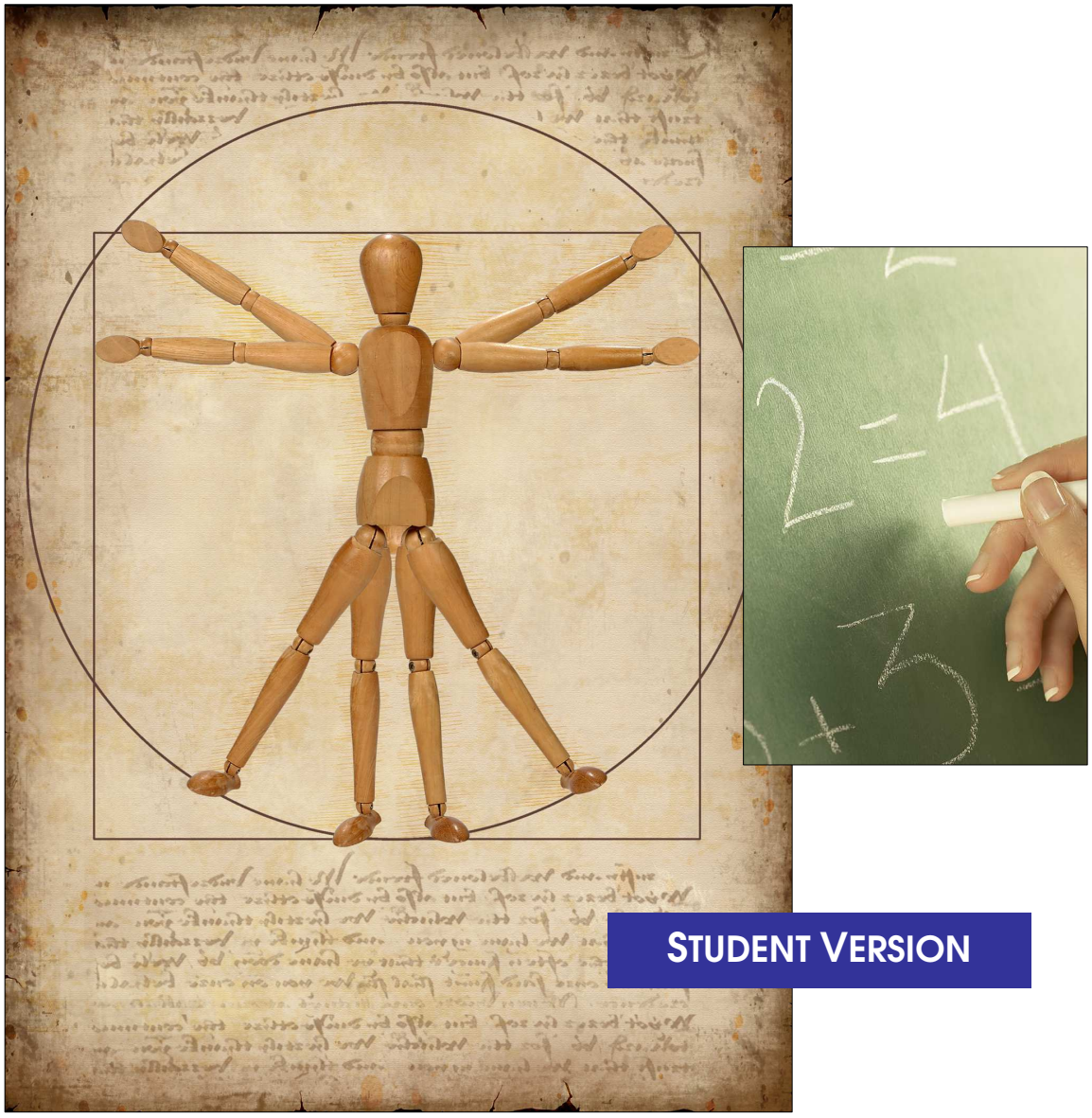
Mathematics:

