Charlotte Mason and the authors of these lessons to adjust or modify any lesson, at any time, to provide a living education to my unique, born persons.
    - I have permission from Charlotte Mason and the authors of these lessons to assign fewer problems than written in the lessons to provide a living education to my unique, born persons.
    - I have permission from Charlotte Mason and the authors of these lessons to assign more problems than written in the lessons to provide a living education to my unique, born persons.

      "...the educator has to deal with a self-acting, self-developing being, and his business is to guide, and assist in, the production of the latent good in that being, the dissipation of the latent evil, the preparation of the child to take his place in the world at his best, with every capacity for good that is in him developed into a power." (Mason, Vol. 1, p. 9)

- Pray for joy and wisdom as you set out each day exploring mathematical truths with your students. Now dive right into using the lessons, confident that the Lord is with you and for you!

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PUTTING IT ALL TOGETHER

Imagine this - you are working on a lesson with your student. You glance at the clock and see that the lesson time is halfway over. Your student is not even close to completing the lesson. What do you do?

A) PANIC! Because clearly, you have failed as a teacher, and your student is doomed for life. *Yes, we've succumbed to this lie multiple times.*

B) HURRY! Because it doesn't matter how frustrated all of you end up being, you must get through the material. *Does anybody else ruin the atmosphere by doing this?*

C) STAY CALM & MODIFY! Because you can use the general guidelines in the diagram on the following page to help you determine what to do next. *We created this diagram to serve you because it's a tool that we need, even as math teachers.*

AN IMPORTANT NOTE

The Beauty and Truth Math curriculum is a marriage of spiral and mastery. The weekly review allows the students to continue working on challenging ideas without plateauing. We also teach the reasonableness of each math concept and then recap it each year to help build conceptual understanding.

We never want students to get bogged down in an idea they have not fully mastered. Please keep moving forward even if memorization has not occurred. Your student's relationship with the Lord, you, and math are more important than memorizing a formula!

We pray that these clarifying features equip you to better come alongside your students while you enjoy exploring mathematical ideas together.

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ALL ABOUT THE YEAR

SEEING THE BIG PICTURE

There is NOT a one size fits all way to teach math using the Charlotte Mason method. Our guides are one option for teachers to use. We have created them to be adaptable to each unique student, both in the big picture and in the guides' details.

We have designed our curriculum to imitate the math streams used in Charlotte Mason's schools. Students have several options for the tracks and combinations of these streams. For more information, see our **Scope & Sequence** page on our website.

Additionally, **The Guides' Big Ideas** page on our website shows the main ideas throughout the years.

YEAR OVERVIEW

Year 2 is spent laying a solid foundation in the four fundamental operations of arithmetic. Students learn proper notation for carrying in addition and borrowing in subtraction. Extensive time is spent exploring and connecting the ideas of multiplication, division, and unit fractions.

Students also learn about numbers through the thousands, how to add and subtract money, and the importance of watching out for zeros.

We want students to get in the habit of clearly labeling their work. In Year 2 we recommend having students write down each problem number and highlight each answer by putting a circle or box around it.

The **maximum** lesson time for students in Year 2 is 20 minutes.

EVERY DAY & SPECIAL MATERIALS

We assume students will always have their pencil, math notebook with grid paper, grid dry erase board, and dry erase marker handy for lesson time. Any additional materials beyond these items are listed in the Special Materials Needed sections.

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CARDSTOCK PRINTABLES VS. PRINTABLES

The teacher must prepare all cardstock printables before the term begins. The cardstock printables are listed as special materials, but links are not provided. Links for the Printables Folder are always provided in the special materials.

MONEY

In Year 2 money is often used to represent place value. As such, play money is provided for all the dollar bills in the Cardstock Printables folder.

THINGS TO LOOK FORWARD TO THIS YEAR

This list highlights the special features and noteworthy things throughout the year. These items are expounded on in each term introduction.

