Classical Math 3
Teacher's Manual, Additional Worksheets, & Additional Worksheets Answer Key

Classical Math 3 Teacher's Manual, Resource Book, and Resource Book Answer Key
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Forward

Classical Math 3 is a unique program established to teach mathematics to third grade students using the Classical methodology, which has been proven to produce results. It is not based upon some gimmick or clever manipulation, but it was born out of the need for a program that would thoroughly and systematically ground students in mathematics.

By the end of the third grade, a student should understand numbers with perfect mastery. They should understand counting and writing numbers, place values, and computation of numbers using addition, subtraction, multiplication and division. *Classical Math 3* addresses this need. In addition, it provides continued instruction in telling time, using measurement, working with money, equations, reading graphs, fractions and much more.

Although many math programs teach the same basic material to elementary students, *Classical Math 3* does it thoroughly. This math program contains strategic review of prior concepts. Furthermore, a concept is never taught and then left for a review unit at the end of the school year, but every concept taught is systematically reviewed throughout the course. Also, many of these concepts and lessons are expanded upon and reviewed again. Therefore, in order to accomplish the constant review and, at the same time, present new lessons, the lessons are packed. A first glance at the worksheets tells the complete story. The worksheets are "black". Little space is wasted and cute pictures are missing. *Classical Math 3* is a true mathematical program for the studious.

Each lesson begins with oral exercises in count bys, drills, sound-offs, short timed fact quizzes, and a systematic review of past material. Then the teacher presents the lesson's new objective, utilizing chants, such as the Running Total Chants, Division Chants, Regrouping Chants, and whole group responses, especially when learning new terms and rules and step-by-step processes, where the student learns the logical order for performing each operation. Sample exercises are then completed working together. Finally, once the lesson has been taught and practiced, another worksheet is provided to review the concept. This second worksheet also gives the student an opportunity to show his understanding and mastery of the new material and the review material.

Classical Math 3 is not only a classical approach to mathematics, but it is also a Christian approach to learning mathematics. The third grade student needs to develop a Christian worldview of mathematics. Beginning with the first lesson of *Classical Math 3*, the teacher can facilitate the child's understanding that God is a God of numbers; and God's holiness, faithfulness, truth, goodness, and beauty are reflected in mathematics. God used numbers and number patterns throughout His creation. God gave us numbers to use, whereby we may know Him, serve Him, and glorify Him. We can number our days, observe mathematical phenomenon in nature, and know the regularity and orderliness of mathematics because God is the creator and sustainer of all. The students need to know that there are absolute truths, correct answers, and 2 + 7 will always equal 9 because God is. God is unchanging, He is the same yesterday, today, and forever, and arithmetic works because of God. After this Christian worldview foundation is laid, then the students can perform mathematics with gusto, to the glory of God.

Therefore, *Classical Math* 3 is a systematic, logical approach to teaching classical, Christian mathematics. It provides, from the first lesson to the last lesson, orderly exercises for the student to completely understand numbers with systematic review and rigorous exercises.

Grading

The importance of precision in mathematics cannot be overemphasized. The success of Classical Math 3 rests heavily on requiring precise, accurate work from each student. This, of course, is accomplished through high standards in grading. If a teacher tells her students they must label word problems and then fails to mark an unlabeled problem incorrect, the students have learned that it is not important to heed the instruction of the teacher; it didn't really matter if they followed her instruction. Not only is this poor training for mathematics, it is an inaccurate representation of how God has made the world. It *matters* whether we remember to obey our Lord and Savior! Our God takes "forgetting" very seriously. He doesn't say, "Oh, that's okay." when we forget His countless blessings or neglect His commands. Rather, He, in His great kindness and mercy, corrects, rebukes, chastens, and *teaches* His people. Teachers should respect the wisdom of the Great Teacher and follow His example. It is very common for teachers (and parents) to say, "Well, it is clear that the student understands the concept; he just forgot to…" Perhaps it is something mislabeled, misspelled, illegible, or only halfway done. Perhaps the student forgot to do a section all together. It is far kinder and gracious to the student to have these errors marked as errors than to overlook sloppiness and falsely teach that accuracy and detail do not matter. We want to show grace to our students, and to do so we must recognize that true graciousness prepares students well for the work and requirements they will face in later grades and as adults.