A Christian Perspective



STUDENT VERSION

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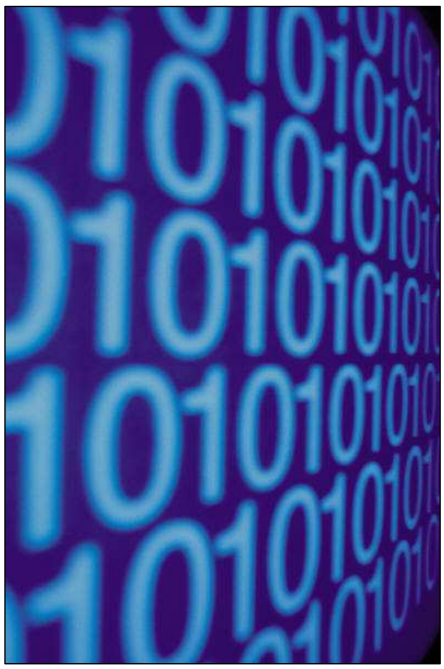
1 Why Study Math?

Why are you studying math? Did you sit down before the school year, look over a list of courses your school offered, and then say, “That math course, that’s the one I really want!” Probably not—even if you are a person who likes math! More likely, you are taking this course because your school requires it, your teachers or guidance counselors advised it, or your parents said you had to. But why do all these adults think it will be good for you to take math?



There are many reasons adults advise young people to study math—some of these reasons are pleasing to God and some are not. In this unit we will be examining some good and some not-so-good reasons for studying math. Our goals are that you will understand how math fits into God’s purposes for us and that you will increase the amount that you enjoy learning it.

1) Warm-up. Why did God give people the capacity to do mathematics? Before reading any further, write a couple of sentences giving your answer to this question. If all you can think of is “I have no idea!”, take your best guess, even if it seems silly to you.

2) The following statements have been made during the past 4,000 years. They suggest possible answers to the question of why we should study math. Most are by famous and influential people. As you read each one, fill in the first column of the table on page 8, "What reason for studying math does this suggest?" These quotes are rich and many good things could be said about them, so aim for one good point for each. You will work in groups to fill in the rest of each row; we've done one as an example. Note the column "Is this a good reason?" Some quotes provide reasons that are partly good and partly bad.

Accurate reckoning. The entrance into the knowledge of all existing things and all obscure secrets.

Introduction to the *Rhind Mathematical Papyrus*, written in Egypt around 1850 B.C.

As a matter of fact, I admit that I don't know why mice and frogs, or flies and worms were created; yet I see that all things are beautiful according to their types, even though because of our sins many of them seem to be against us. Indeed, I cannot think of the body and members of any animal, in which I fail to find that measures and numbers and order pertain to the unity of agreement. Where all these come from, I don't understand, unless from the highest measure and number and order, which dwell in the immutable and eternal sublimity of God Himself….[1]

St. Augustine, *De Genesi Contra Manichaeos*, I, North Africa, c. 400 AD

In all those transactions which relate to worldly… (or) religious affairs, calculation is of use. In the science of love, in the science of wealth, in music and in the drama, in the art of cooking, and similarly in medicine and in things like the knowledge of architecture; in prose, in poetics and poetry, in logic and grammar and such other things,…the science of computation is held in high esteem. In relation to the movements of the sun and other heavenly bodies, in connection with eclipses and conjunction of the planets…it is utilized. The number, the diameter, and the perimeter of islands, oceans, and mountains; the extensive dimensions of the rows of habitations and halls belonging to the inhabitants of the world…all of these are made out by means of computation.

Mahavira's *(mah-hah-VEE-rah) Ganitasarasangraha*, India, 9th century A.D.

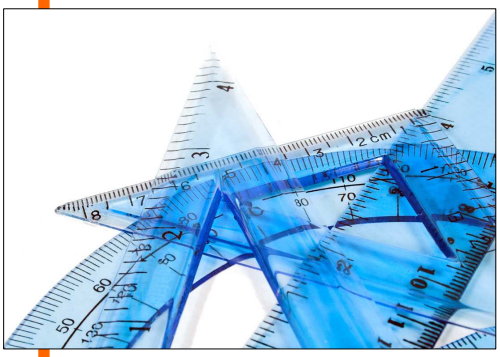
[1] The word "number" here could also be translated "pattern."

