

# REVEALING ARITHMETIC

5.321  
+340  
5.661

$\sqrt{25}=5$

90 2,560  
2,333  
2,210  
9  $\overline{)810-1,000}$  addition and subtraction  
81 1,560  
0

$3.4 + 4.7 = 8.1$

$\frac{4}{5} = \frac{x}{10}$

100  
-60  
40

55%

$6^2 = 36$

$1.6 \times 5 = 8$

0.45 = 45%

35 > 30

123

0 1 2 3 4 5 6 7 8 9

6x5=30  
6x6=36  
6x7=42  
6x8=48  
6x9=54

7-3=4

$10-5=5$

$\frac{3}{18} = \frac{1}{6}$

2,560  
-1,000  
1,560

24 ÷ 4 = 6

78 - 6 = 72

$\frac{1}{2} \times \frac{4^2}{7} = \frac{2}{7}$

$\frac{40}{18} = \frac{20}{9}$

123  
x 4  
492

99%

45  
-6  
39

40  
+56  
96

1,428  
-313  
1,115

multiplication

$1+1=2$

$\pm 45 > 25$

what percent?

5x1=5  
5x2=10  
5x3=15  
5x4=20  
5x5=25

3.4  
x 4.7  
15.98

X 600 = 150

7 < 8

\$1.99 ≈ \$2

30  
2  $\overline{)60}$

$\frac{1}{4} + \frac{2}{3} = \frac{11}{12}$

$1\frac{1}{2} + \frac{2}{3} = 2\frac{1}{6}$

$\frac{12}{24} = \frac{1}{2}$

1/4 1/2 3/4

40 ÷ 2 = 20

40¢

4<sup>2</sup> = 16

4x7 = 28

100¢ = \$1

$\frac{1}{4} \times 600 = 150$

25% 14%

123 X 4 = 492

$\frac{18}{36} = \frac{1}{2}$

5, 10, 15, 20 ...

80 - 52 = 28

1/8 3/8 5/8

40  
+56  
96

3 15

45  
-6  
39

8,873  
-501  
8,372

75.6

100%

math

$\frac{2}{5} = 0.4$

Math Concepts from a Biblical Worldview

KATHERINE [LOOP] HANNON

100%

20  
4  $\overline{)80}$

60  
100 = 60%

20, 30, 40, 50 ...

65% 35%

+ 3.65  
79.25

$\frac{60}{100} = 60\%$

= - ÷ < >

45 - 6 = 39

100  
-60  
40

# REVEALING ARITHMETIC

Math Concepts from  
a Biblical Worldview  
KATHERINE [LOOP] HANNON

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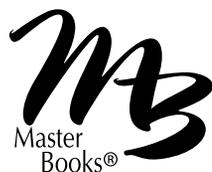
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And thank you to the amazing team at Master Books, who saw a vision for this resource and is reprinting it in this new edition, which I hope will make it available to a wider audience.

Above all, I wish to thank the Lord for His faithfulness and unconditional love. He has used this book, including all its challenges and setbacks, to work in my heart and show me how I truly have *nothing* and can do *nothing* without Him.

May the Lord receive glory now and forever.

Katherine [Loop] Hannon



# Why and How to Use *Revealing Arithmetic*

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## WHY USE REVEALING ARITHMETIC?

Of all subjects, math is probably the one the most people look at as neutral, or “not engaged on either side; not aligned with a political or ideological grouping.”<sup>1</sup> Most view math as a set of facts independent from God. Even most Christian math resources, while they add a verse or Bible example to the text, still present math as an independent, neutral fact. Yet this “neutral” view of math is really a humanistic and naturalistic one (see the chapter: **MATH CONCEPTS . . . FROM A BIBLICAL WORLDVIEW?**).

Far from being independent *from* God, math is entirely dependent on God. Math only works *because* it describes consistencies God holds in place. One plus one consistently equals two *because* God faithfully holds this universe together in a consistent fashion. Math testifies to God’s faithfulness! If this universe (not to mention our own minds) were the result of random chance, we would have no reason to expect to be able to use math in the first place. Math’s overarching message is one of trust and dependency on God. It testifies to God’s power, faithfulness, and might.

Sadly, math’s message has been twisted underneath a “neutral” guise. Children learn to manipulate numbers on paper. They can tell math works. But they learn to look at math as a system independent *from* God rather than dependent on Him. They adopt an *independent* outlook on math.

**This resource is designed to help you “reveal” arithmetic for what it is: a testimony to the Creator.** It’s easy to lose sight of the big picture when teaching math. This resource will help you remember the purpose of what you’re teaching — and pass that on to your children. It will help you answer the “why-are-we-learning-this” questions . . . and show you how to customize your curriculum to show students math’s true purpose.

## WHO IS REVEALING ARITHMETIC FOR?

- **Homeschool parents** looking for a simple guide to help them both understand and teach elementary math concepts (pre-K through about grade 6) from a biblical worldview. You’ll find easy-to-read explanations of how the main concepts in arithmetic can be taught from a biblical worldview . . . along with bulleted ideas to use with your children in order to help them grasp the concepts biblically as well.
- **Older students or adults** needing a review of math’s basics or an understanding of how math can be seen from a biblical worldview. Math builds on itself — and many

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1. *Webster’s New Collegiate Dictionary*, 1974 ed., s.v. “neutral.”

people who struggle with upper-level math do so because they missed something early on. *Revealing Arithmetic* can help older students develop a biblical worldview toward math and build a solid foundation for upper-level concepts.