As this curriculum is used, it is important to consistently teach and train the students to carefully follow every instruction. Teach them that a label is required when writing a number sentence in a story problem, and then faithfully mark the problem incorrect if the label is not included. Teach them that the date must include a correctly spelled month and a comma, and mark the problem wrong when these instructions are not followed. Teach them exactly how they must draw the hands on a clock, and mark them incorrect if they do it differently. Train the students rigorously and in a loving manner. Far from being harsh, this will prepare them to receive and master the concepts presented in Classical Math 3.

Weighting Grades

Different schools will have varying criteria for grading and homework expectations. Some require that all work be done in class; others allow certain items to be sent home for completion. Some classrooms use a percentage system, while others may use total points or some other arrangement. Examples of possible grading schemes for Classical Math 3 are included below. However your quarter grades are calculated, it is very important to remember that when grading individual assignments a high level of accuracy and attention to detail must be maintained.

Weighting grades is a helpful way to provide a great deal of practice for a student without being too harsh as they work their way through new material. The details should matter, and this should be reflected by a great deal of red on a sheet where a concept is not yet grasped. And yet, we don't want students to flunk or do very poorly simply because they are dealing with new material. The following is one scheme that has proven effective.

Tests 50% This includes the tests that appear every five lessons throughout the curriculum, but it does *not* include timed fact test.

Seatwork 30% Seatwork is any assignment that the student works through on their own in the classroom. The teacher is available to help on these assignments but is not standing at the front of the room telling them what to put in each blank. In Classical Math 3, the B side of the worksheet may occasionally be given as independent seatwork, and towards the end of the year, the teacher may also find it appropriate to assign side A as seatwork.

Fact Quizzes 15% This grade is the fact quiz that follows a week or two of practice quizzes. Practice quizzes are not recorded in the grade book; rather the student sees his progress in his own sticker book.

Homework 5% Parents are welcomed and encouraged to help their child find all mistakes on anything that comes home as homework. Because of this, homework is weighted very lightly. In Classical Math 3, the B side of the worksheet could often be sent home as homework.

In this system, each test, seatwork assignment, and fact quiz (not the practice fact quiz) go home with a percentage at the top. This can be quickly calculated by determining the number of possible points, marking off for each error, and then using a percentage sheet to arrive at a total percentage. (A grading wheel or calculator can also be used, but they take a little more time.)

Homework can be calculated with a percentage, but a 0 to 5 grading scale is perhaps the most effective training for the student. This scale allows the teacher to be very picky and precise in grading the assignment, (allowing the student to see exactly where more careful work is needed) without having too harsh an impact on the overall grade of the student. The grading scale works this way.

Perfect score = 5
1-3 errors = 4
4-6 errors = 3
7-9 errors = 2
10- 12 errors = 1
More than 12 = 0
Late assignments: reduce final score by one point for each day late
More than 3 days late = 0
(Example: An assignment that received a 4 but was two days late would receive a 2.)

At the end of the quarter calculate total points possible in the homework category, calculate the points actually earned, and turn it into a percentage grade.

Lesson by Lesson Table of Concepts

Concepts in **Bold** have a **Resource Worksheet for additional practice**.

Schedule for Use of Math Facts

Week 1	Week 2	Week 3
+, - 0 & 1	+, - 2	+, - 3
Week 4	**Week 5**	**Week 6**
+, - 4	+, - 5	+, - 0-5
Week 7	**Week 8**	**Week 9**
+, - 6	+, - 7	+, - 8
Week 10	**Week 11**	**Week 12**
+, - 9	+, - 10 and +, - 6-10 (just one day for +, - 10)	M/D 0,1 and A/S 100 facts (one day addition 6 min./ one day subtraction 7 min.)
Week 13	**Week 14**	**Week 15**
M/D 2 and A/S 100 facts (one day addition 6 min./ one day subtraction 7 min.)	M/D 3 and A/S 100 facts (one day addition 6 min./ one day subtraction 7 min.)	M/D 4 and A/S 100 facts (one day addition 6 min./ one day subtraction 7 min.)
Week 16	**Week 17**	**Week 18**
M/D 5 and A/S 100 facts (one day addition 6 min./ one day subtraction 7 min.)	M/D 6 and A/S 100 facts (one day addition 5 min./ one day subtraction 6 min.)	M/D 7 and A/S 100 facts (one day addition 5 min./ one day subtraction 6 min.)
Week 19	**Week 20**	**Week 21**
M/D 8 and A/S 100 facts (one day addition 5 min./ one day subtraction 6 min.)	M/D 9 and A/S 100 facts (one day addition 5 min./ one day subtraction 6 min.)	M/D 10 and A/S 100 facts (one day addition 5 min./ one day subtraction 6 min.)