- The Details Matter
- Math Jeopardy
- Review Activities
- Manipulatives
- Flash Cards
- Be the Chef!
- Reprieve Activities
- Addition Guidelines
- All About Pages
- Spelling Numbers
- The Multiplication Table Reference Sheet
- Division Notation

SAMPLE

MATERIALS NEEDED FOR THE ENTIRE YEAR

- 12-Inch Ruler
- 2 Highlighters
- 2 Pita Bread (or some other circle shape that's easily cut)
- 25 Two-Color Counters
- 31 Sticky Notes (3 by 3 Inch)
- 3 Pieces of Different Colored Cardstock Paper
- 40 Candies (or another small item)
- 48 Beans (or Beads)
- 5 Bowls
- 5 Dice
- 5 Different Color Markers or Colored Pencils
- Apple
- Banana (or something that is easily cut into thirds)
- Calendar
- Deck of Cards
- Dice
- Dry-Erase Marker
- Grid Dry-Erase Board
- Internet
- Knife & Cutting Board
- Loose Sheet of Grid Paper
- Money - 20 Pennies, 10 Nickels, 20 Dimes, 10 Quarters
- Notebook with ½" Grid Paper

Our Favorites

Check out our recommendations to see if any of them would be helpful to you in preparing and organizing your materials.

Cardstock Printables

- All About Addition
- All About Money
- All About Subtraction
- Dot Chart
- Mastering My Addition Tables
- Measures of Length Cards
- Number Chart
- Pretend Money - 20 $1 Bills, 20 $10 Bills
- Spelling Numbers Tracker
- Ten Frames

Printables

- 0-5 Multiplication Chart
- 0s & 1s Multiplication Table
- Bottom-Up Jigsaw Puzzle
- Bottom-Up Number Chart
- Bottom-Up Puzzles 1-2
- Bottom-Up Puzzles 3-7
- Bottom-Up Puzzles 8-12
- Making Connections
- Number Chart (2 Copies)
- Summing It All Up

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- Optional:
    - 100 Pop Beads or 100 Pony Beads with Bundles
    - 100 Popsicle Sticks with Bundles
    - Chalk
- Plastic SleevePencils
- Piece of String
- Pint, Quart, and Gallon Containers
- Premade Number Line
    - Black Marker
    - Eight 8½” by 11” Cardstock Sheets
    - Painter or Masking Tape
    - Straight Edge (Ruler, Yardstick, etc.)
- Scissors
- Spaghetti Noodle
- Water
- Yardstick

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Mathematics in a Charlotte Mason Education

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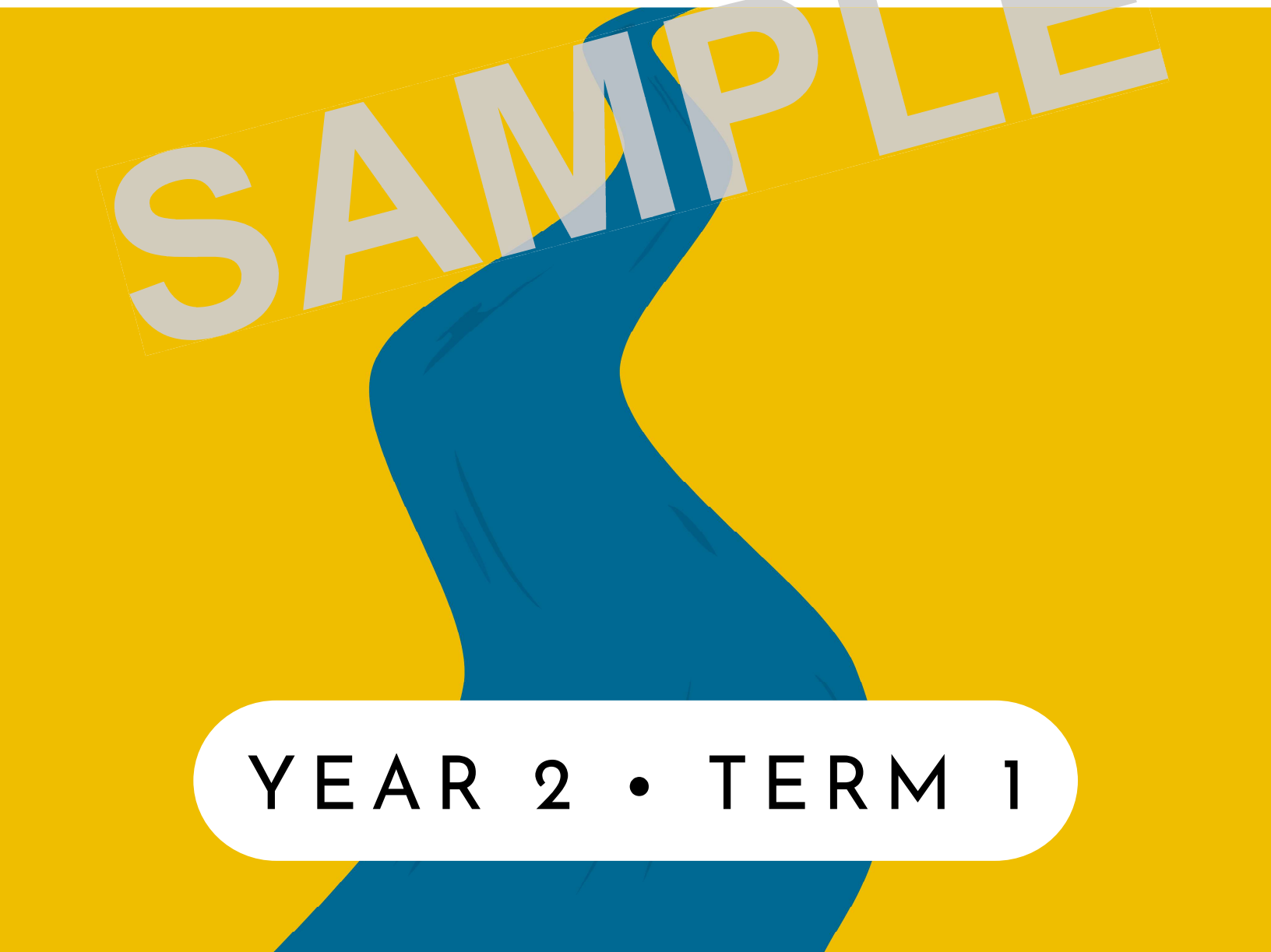