- **Christian school or co-op teachers** wanting ideas or training on how to modify the curriculum they're using (or will be using) to better convey a biblical worldview to students. The basic principles shared and many of the ideas can be adapted to a classroom setting.
- **College students studying to be elementary school teachers** who want to learn to teach math from a biblical worldview. This book makes a great guide for future elementary school teachers to begin thinking through how biblical principles apply in math.

## IS REVEALING ARITHMETIC A CURRICULUM?

**No. *Revealing Arithmetic* is designed to be used alongside any curriculum.** As there is already an abundance of resources focusing on mechanics, you'll find *Revealing Arithmetic* includes just enough of the mechanics to show how the many rules and "facts" in math describe consistencies God created and sustains. It's designed to help you see and teach those mechanics from a biblical worldview rather than to be a curriculum in itself.

## HOW IS REVEALING ARITHMETIC STRUCTURED?

**The book is divided into chapters by concept.** The first part of the chapter presents the "big picture" of the concept; the second part offers specific teaching suggestions and ideas. Within the second part, an example curriculum presentation is examined, and suggestions on how to modify it are offered. These examples are included to help you apply the principles discussed. There is material in the appendixes designed to go with some of the ideas given. You'll find there some worksheets that give students an opportunity to see math in action, along with information about historical methods designed to help students see our modern methods as just one way of describing God's creation.

Since this book is designed for parents/teachers of all aged children to use, the ideas often span a wide range of ages and abilities. Please use your own discretion as to whether an idea would be appropriate for your child. A large "H" graphic marks ideas requiring knowledge of more advanced concepts.

Because I personally love history and find it helpful in understanding the worldviews behind a concept, I have frequently incorporated history. If your love is science, you might develop your math lessons with more science.

## WHERE DO I START?

**Start by reading** MATH CONCEPTS . . . FROM A BIBLICAL WORLDVIEW? to get a big-picture overview of how the Bible *does* affect how we view math.

After that, you can **skip around as needed to match what your curriculum is teaching**. If you're covering place value right now with your child, skip to the Place Value chapter and use the background and ideas there to help you teach place value. The chapters are arranged by main concepts to help you quickly find the concept you're teaching, and there's an index in the back.

Note, though, that **you may want to skim any chapters that you skip when jumping ahead to a concept in order to stay in sync with your curriculum**, as the concepts build on each other. The beginning chapters (COUNTING through MULTIPLICATION) are especially foundational, and many of the principles discussed in them apply to other concepts as well.

**If you're using the resource with an older student as a review**, have them work through the book in order. The first part of each chapter that explains the concepts from a biblical worldview are going to be what they need to read; you might also have them work some of the problems marked with a big "H."



## ECOURSE AND ADDITIONAL MATERIAL

The *Revealing Arithmetic* eCourse ([www.MasterBooksAcademy.com](http://www.MasterBooksAcademy.com)) features videos that go along with this material, walking through teaching the different concepts, making an abacus, and more. If you're more visual or auditory, you'll find these videos engaging ways to quickly understand the concept biblically and be equipped to teach it that way too.

The Book Extras section on [www.ChristianPerspective.net](http://www.ChristianPerspective.net) contains information about additional materials that may be helpful to you as you teach.



# Math Concepts... from a Biblical Worldview?

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Math...from a biblical worldview? Those words do not usually appear together. We can see how worldviews matter in history and science, but how can math facts be taught biblically? After all,  $1 + 1 = 2$  to a Muslim, Christian, and atheist.

For years, if you had asked me how to teach math biblically, I would have suggested adding a scripture verse to the top of the page and including word problems based on biblical data or settings. I later came to realize merely adding a scripture or word problem did nothing to teach the math facts themselves from a biblical worldview. The student still saw math itself as neutral.

But math is *not* neutral, and it *can* be taught from a distinctly Christian worldview! To see how, take a brief look with me at how a Christian worldview applies to science. These same principles apply to math as well.

- **The Bible explains WHERE science originated.** — Genesis 1:1 says, “In the beginning God created the heaven and the earth.” God created everything in six days: “For in six days the LORD made heaven and earth, the sea, and all that in them is, and rested the seventh day: wherefore the LORD blessed the sabbath day, and hallowed it” (Exodus 20:11).<sup>2</sup>
- **The Bible tells us WHY science is possible.** — Science is based on observing, repeating, and testing. The whole scientific process presupposes that the universe operates consistently and that man can make intelligent observations. The Bible gives an explanation for both these presuppositions. It tells us a consistent, never-changing God holds all things together (Malachi 3:6; Colossians 1:17) and that this same God created man in His image (Genesis 1:26, 27), capable of subduing the earth (Genesis 1:28). Thus we, unlike animals, can do science!
- **The Bible tells us WHAT to expect as we explore creation.** — We should expect to see both reflections of God’s original incredible design, and evidence of destruction and death due to the entrance of sin into the world.<sup>3</sup>
- **The Bible gives us principles to guide HOW we use science.** — God created man to fellowship with Him. Although sin destroyed man’s perfect fellowship with God, through Jesus we can again know God and worship Him in all we do. Thus we can worship God as we explore His creation. Since God created us, we are accountable to Him for how we use science.

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2. The Bible teaches a literal six-day creation and a young earth (about 6,000 years old). For more information, see [www.answersingenesis.org](http://www.answersingenesis.org).