Whatever way he [the geometer] may go, through exercise will he be lifted from the physical to the divine teachings, which are little accessible because of the difficulty to understand their meaning…and because of the circumstance that not everybody is able to have a conception of them, especially not the one who turns away from the art of demonstration.

Preface to the Book on *Finding the Chords in the Circle*
Muhammad ibn Ahmad al-Biruni *(al bee-ROO-nee)*,
Uzbekistan, c. 1030 A.D.

Now the science of mathematics is very important. This book …therefore will be of great benefit to the people of the world. The knowledge for investigation, the development of intellectual power, the way of controlling the kingdom and of ruling even the whole world, can be obtained by those who are able to make good use of this book. Ought not those who have great desire to be learned take this with them and study it with great care?

From the introduction to *Precious Mirror of the Four Elements,*
Zhu Shijie *(JOO shoor-jieh)*, China, 1303.



Geometry, being part of the divine mind from time immemorial, from before the origin of things, being God Himself (for what is in God that is not God himself?), has supplied God with the models for the creation of the world.

Johannes Kepler, *The Harmony of the World*, 1619

Philosophy is written in this grand book, the universe, which stands continually open to our gaze. But the book cannot be understood unless one first learns to comprehend the language and read the letters in which it is composed. It is written in the language of mathematics, and its characters are triangles, circles, and other geometric figures without which it is humanly impossible to understand a single word of it; without these, one wanders about in a dark labyrinth.

Galileo Galilei (1564–1642), *Il Saggiatore*, 1623

The long chains of simple and easy reasonings by means of which geometers are accustomed to reach the conclusions of their most difficult demonstrations led me to imagine that all things, to the knowledge of which man is competent, are mutually connected in the same way, and that there is nothing so far removed from us as to be beyond our reach, or so hidden that we cannot discover it, providing only that we abstain from accepting the false for the true, and always preserve in our thoughts the order necessary for the deduction of one truth from another.

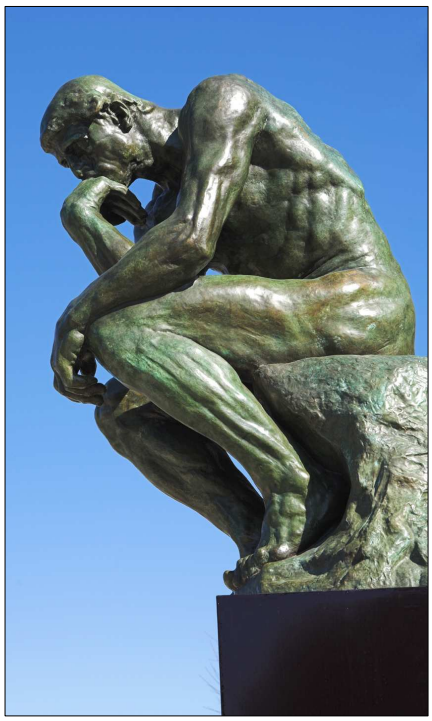
Rene Descartes *(day-KART)*, from his *Discourse on Method*, France, 1637

In brief, the real world is the totality of mathematically expressible motions of objects in space and time, and the entire universe is a great, harmonious, and mathematically designed machine.

Morris Kline*, Mathematics in Western Culture,* describing Descartes' views, United States, 1964

Mathematics, rightly viewed, possesses not only truth, but supreme beauty—a beauty cold and austere, like that of sculpture, without appeal to any part of our weaker nature, without the gorgeous trappings of paintings or music, yet sublimely pure and capable of a stern perfection such as only the greatest art can show. The true spirit of delight, the exaltation, the sense of being more than man, which is the touchstone of the highest excellence, is to be found in mathematics as surely as in poetry.