YEAR 2 • TERM 1

• WEEK 4 RESOURCES •

YEAR 2. TERM 1. WEEK 4

OVERVIEW

This week the students will practice solving word problems that use addition and subtraction and learn about months.

BIG IDEAS NEEDED BEFORE BEGINNING

- Days of the Week
- Addition
- Subtraction

SUGGESTED PACE

Day 1: How Much Extra?
Day 2: Check Your Sums, Ls. 2
Day 3: Using the Calendar
Day 4: Review/Catch-Up
Day 5: Shopping/Catch-Up

ONGOING REFERENCE PAGES

- All About Addition
- All About Money

MENTAL MATH IDEAS

- +/- 7 Flash Cards
- +/- 8 Flash Cards

SPECIAL MATERIALS NEEDED

- Spelling Numbers Tracker
- Number Chart
- Money - Pennies, Dimes
- Calendar
- Internet

SUGGESTED REVIEW

- Money
  - Shopping (Teacher as Owner)
- Mixed Review: 21
  - Deck of Cards
- Subtraction: 23

SAMPLE

• How Much Extra? •

Y2. T1. W4. L1

SUBJECT

Arithmetic

RESOURCES USED

None

OBJECTIVES

Students will be able to find the missing number to complete addition problems.

SPECIAL MATERIALS NEEDED

Spelling Numbers Tracker, Number Chart, Money - Pennies, Dimes

THE PLAN

1. Grab your Spelling Numbers Tracker. Today you will see how we spell the numbers four and five. *Have your student copy what you write on your own sheet, or you may write them in for your student.*
2. What letter do both of these words start with? (F) Perfect. Put the tracker away.
3. Next, you will practice giving me the correct change. This lesson will combine three lessons you've done so far this year! Isn't that fun?!
4. For starters, we reviewed money last week. How many cents are in $1? (100¢)
5. And what number is your best friend? (10) What coin represents 10¢? (A dime) Perfect.
6. Let's pretend you have a pack of gum that you'll sell me for 67¢. *Hold up a dollar bill.* Do I have enough money to buy it? (Yes)
    a. How do you know? (Because 67¢ is less than 100¢, which is what $1 equals)
7. Since I'm paying you extra, you need to figure out how much change I need to be given back. So you need to find the difference between 67¢ and 100¢. How do we find the difference between two numbers? (Subtract them.) Correct.
8. When we subtract or find the difference between two numbers we can take away or we can add up. Today you will practice adding up using the number chart and your best friend ten.
9. *Hand the student the number chart.* We will do one together. Then you'll get to do several on your own. Point to 67 on the number chart.
    a. What is the first number that is bigger than 67 that has 0 units? (70)
    b. How many tens are in 70? (7) So in this situation seventy is your best friend as it is made up of only tens.