3. The Bible teaches suffering and death came into the world as result of man’s sin (Genesis 3). Before sin entered the world, the universe was “very good” (Genesis 1:31). See [www.answersingenesis.org](http://www.answersingenesis.org) for more resources on understanding death and suffering from a Christian worldview.

Whether we acknowledge it verbally or not, our worldview impacts us continually in science. When we examine a tree, we start with some sort of belief about how the tree got there. Our underlying belief impacts how we view the tree (as God’s handiwork, the product of time and chance, etc.). When we see a disease-ridden tree, we either understand the disease as a consequence of man’s sin, or else adopt some other explanation (viewing disease as a “natural process,” blaming God for the destruction in the world, etc.).

It is easy to see how science can be taught from a distinctly biblical perspective. We can ground ourselves in the Word of God, interpreting the world around us through its lens. Rather than merely learning facts about a tree, we can pause and think of the amazing design before our eyes, letting our hearts turn upward to our Creator. Both Christians and non-Christians have the same facts in science, but interpret them very differently.



In much the same way, worldviews matter in math. While  $1 + 1 = 2$  to a Muslim, Christian, and atheist, those three worldviews explain this fact very differently. Join me in a quick overview of the answers the Bible gives to math’s where, why, what, and how.

- **The Bible tells us WHERE math originated.** — Since God created everything, He created math too! This does not mean God created the symbols we write, but He created the consistency those symbols represent. Symbols like  $1 + 1 = 2$  record the consistent way God causes objects to operate.
- **The Bible tells us WHY math is possible.** — Why does  $1 + 1$  consistently equal 2? Because God both created this consistency and keeps it in place! Math’s very ability to work is a testimony to God’s faithfulness. If this universe were simply a random collection of chemicals, or if we served an inconsistent God, we would have no reason to expect objects to add or subtract consistently.<sup>4</sup>

In the Book of Jeremiah, God pointed out to His people the consistent way He has chosen to govern the universe, reminding them He would keep His covenant with them. It is as if math were shouting out at us, “You can trust God!”

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4. While many mathematicians have tried to explain math’s ability to work without acknowledging God, sooner or later something has come along to dislodge their theory.

You may wish to look at a presuppositional book on logic, such as *The Ultimate Proof* by Dr. Jason Lisle. In this book, Dr. Lisle makes the case that only the biblical worldview makes sense of the laws of logic and that, apart from the biblical God, there is no way to really prove or know anything. He also makes the case that it is the biblical God, not any other God, who makes sense out of logic. (I would add that this is true of math too. Only the biblical God has the characteristics necessary to account for what we see in logic and math.)

*“This is what the Lord says: ‘If I have not established my covenant with day and night and the fixed laws of heaven and earth, then I will reject the descendants of Jacob and David my servant.’”*

JEREMIAH 33:25-26A (NIV)

In order for math to work, there not only have to be consistencies throughout creation, but we have to be able to recognize those consistencies! Again, the Bible gives us the framework for understanding this. It teaches us God created man in His image and gave him dominion over the earth (Genesis 1:27–28). Hence we should expect to be able to develop ways to record the consistencies God placed around us.

We should also expect our thinking to, in a very limited way, take after our Creator. Many purely intellectual mathematical theories end up corresponding with reality because *our minds were created by the same Creator who created all things*.

- **The Bible tells us WHAT to expect as we use math.** — Although we tend to confine math to a textbook, it actually goes hand-in-hand with science! Since math records real-life consistencies, we should expect it to help us explore God’s creation, showing us both reflections of God’s original incredible design and evidence of destruction and death due to the entrance of sin into the world. We should also expect to be able to use math to help us in the various tasks God has given us to do, be they around the house or on the job.
- **The Bible gives us principles to guide HOW we use math.** — Through Jesus, we can again know God and worship Him as we use math! Since God created us, we are accountable to Him for how we use the gift of math He has given us.

So how can math be taught biblically? In much the same way science can! Just as we would worship God while studying a tree, recognizing Him as the Creator and Sustainer, we can worship God as we study math concepts, recognizing He created and sustains the consistency the concept represents.

The problem is, nearly all math textbooks approach math as a neutral concept. We typically look at math as facts to solve on paper — facts that have always been there and that we can never question. This “neutral” approach is not neutral at all — we have to give the credit for math’s ability to work somewhere. When we do not give the credit to God, we end up buying into a naturalistic and humanistic view on math.

- **Naturalism** — Most math books present math as a self-existent fact. For example, one algebra book, when talking about properties says we “are stuck with properties because they are what they are.”<sup>5</sup> Yet properties represent consistencies all around creation. Calling properties or other math facts self-existent subtly calls the consistencies throughout creation self-existent as well, which is a naturalistic and evolutionary idea!
- **Humanism** — A student studying math might also get the impression man created math. After all, man *did* develop many of the tools and techniques we use in math. But man did *not* develop math! Regardless of when man discovered them, math principles

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5. Saxon, *Algebra 2*, 8.

have been in action all around us since God created the world. When we give man the credit for math's ability to work, we buy into humanistic thinking and begin to place our faith in man's intellect instead of in God's Word.

There is a fundamental worldview conflict going on in math, as in science and every other subject. If we want to see God in math, we have to do more than add a scripture verse or biblical example to a presentation. We have to completely change our approach to math.