Week 22

M/D 11 and A/S 100 facts (one day addition 4 min./ one day subtraction 5 min.)

Week 23

M/D 12 and A/S 100 facts (one day addition 4 min./ one day subtraction 5 min.)

Week 24

A/S 100 facts (two days addition 4 min./ two days subtraction 5 min. - work to meet goals)

Week 25

A/S 100 facts (two days addition 4 min./ two days subtraction 5 min. - work to meet goals)

Week 26

A/S 100 facts (two days addition 4 min./ two days subtraction 5 min. - last week to meet goals)

Week 27

M/D 100 facts (two days multiplication 7 min./ two days division 8 min.)

Week 28

M/D 100 facts (two days multiplication 7 min./ two days division 8 min.)

Week 29

M/D 100 facts (two days multiplication 7 min./ two days division 8 min.)

Week 30

M/D 100 facts (two days multiplication 6 min./ two days division 7 min.)

Week 31

M/D 100 facts (two days multiplication 6 min./ two days division 7 min.)

Week 32

M/D 100 facts (two days multiplication 6 min./ two days division 7 min.)

Week 33

M/D 100 facts (two days multiplication 5 min./ two days division 6 min.)

Week 34

M/D 100 facts (two days multiplication 5 min./ two days division 6 min. - work to meet goals)

Week 35

M/D 100 facts (two days multiplication 5 min./ two days division 6 min. - work to meet goals)

Week 36

M/D 100 facts (two days multiplication 5 min./ two days division 6 min. - last week to meet goals)

3rd Grade - Best Times on 100 Math Facts for _____

Year

	Name		Grade for 4 minute Addition		Grade for 5 minute Subtraction		Grade for 5 minute Multiplication		Grade for 6 minute Division
1.									
2.									
3.									
4.									
5.									
6.									
7.									
8.									
9.									
10.									
11.									
12.									
13.									
14.									
15.									
16.									
17.									
18.									
19.									
20.									
21.									
22.									
23.									
24.									
25.									

Starting Out With a Biblical Worldview of Math

Help your third graders develop a Christian worldview of mathematics. Start with the first lesson and help the students understand that God is a God of numbers. He used numbers and number patterns throughout His creation. The days of the week, the days of the month, and the months of the year all show God's use of numbers. Monocots and dicots, the speed of light, the mass of an object, the snowflake, the distance of planets, and the rings of a tree are examples of God's use of mathematics in nature. Help the students see that God's holiness, faithfulness, truth, goodness, and beauty are reflected in math. Share that God gave us numbers to use, whereby we may know Him, serve Him and glorify Him. Teach the students to number their days, observe mathematical phenomenon in nature, and know the regularity and orderliness of math because God is the creator and sustainer of all. The students need to know that God has absolute truths and this applies to math as in correct answers. 3 + 4 will always equal 7 because God IS. God is unchanging. He is the same yesterday, today, and forever. Help the students understand that math works because of God. After this Christian worldview foundation is laid, be sure to seek and use other opportunities to review and share the Christian worldview of mathematics in subsequent lessons throughout the year.

Start each lesson with count bys and a sound-off. These are to be recited together, students and the teacher.

COUNT-BYS

Make number strips for each count by, display on a bulletin board, and point to each number as you progress through the count-bys. Use your imagination in reciting count-bys: boy, girl, boy, each say a number...- side 1, side 2, side 1, side 2...- row 1, row 2, row 3, row 1,...- students, teacher, students...- whisper mode, shout mode.