SAMPLE

c. Which coin represents units? (The penny) Perfect. Laying down pennies on each square after 67, I want you to count up to the best friend 70. *The student should lay a penny on 68 and say, "One." Then another penny on 69 and say, "Two." Then finally, a third penny on 70 and say, "Three.* Well done.

10. Now add tens using your dimes as you climb up to the 100 cents I paid you with. *The student should lay a dime on 80 and say, "13." Then another dime on 90, saying, "23." Finally, a third time on 100, saying, "33."*
11. Perfect. So how much extra money did I give you that you need to give me change for? (33¢)
12. Let's see if you can do this without my help. *Continue role-playing scenarios of paying $1 for different items and following the two steps:*
    a. *Count up to the next largest ten from the price of the item.*
    b. *Then count up by 10s to get to 100¢.*
13. *A table is provided below with problems for you to use.*

Item	Price	Extra Paid
Bouncy Ball	55¢	45¢
Snickers Bar	**87¢**	**13¢**
Skittles	72¢	28¢
Bubbles	**48¢**	**52¢**
Kid Sunglasses	24¢	76¢

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STUDENT RESPONSE

1. Explain in your own words how to figure out how much extra a person has paid.

• Check Your Sums, Ls. 2 •

Y2. T1. W4. L2

SUBJECT

Arithmetic

RESOURCES USED

Strayer-Upton, Book 1 (p. 16)

OBJECTIVES

Students will be able to check their sums by adding in reverse.

SPECIAL MATERIALS NEEDED

None

THE PLAN

1. Earlier this term you practiced adding tens first, instead of units, as a way to check your sums. Today you will learn another way to check your sums.
2. On the left of your dry-erase board, vertically write the sum of 3 and 2. (3 + 2 = 5)
    a. Next to it write the sum of 2 and 3. (2 + 3 = 5, *written vertically again*)
    b. How are these two sums similar? (Same answer and numbers being added)
    c. How are they different? (The order of the numbers being added is switched.) Do you think this pattern will hold?
3. Let's do another sum to find out. Erase your board and next to each other find the sum of 1 and 3, then 3 and 1. (1 + 3 = 4 & 3 + 1 = 4)
4. What pattern do you see with both pairs of equations that you've solved? (That the order of the numbers being added doesn't matter)
5. This special pattern has a name called the commutative property. The commutative property tells us that you can switch the order of numbers being added and you'll get the same answer. Isn't it fun to see how this shows us God's unchanging truth in numbers?!
6. The commutative property can be used as a shortcut to finding answers. For example, if 32 + 67 is 99, what is 67 + 32? (99) Good.
    a. If 23 + 39 is 62, what is 39 + 23? (62) Great job!
7. The commutative property can also be used to check answers. Let's do a couple of sums on your dry-erase board. *Have the student do the first two sums from p. 16: 2 as the directions state.* Do you prefer adding up or down?

STUDENT RESPONSE

1. Give me two problems to solve that require using the commutative property.

SAMPLE

• Using the Calendar •

Y2. T1. W4. L3

SUBJECT

Arithmetic

RESOURCES USED

Strayer-Upton, Book 1 (p. 20)

OBJECTIVES

Students will be able to find the days of the week and dates on a calendar. Students will also be able to say the months of the year.

SPECIAL MATERIALS NEEDED

Calendar, Internet

THE PLAN

1. Tell me what day of the week is your favorite and why that is. What is something you are excited to do in the next week?
2. Last year we learned the days of the week. Can you tell me them in order, starting with Sunday? What do you think would happen if we didn't have days of the week?
3. Let's watch a short video about how the calendar we used today was created.
4. *Lay the calendar in front of your student.* Now let's look at the calendar for this year. Together let's start with January and say each month as we flip through the pages.
5. Well done. Before we continue with the calendar, it's time for a short break to play *What's More Likely*? So what is more likely to happen?
    a. It will snow or be sunny tomorrow.
    b. You will swim or hike this upcoming weekend.
    c. We will grow cucumbers or pickles in a garden.
6. Now we are going to zoom in on November and answer some questions. Let's turn to p. 20 in our book.
    a. Do p. 20:1-7. *For 5, see if the student can demonstrate each month as we did in step four on his own. If not, repeat step four together.*

STUDENT RESPONSE

1. Tell me two things you learned about the calendar today.

SAMPLE