How? Throughout this book, you will notice four main tactics used to “reveal” math concepts.

1. **Rewording the presentation.** Often, textbooks have students memorize rules without really understanding why the rules work. This robs the student of seeing how the rules describe a real-life principle God created and sustains and leaves him looking at math as man-made. Thus you will notice I have tried to explain *why* various rules work. The goal is to show how each rule, far from being self-existent or man-made, describes a real-life consistency God created and sustains.
2. **Sharing the history of the concept.** In recent years, math has been predominately isolated from history. Yet seeing the history of a concept can go a long way in helping students see it from a biblical worldview! When students only learn one method or symbol, it is easy for them to mistake that method or symbol for math itself, thereby leaving them thinking of math as a man-made system (after all, man did develop the method and the symbol). History, however, reveals many other methods and symbols, thereby helping us see each method or symbol as but *one* way of describing something God created and sustains.
3. **Applying the concept in a real-life situation.** Can you imagine spending years reading instruction manuals on how to work a sewing machine without ever touching one? How silly! Is it not equally silly for students to spend years of their lives studying math concepts without being shown how to actually apply their knowledge outside of a textbook? Math has been isolated to a textbook in a large sense because of a false worldview. Apart from God, it does not make sense why math works, nor do we have the same motivation to use it as a useful tool to serve God. For years, math has been taught as an intellectual pursuit — as something to show how smart we are or to get us into a university.

God, however, urges us to do everything we do as unto Him. Our goal should not be to puff ourselves up with our ability or impress others, but to acquire a skill we can use in the tasks God has given us, all the while praising Him!

I have included suggestions on how you can let your child apply math concepts in his own life. These suggestions should both help your child connect math with a way of recording real-life consistencies and help him learn to use math as a useful skill rather than empty head knowledge.

4. **Using the concept to explore an aspect of creation.** Math is the tool scientists use to discover the intricate way God created different aspects of creation. For example, math helps us calculate the distance to stars, the special pattern God put within a sunflower, the order within our own bodies, and much, much more. Throughout the book, I have interspersed a few examples of math's use in science. My goal in these examples is to help students see math outside a textbook and understand how it aids in exploring God's creation, giving us glimpses of our Creator at every turn.

Much as our heart pumps blood through our entire bodies, our worldview gives life to everything. If we approach math from a dependent worldview — a worldview acknowledging math's complete dependence on God and inability to exist without Him — it gives a whole new life and color to every aspect of math. Math ceases to be a paper exercise and becomes a real-life tool we can use in the tasks God has given us, whatever they might be. Math connects with history and science, taking its place, not as a mysterious intellectual pursuit, but as yet another area in which we can worship our Maker and see reflections of His character.

Best of all, math becomes an encouragement to us in our Christian walks. For as we see God's faithfulness in holding this universe together, it encourages our hearts and reminds us to live in trust instead of fear or pride.

I hope by now you are as excited as I am at digging into math concepts. I invite you to begin "revealing arithmetic" with me.



# Counting

---

Most of us learned to count at a very young age. We proudly exclaimed to everyone who would listen, “Look at me! I can count to ten! One, two, three, four...” Although simple enough for a young child to learn, counting forms the basis for all other math concepts, as shown.

<b>EXPONENTS:</b> <i>Repeated multiplication</i>	<b>EXTRACTION OF ROOTS:</b> <i>Repeated division</i>
<b>MULTIPLICATION:</b> <i>Repeated addition</i>	<b>DIVISION:</b> <i>Repeated subtraction</i>
<b>ADDITION:</b> <i>Counting forwards</i>	<b>SUBTRACTION:</b> <i>Counting backwards</i>
<b>COUNTING</b>	

At first glance, counting appears neutral. After all, how could counting “one, two, three, four...” have anything to do with God or a worldview? Although counting seems neutral on the surface, digging a little deeper reveals a different story.

The first few chapters of Genesis give us a foundation for building a biblical worldview toward every aspect of life, including counting. Take a look with me at different events in Genesis 1 through 3 and what they reveal about math in general, and counting in particular.

## God Created All Things

The Bible starts by telling us God created the heavens and the earth.

*In the beginning God created the heaven and the earth.*

GENESIS 1:1 (KJV)

God is the creator; He created *all* things.

*For by him were all things created, that are in heaven, and that are in earth, visible and invisible, whether they be thrones, or dominions, or principalities, or powers: all things were created by him, and for him:*

COLOSSIANS 1:16 (KJV)

Notice it does not say God created all things with the exception of math. It says He created *all* things. He created math!

This does not mean God created the symbols on the piece of paper we have come to associate with math. Rather, He created the way real-life quantities interact in this world. Man developed the symbols to represent these real-life consistencies God created and sustains. Math records aspects of God’s creation!

When we count, then, we are using names to describe quantities God created.

## God Created Man in His Image

In Genesis 1:27, we learn God created man as the crowning jewel of His creation. Man, unlike animals and plants, was made in God's image (Genesis 1:27), capable of fellowship with Him.

*So God created man in his own image, in the image of God created he him; male and female created he them.*

GENESIS 1:27 (KJV)

How does this truth apply to math? It both 1) explains why we can count and 2) holds us accountable to God, our Creator, for how we use the gift of counting. Man, unlike the animals,<sup>6</sup> can count because God created us in His image, capable of seeing and classifying the order He placed around us. Our very ability to count is a God-given gift for which we are accountable to God!