Bertrand Russell, *The Study of Mathematics: Philosophical Essays*, England, 1967

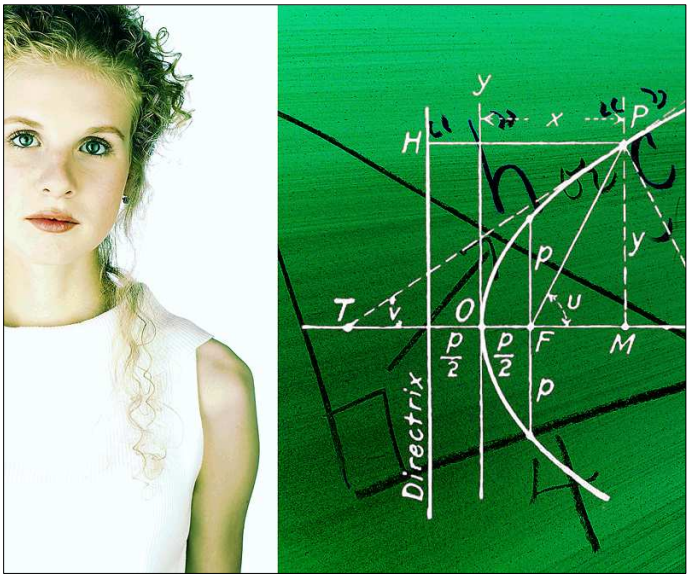


The 1999 Jobs Rated Almanac by Les Krantz ranked 250 jobs based on salary, work environment, security, stress level, physical demands, and outlook. The top five jobs were all in mathematics or computer science:

Web site manager
Actuary
Computer Systems Analyst
Software engineer
Mathematician

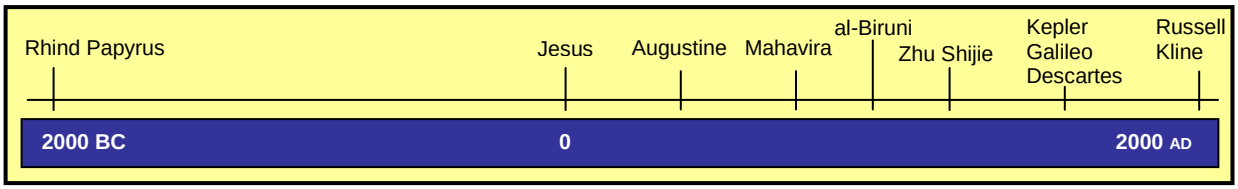
In fact, 9 of the top 10 jobs in the list were math or computer related!

From the Web site of a college mathematics department, United States, 2005



You don't pass math, you don't graduate.

A high school principal, timeless



Author	What reason does this suggest?	Is this a good reason?	Why?
Rhind Papyrus			
Augustine			
Mahavira			
al-Biruni	Understanding math can help us understand God.	Yes	God wants us to know him. Understanding the order and beauty of God's world can also help us understand God's order and beauty.
Zhu Shijie			
Kepler			
Galileo			
Descartes			
Kline			
Russell			
Web site			
Principal			

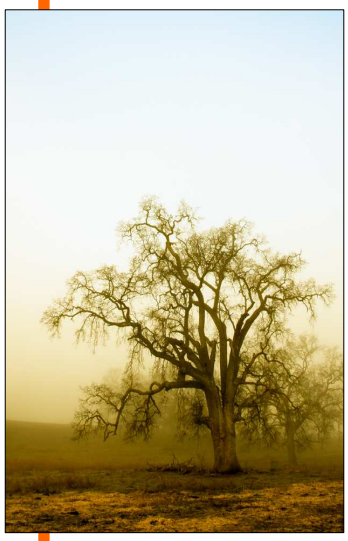
3) Now that we have looked at what several key thinkers have said, let's look at what God says. The Bible uses numbers frequently, but does not speak directly about mathematics. Nevertheless, we can take several statements the Bible makes about God's plans and purposes and apply them to the study of math. After each quote, summarize its main ideas in your own words and apply them to the study of math.

So God created man in his own image, in the image of God he created him; male and female he created them. And God blessed them and God said to them, "Be fruitful and multiply, and fill the earth and subdue it, and have dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth."

Genesis 1:27–28

Main ideas:
What might this statement have to do with how we think about math?

Happy is the man who gets wisdom,
and the man who gets understanding,
for the gain from it is better than gain
from silver
and its profit better than gold.
She is more precious than jewels,
And nothing you desire can
compare with her.
Long life is in her right hand;
In her left are riches and honor.
Her ways are ways of pleasantness,
and all her paths are peace.
She is a tree of life to those who lay hold of her;
those who hold her fast are called happy.
The Lord by wisdom founded the earth;
by understanding he established the heavens;
By his knowledge the deeps broke forth,
and the clouds drop down the dew.
Proverbs 3:13–20



Main ideas:
What might this statement have to do with how we think about math?