SOUND-OFF Additional Worksheet on page 93 - Place Value Sound-Off

Assign sound-off parts for the students to memorize. Make two copies of the sound-offs. Send home a copy so students can be working on memorization at home. Make a copy for them to keep in a reference binder at school. Allow the students to look at their sound-off parts for several weeks. It will take several run-throughs and practices before the sound-off sounds beautiful. Teach them to do it with rhythm and excitement. Variation: treat the sound-off like a chant and have students be responsible to chant all of it. Place Value Sound-Off - Explain the meaning of the prefixes: bi-2, tri-3, quad-4, quin-5, sex-6, sept-7, oct-8, non-9, dec-10 and explain place value.

Lesson 1

Side one to be completed together as a class.

1. Have students practice reading numbers and writing numbers from words. Provide your own examples. Teach them that whenever they hear the words "thousands, millions, billions, etc.," those are comma words and they are to insert commas as they write the numbers.

   Also teach them to count 3 numbers from the left and insert a comma. Teach them each group (ones, thousands, millions, billions, trillions, quadrillions,... has 3 numbers in the group, separated by commas. Teach them to appreciate all of the numbers God created, they are infinite, just like He is infinite. Teach them to expand thousand numbers out into each place value. For those that need a visual aid, show a thousand using a cube, show a hundred using a large box, show a ten using a narrow rectangle, and show a one's number using a small square. Teach that you must place a "0" to hold a place value or else 5,306 becomes 5,36 and there are only 2 numbers in the one's group. Teach them to say and write numbers without using the word "*and*"**.**

2. Practice the "Running Total Chant" every time you have the students add. This is excellent practice to facilitate adding and subtracting numbers in your head. Make flash cards with various combinations of numbers to help the students become proficient. Stress: This is to be done orally, with mental computation.

   Lesson 1B is a review lesson of side one. Students should be able to complete it on their own.
   Grade is worth 25 points.
   1. 1 point (entire count-by must be correct)
   2. 1 point
   3. 11 points
   4. 12 points

Lesson 2

Side one to be completed together as a class.

1. Ordinal numbers is a review for most 3rd graders. Teach the students when and how we use ordinal numbers by giving examples from real life. Teach them to hear the "st, nd, rd, and th." Review the frequency of those endings as you count to 100. Teach how to write them neatly.

2. Practice reading, writing, and expanding numbers from words. Provide many of your own examples.

3. Teach the students to find missing addends by thinking: "What plus 5 will equal 12?" *or* "12 - 5 = ?" Encourage the students to do these mentally.

4. Practice the "Running Total Chant" together as a class. Give lots of praise for doing these correctly!

Lesson 2B is a review lesson of side one. Students should be able to complete it on their own.
Grade is worth 38 points.
1. 1 point (entire count-by must be correct)
2. 1 point
3. 9 points
4. 8 points
5. 6 points
6. 13 points

Lesson 3

Side one to be completed together as a class. Additional worksheet on page 94 - number before and after

1. Reading an hour clock is review for a 3rd grader. Explain information given on worksheet about hour hands and minute hands. *Chant around the clock by 5's together* and check off chanting in the box provided. When making an hour and minute hand, have the students make a simple straight line for each. Get them in the habit of drawing the minute hand first, then the hour hand (minute hand determines placement of the hour hand).*Chant together, "Minute-long word, long hand! Hour-short word, short hand!"* Chant it again!

2. Using a classroom clock with moveable hands, call on students to identify several hour clock examples. Write time correctly, using a colon and two numbers to the right of the colon.

3. *Chant together, "Minute-long word, long hand! Hour-short word, short hand!"* Chant it again! Have the students show 4:00 using straight lines for the hands. The hour hand should not touch the numbers as it moves around the clock. The minute hand should pass through the numbers as it moves around.

4. There is an additional worksheet for this concept. Write the numbers that come before and after. Teach the students to *listen* to check their work to see if it makes sense. "Two hundred ninety-two, two hundred ninety-three, two hundred ninety-four". Do not let them say "Two hundred *and* ninety-two". We do not use **"***and***"** at any time saying or writing numbers.