## God Gave Man Work to Do

Genesis 1:28 tells us God gave man authority over the rest of creation and the task of subduing the earth.

*And God blessed them, and God said unto them, Be fruitful, and multiply, and replenish the earth, and subdue it: and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth.*

GENESIS 1:28 (KJV)

God put Adam and Eve in the Garden of Eden to tend it. He gave man work to do.

*And the LORD God took the man, and put him into the garden of Eden to dress it and to keep it.*

GENESIS 2:15 (KJV)

God did not give man tasks without giving us the ability to do them! He created us capable of doing all He gave us to do. He created us capable of observing and naming creation. In counting, we observe and name quantities. The concept of counting is part of God's provision to help us complete the tasks He gives us.

We use counting all the time. When you set the table, you count the correct number of plates and silverware. When you fold the wash, you count as you grab two socks and fold them together (you just counted two!). When you take medicine, you often count the correct number of teaspoons or pills. When you cook, you count. Perhaps you count two cups of flour, or put two cookies in a lunch pail. Aren't you glad God gave us the ability to count?

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6. Although some animals can be trained to mindlessly repeat numbers, they do not have the understanding and ability to really count and explore the consistencies throughout creation using math like humans.

## **Adam Named the Animals**

On the very first day of mankind's existence, God brought the animals to Adam, and Adam named them.

*And out of the ground the LORD God formed every beast of the field, and every fowl of the air; and brought them unto Adam to see what he would call them: and whatsoever Adam called every living creature, that was the name thereof.*

GENESIS 2:19 (KJV)

The naming process bears many similarities to the counting process. In naming the animals, Adam 1) observed God's creation (the animals) and 2) assigned names to describe the different animals. In counting, we 1) observe God's creation (the quantities around us), and 2) assign names to different quantities. "One" is the name we use in English to describe a single unit — a single pen, dollar, toy, etc. "Two" is the name for a group of two units of anything.

Thus right in the Garden of Eden, we have an example of man using his God-given ability to observe and name to complete the task God had given him! Notice God brought the animals to Adam for naming — Adam was in God's presence while observing and naming. Prior to the fall of man, both God and man engaged in the naming process together.

God created all things "very good" (Genesis 1:31). No sin, suffering, or death marred the world like today. Adam's ability to explore God's creation, as well as to walk and talk with God, was originally perfect.

As we continue reading in Genesis, however, we learn about an event that changed the world forever: the fall of man.

## **Sin Ruined an Originally Perfect Creation**

Genesis 3 tells us about the entrance of sin into the world. Man's sin, or rebellion against God, changed everything, including counting. Our ability to classify and explore God's creation is no longer perfect. We now see but darkly (1 Corinthians 13:12).

The whole creation now "groaneth and travaileth in pain" (Romans 8:22). Death came into the world as a result of sin (Genesis 2:17, 1 Corinthians 15:22). As we count, we should expect to see evidences of both God's original design and the fall of man. And we do!

For example, if we use counting to explore our hands, we find we have four fingers and one thumb on each hand. Counting helps us see the design God placed within hands! At the same time, though, if we were to count the fingers on every person's hands, every once in a while we would find a person with a finger cut off, evidence we live in a fallen universe.

## **Through Jesus We Can Again Fellowship with God**

Thankfully, God's message to man does not stop with man's sin. In the middle of cursing the serpent, God proclaimed this hope: an offspring of the woman would one day crush Satan's head forever.

*“And I will put enmity between you and the woman, and between your offspring and hers; he will crush your head, and you will strike his heel.”*

GENESIS 3:15 (NIV)

Before man’s sin, God had clearly told Adam, “But of the tree of the knowledge of good and evil, thou shalt not eat of it: for in the day that thou eatest thereof thou shalt surely die” (Genesis 2:17). Adam knew the penalty for sin was death. God keeps His Word. As soon as Adam sinned, death entered the world.

Man’s sin, however, had not caught God by surprise. Right there in the Garden of Eden, God did something to foreshadow what He would one day do to take the penalty for sin and redeem those who would believe Him. God killed an animal and clothed Adam and Eve.

While the blood of an animal could never take away man’s sin, it foreshadowed the blood God’s own Son, Jesus Christ, would one day shed to save man from eternal death and destruction. Through Christ Jesus, our relationship with God can be restored. We can enjoy eternal life rather than eternal death and torment *because* Jesus paid the penalty for sin for all mankind.

What does all this mean for counting? Through Christ Jesus we can again worship and fellowship with God while we count! In fact, Colossians 3:17 (NIV) tells us, “And whatever you do, whether in word or deed, do it all in the name of the Lord Jesus, giving thanks to God the Father through him.” Notice it does not say “whatever except math.” It says *whatever*. As we count and use math, we have the opportunity of worshiping God and depending on Him!

## **Conclusion**

While we could explore many other scriptures relating to our view of counting, hopefully this short overview sufficed to illustrate that counting is *not* neutral. Already we have seen

- Where counting came from (a gift from God) and what it is (a way of describing His creation)
- Why we see both order and problems as we use counting (sin ruined God’s originally perfect creation)
- How we can use counting (in God’s presence, knowing we are accountable to Him)

The principles we have discussed in this chapter give us a foundation, not only for counting, but for the rest of math as well. Because God created all things and made man in His image, we are able to use math. Every math concept rests on Him.