He [Christ] is the image of the invisible God, the first-born of all creation; for in him all things were created, in heaven and on earth, visible and invisible, whether thrones or dominions or principalities or authorities—all things were created through him and for him. He is before all things, and in him all things hold together.

Colossians 1:15–17

Main ideas:
What might this statement have to do with how we think about math?

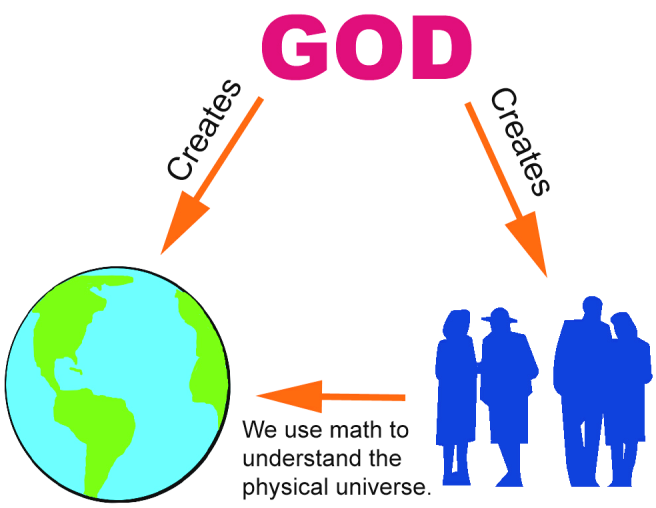
…you have disposed all things by measure and number and weight.

Wisdom 11:20[2]

Main ideas:
What might this statement have to do with how we think about math?

[2] The Wisdom of Solomon is one of the Apocryphal books. Roman Catholic and Orthodox believers regard it as part of Scripture; Protestants typically regard it as a book of wise sayings but not scriptural. We have included it here because thinkers who write on the relationship between Christian belief and mathematics frequently cite it.

4) The diagram can help us understand the relationships among God, the physical universe, mathematics, and ourselves.



a. The quote from Augustine on page 4 expresses the idea that nature has underlying patterns without which it could not exist. Augustine believed that these patterns existed in God's mind at creation. Thomas Aquinas, writing in the 12th century, emphasized that God's creation is orderly and as such, expresses a deeper orderliness in the mind of God. Mathematics and logic express those patterns and that order and help us understand it. Do these ideas seem right to you? Why or why not?

b. Why does God want us to understand the structure of his creation?

c. What does your answer to part (b) say about why we should study math?

Projects

- Keep a piece of paper and a pen or pencil with you and record every time you use mathematics for 24 hours.
- After completing part (a), merge your list with other students who are also doing this project. Then take a few minutes to review the composite list carefully, looking for patterns. Write a one- to two-page essay explaining how your life would be different if God had not given us the ability to do mathematics.
- There are many Web sites that have great quotes and jokes about mathematics, although some of the jokes are a bit coarse. Here are a few URLs.

  http://www.pen.k12.va.us/Div/Winchester/jhhs/math/quotes.html

  http://www.xs4all.nl/~jcdverha/scijokes/

  http://en.thinkexist.com/quotations/mathematics/

  http://www.dctech.com/physics/humor_math.php

Visit these sites and pick your favorite quotes and/or favorite math jokes. Print them out using an interesting font and use them to decorate your math classroom. Vote on your class favorite and make T-shirts that feature it for each member of your class.

- Here's a list of statements that students have made about math. Make a checkmark next to any that you have said or might have said.
  - *I don't see why we have to take math.*
  - *Math is boring.*
  - *Math is really cool.*
  - *Math is just a bag of tricks. It doesn't mean anything.*
  - *There's no way to misuse math, except maybe to get the wrong answer.*
  - *What I like about math is that every question has a right or wrong answer.*
  - *Math is just a dumb hoop adults make young people jump through.*
  - *I like math because it's easy for me.*
  - *There's no relationship between math and my faith.*
  - *Math can open a lot of doors for my future*.

- Given what we have learned about God's purposes for math, are there any of your attitudes or opinions you would like to change?