## TEACHING SUGGESTIONS AND IDEAS

**Objective:** *To lay a biblical foundation, connecting math in your child’s mind with a God-given ability to record and explore the quantities God placed around us.*

### **Specific Points to Communicate:**

- *Names like “one” and “two” are ways of describing real-life quantities.*
- *Counting is a gift God gave man for which man is accountable to God.*

**You can teach your child to count in much the same way you taught him to speak and identify colors — as a part of normal, everyday life.** Keep your eyes open for opportunities to have your child count — toys, food, crayons, and other household objects all make excellent math manipulatives.

For example, if your child needs to put away a pile of blocks, have him count each block as he puts it back. When he is finished, point out he used words like *one* and *two* to help him name quantities (the quantity of blocks). Explain that *one* is the word we use to name a single quantity — be it a block, plate, toy, pencil, apple, or idea.

Having your child count real-life objects serves an important purpose. It teaches him to view numbers as ways of describing real quantities. The next step is to help him understand God gave us this ability to count and record quantities.

You can teach your child this by simple comments throughout the day like, “Very good! You were able to count those apples! Do you know why? Because God gave man the ability to count and explore.” At some point, read Genesis 2:19–20 with your child, mentioning how right from the very beginning, man has been naming God’s creation. On the very first day of Adam’s life, God brought all the animals to him so he could name them.

Counting, along with the rest of math, is one way man names and explores God’s creation. Adam used names to describe the animals, and we use numbers to describe quantities. Adam was fellowshiping with God while he named the animals, and we can fellowship with God while we use numbers because — and only because — Christ died on the cross for us.

It is important to note that numbers describe quantities, not specific objects. You can show your child this by having him count a variety of different objects, highlighting how we describe “three” the same way, no matter what type of object it might be. The name describes the quantity, not the item.

### **Example**

For the other concepts in this book, we will take a look at a typical textbook presentation and discuss ways to change it in order to convey the above objective and specific points to communicate. But since most children learn to count long before they ever open a math book, I felt looking at a textbook example for counting would be more confusing than helpful.

## Ideas

### ◆ Look for simple opportunities to let your child use counting to explore God's creation.

- » **Our Bodies** — For a wonderful — and simple — opportunity to let your child explore God's universe with counting look no further than your own body. Have your child count the fingers on your hand and on one of his hands. Both hands have the same number of fingers. Talk about the order God placed in hands, as well as the effects of sin we see (sometimes people have a finger cut off). Note: You do not have to stop with hands! You could have your child count eyes, ears, noses, toes, joints, etc.
- » **Stars and Hairs on Our Heads** — Using counting to explore the stars and hairs on our heads points us both to God's greatness and His personal care. Begin by heading outside and asking your child to count the stars. He should quickly see the impossibility of ever counting the stars, especially once you mention the existence of galaxies not even visible with the naked eye. While we cannot even count the stars, God knows their number, calls each star by name, and keeps each one in its place! What a mighty, powerful God!

*Lift up your eyes on high, and behold who hath created these things, that bringeth out their host by number: he calleth them all by names by the greatness of his might, for that he is strong in power; not one faileth.*

ISAIAH 40:26 (KJV)

*He telleth the number of the stars; he calleth them all by their names.*

PSALM 147:4 (KJV)

Next have your child try to count the hairs on his head. After he has tried and failed, share with him Matthew 10:29-31.

*Are not two sparrows sold for a farthing? and one of them shall not fall on the ground without your Father. But the very hairs of your head are all numbered. Fear ye not therefore, ye are of more value than many sparrows.*

MATTHEW 10:29-31 (KJV)

By showing us how unable we are to even identify all the stars and hairs on our own heads, counting helps us better comprehend how much greater God is than us! Yet the God whose power knows no bounds and who knows the number of the stars cares personally for each one of us — He has even numbered the hairs on our heads.

- » **Other Aspects of Creation** — Other aspects of creation you could have your child explore with counting would include the number of petals on a flower, the number of tomatoes on your tomato plant, or the number of leaves on a vine. You could even check out a book from the library on plants and look at how counting the number of leaves helps us identify some plants (such as poison ivy). Counting

various objects in God’s creation can provide a lot of fun as well as opportunities to marvel at God’s greatness and help your child view math as a useful way of exploring God’s creation!

- ◆ **Reinforce counting through real-life examples.** Use the times you find yourself counting to reinforce counting’s usefulness. You could make a game out of finding real-life uses for counting — see who can notice the most!

As your child begins to see counting as practical, pause together to thank God for creating us able to count and for redeeming us through Christ Jesus so we can know God and delight in Him while we count.

- ◆ **Play games involving counting.** Since many games involve counting (and children typically love games!), why not play a game with your child? Any board game requiring counting spaces will work. Or you could “make up” your own game. For example, you could play “Go Get” by asking your child to get a certain number of items, or play “Mother May I” by asking your child to take a certain number of steps forward or backward. Math allows us to name quantities, such as the number of spaces to move on a board game, the number of items to get, or the number of steps to take. Even while playing a game, we use math to help express a quantity in a similar way to how Adam used names to express an animal.
- ◆ **Have your child count objects in books.** As you read picture books, have your child count different objects or animals on the page. At times, you might remind them counting helps us describe the quantities around us.

## PARTING NOTE

You may find it helpful to create an idea notebook to aid you while you teach. Use this notebook to jot down all the practical uses for math you discover. If you find yourself using math to measure fabric for a dress, write that down in your notebook. If you read about a new scientific discovery in the newspaper in which math was applied, make a note of it. Then on those days when you need ideas, you can use your notebook for inspiration.



# Written Numbers

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We use written numbers so often it is hard to imagine life without them. But what are written numbers? And how did they get here?

The same biblical principles we examined in the last chapter apply to written numbers. Much as the words *one*, *two*, and *three* describe, or name, quantities in God's creation, the symbols *1*, *2*, and *3* represent those quantities on paper. The symbols we use (*1*, *2*, *3*, etc.) in math, as well as the words (*one*, *two*, *three*, etc.), are part of *one* language system to describe real-life quantities and consistencies God created and sustains.

I emphasized the word *one* because we tend to think of our modern numerals as *the* way to record quantities. Nothing could be further from the truth!

All throughout history, men have used different words and symbols to describe quantities. Taking a look at these different methods aids in viewing our current method as a language rather than as an absolute structure. This in turn helps us see math as a description of God's creation, not some sort of man-made absolute. God created quantities and gave man the ability to find methods to observe and record them.

To better illustrate this point, let us head back to Genesis again and take a look at some early uses of numbers, as well as at a key event that forever changed how we communicate about quantities. Because counting and written numbers are so closely intertwined (one is an oral way and the other a written way of communicating about quantities), we will be looking at both.

## Back to the Beginning

Right from the beginning of history, we find men using numbers to communicate and help them with tasks. The Bible tells us Cain built a city (Genesis 4:17). Although we do not know exactly what type of city he built or what process he used, we have no reason to suppose Cain did not use math and numbers. It would make sense for Cain to have used some sort of measuring device or number system while building his city.

We do know Cain's great, great great, grandson, Lamech, spoke of numbers, saying, "If Cain shall be avenged sevenfold, truly Lamech seventy and sevenfold" (Genesis 4:24). We also know God used numbers to communicate to Noah instructions about building the Ark. He told Noah, "The length of the ark shall be three hundred cubits, the breadth of it fifty cubits, and the height of it thirty cubits" (Genesis 6:15b).

After the Flood, an event happened that had massive effects on numbers: the Tower of Babel. Prior to this event, "the whole earth was of one language, and of one speech" (Genesis 11:1). Thus, men would have used the same words to describe quantities.

At the Tower of Babel, men misused the ability God had given them to communicate and sought to unite against God and try to make a name for themselves. The project stopped

abruptly when God came down and confused their languages, thereby scattering them across the earth.

The Tower of Babel accounts for the many different language systems we find, including the different words used to describe numbers. As men spread out across the earth and became unique cultures, we would expect them to use unique mathematical symbols as well.

Figure 1 shows some of the many symbols cultures have used to express a single quantity (what in English we would call “one”).

			
Early Arab	Mayan/Aztec	Hebrew (Rabbinical)	Modern
			
Hebrew	Samaritan	Babylonian	Greek
			
Egyptian (Hieroglyphic)	Roman	Early Sumerian	Egyptian (Hieratic)
			
Chinese	Japanese	Cretan	Greek (Herodianic)

Figure 1: Different Symbols to Express a Single Quantity

There is another important lesson to take from the Tower of Babel. God gave us the ability to communicate for a purpose — and that purpose was not to build a name for ourselves. As we learn to use written numbers, we will want to remember our purpose is not solely to learn something and impress others with our knowledge. We want to worship God in math and use it to accomplish tasks He puts before us, all the while depending on and trusting Him.

### Math and Science Go Hand in Hand

Because written numbers represent real-life quantities, we can use them to help us explore the universe around us. Although we tend to separate math and science, they go hand in hand. Math is the tool scientists use to learn about the universe.

For example, written numbers helped Danish astronomer Ole Christenson Rømer (1644-1710)<sup>7</sup> realize light had a definite speed. Written numbers were used to record when Io (one of Jupiter’s moons) became visible after an ellipse. Over the years, a pattern began to emerge. During certain times of year when the earth is farther away from Jupiter, it took longer for Io to appear after an ellipse. The question was...why?

The answer...because the light takes longer to reach the earth when the earth is farther away! By recording times or looking at times others had recorded, then using more math and written numbers, Rømer realized light had a definite speed. Rømer (or another astronomer — sources disagree about who actually made the estimate)<sup>8</sup> estimated the speed of light to be 214,000 kilometers per second. This estimate, while not completely accurate (the actual speed is closer to 300,000), was amazingly close.<sup>9</sup> Recording data using written numbers helped Rømer realize light travels at the same speed all the time!

As we use math to explore creation, we also see glimpses of God’s character throughout His creation. For example, light’s consistent speed testifies to God’s consistency. Hebrews 1:3 tells us Jesus is “upholding all things by the word of his power.” He is the One who holds light together and causes it to operate in the same predictable fashion! The speed of light is constant because God is constant. He does not change based on our moods or the situations in which we find ourselves. Light’s consistent speed reminds us God is the same today as He was when He parted the Red Sea and turned water into wine. What an encouragement to walk forward in confidence knowing our circumstances or feelings have not changed God!

*For I am the LORD, I change not; therefore ye sons of Jacob are not consumed.*

MALACHI 3:6 (KJV)

This one example illustrates how written numbers help us explore God’s creation, in the process turning our eyes upward to God’s character.

## Conclusion

Our current method of writing numbers is one way to express real-life quantities on paper. Right from the beginning of history, men have been using numbers to communicate, help them in tasks, and explore creation. As we use written numbers to learn about the universe, we have opportunities to see glimpses of God’s character and worship Him.

## TEACHING SUGGESTIONS AND IDEAS

**Objective:** *To present written numbers as ways of recording on paper the quantities we find around us.*

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7. Also spelled Roemer. Note: This story is too complex to share with young children, but is provided here for your reference and background information.
  8. The sources I consulted disagreed as to whether Rømer actually gave a guess as to the speed of light or whether someone else made the estimate based on his writings. Either way, written numbers played an important part.
  9. Wilson, *Astronomy Through the Ages*, 96.

### **Specific Points to Communicate:**

- *Number names and symbols express real-life quantities; after the Tower of Babel, many different names and symbols arose.*
- *Written numbers are a useful tool we use all the time.*
- *We can praise and worship God as we learn about and use numbers.*

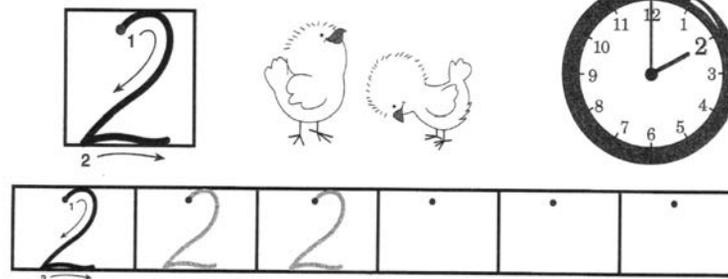
You can teach written numbers much as you did counting — through the use of real-life manipulatives (toys, food, crayons, or other household objects). Instead of teaching your child how to name the quantity with *words*, you are now teaching him the written *symbol* used to “name” the quantity.

Part of learning to write numbers is learning the mechanics and motor skills of forming the symbols 0-9 on paper. As you teach the mechanics of writing symbols, do not lose sight of what those symbols represent! Try to frequently have your child look at a small group of objects (toys, food, crayons, or other household objects) and write a number to represent them. Remind him the symbol he put on paper is just one way of naming a certain quantity! As you did with counting, continue to “connect the dots,” reminding your child why he can learn this system for recording quantities — because God created him with this ability and created a universe that can be counted.

### **Example**

Below is an example of the type worksheets most curriculums have children fill out when learning to write numbers.<sup>10</sup>

#### **2. Trace and write.**



While there is nothing wrong with the above worksheet and it could be very helpful, notice how adding something like the following helps the student develop a biblical view of math.

*How many \_\_\_ [toys, crayons, etc.] do I have here? That is right, we would say I have two \_\_\_\_\_. “Two” is the name we use to describe this quantity.*

*If I wanted to write down on paper how many \_\_\_ [toys, crayons, etc.] I had, can you think of how I could do that? [Pause, listen, and respond to the child.]*

<sup>10</sup>. A Beka Book, *A Beka Numbers Skills K*, 9.

*It is not easy to write out a whole word every time we want to represent a quantity. Different people groups have developed different symbols. In our country today, we represent two like this: 2.*

*Here is a sheet you can use to practice drawing this symbol. Since you are learning to write 2, see how many 2s you can find written in different places today. I will try to find as many 2s as I can too, and we will see who can find the most!*

Notice how these tiny additions help the child see math as a language system to describe quantities God created and sustains. The next section shares some other simple ways you could present or reinforce a biblical perspective on written numbers.

## Ideas

- ◆ **Show your child how God used written numbers to communicate His message to man.** All throughout the Bible, we find written numbers — look at the genealogies for a whole host of them! The numbers in the genealogies serve an important purpose — they trace the lineage of God’s promised Redeemer, Jesus, showing us He did indeed come into history exactly as God had promised.
- ◆ **Integrate written numbers into everyday life.** To help your child connect the symbols he has learned to write with a way of recording quantities, why not have him count and write down the quantities of various real-life objects? We use written numbers all the time, so finding ideas should not be difficult. (There are numbers on clocks, cereal boxes, road signs, street addresses, pages of books, telephones, etc.). There are two worksheets in the worksheet section (page 169) to help you get started.
- ◆ **Teach your child how to dial important telephone numbers (like 911 and his dad’s work number), address envelopes, use a calendar, and tell time.** We use numbers to express more than quantities. Numbers help us label telephone numbers, addresses, etc. When you teach telling time, take a look at Genesis 1. There you will find the basis for different time dividers (the day, week, year, and seasons).
- ◆ **Have your child apply written numbers by measuring various objects around the house and recording his answers.** You can have lots of fun with this! What child does not want to know his height?
- ◆ **Explore how other cultures wrote numbers.** Some children might enjoy learning how to write quantities in different number systems. Besides providing some entertainment, learning other number systems can help your child think about math as one way of describing God’s creation rather than as some sort of system that has always been there. You could even integrate math with history by looking at the number systems of the different civilizations you study! Of course, you will want to use your own judgement as to whether looking at other systems would confuse your child. Appendix B explains several past number systems. If your child has not learned place value yet, you will want to stick with the ones in the



“Fixed Value Systems” section. Reminder: The  means this idea is for older students reviewing the concept.

## **PARTING NOTE**

Right from the beginning, start building a biblical understanding of math! Throughout the other concepts we examine, we will be building on the foundations established here. All of math is a way of observing and recording the quantities and consistencies around us.