Our Savior Christian Academy

Curriculum Framework for: **Math**

Our Savior Christian Academy's "Curriculum Framework for Math" is designed as a tool that will follow the same format for early childhood students ages 3-4. Each age level will have a separate section based on classroom structure, and it will be up to each individual teacher to design a lesson plan that fits their classroom needs based on these standards and suggestions.

Our Savior Christian Academy's "Curriculum Framework for Math" is offered to the glory of God that it may be a blessing among Lutheran school educators and their students.

✠ PHILOSOPHY ✠

God has created an orderly, systematic universe. Mathematics is a useful and unique God-given universal language that facilitates the ability to appreciate the created order God has given us and further advances the understanding of our modern, high-tech world. The development of mathematics abilities prepares students for lives of responsible Christian service to His church and the community.

Our Savior Christian Academy
Broad Goals

From a Christ-Centered Perspective, Teachers will:

- Incorporate Jesus Christ in all core areas of mathematics.
- Provide the children with a wide range of knowledge, skills, & related activities that help him/her to develop an understanding of the physical world & social exchanges.
- Give the child a language and a system through which he/she may analyze, describe and explain a wide range of experiences, make predictions, & solve problems.
- Foster creative and aesthetic development that enhances the growth of reasoning.
- Encourage the children to be confident and to communicate effectively through mathematics.

This will be obtained by:

- Keeping Our Savior, Jesus Christ, as the center focus on our campus and in our curriculum.
- Fascinating and significant mathematical experiences through multi-sensory activities
- Applying mathematics to other core areas of learning
- Adapting other subjects to add valuable perspectives to the mathematics curriculum.
- Stair stepping on an individual basis with the knowledge that children acquire an understanding of mathematical ideas in an uneven way.
- Continuous assessment for analysis and planning in mathematics.
    - Focuses on the identification of the children's existing knowledge, misconceptions, and strategies.
    - Updating curriculum to meet changing state standards along with student needs
    - Provides information that will enable the teacher to cater for individual differences in ability, previous learning and learning style, and to resist pressure to push the child to premature mechanical mastery.
- Work samples and results that are shared with the parents, congregants, and community.

Missouri Early Learning Standards for Mathematics

I. Number and Operations

1. Uses number to show quantity.

Indicators	Examples The child ...
a. Shows interest in counting and quantity.	• uses fingers to indicate the number (e.g., holds up five fingers to show age). • repeats counting rhymes and singing games with numbers. • counts familiar objects (e.g., family members, friends, toys) although not always accurately • asks how many.
b. Develops an increasing ability to rote count in sequence.	• counts one to 10 or beyond.
c. Counts objects with understanding	• counts five items (e.g., blocks, crayons, cars) accurately • hands one to five objects upon request (e.g., hands you three potatoes when you say, "Can you get three blocks out of the box?")

2. Uses language to represent number of objects.

Indicators	Examples The child ...
a. Uses language to compare number (e.g., more/less, greater/fewer, equal to	• looks at his own and another child's blocks and determines who has more blocks. • asks, "How many more do you have?"
b. Combines and names how many	• puts the red, yellow and blue crayons together and tells how many total crayons there are.
c. Separates and names how many.	• participates in finger plays, songs or stories such as *Five Little Monkeys* or *Five Little Ducks* that use backward counting. • plays with a plastic ball and bowling pins and can tell how many fell down and how many are left standing.
d. Explores everyday fractions.	• says, "I have a whole orange," or "I have half an apple, (although not always accurately).

3. Solves problems using number.

Indicators	Examples **The child ...**
a. Names how many there are in a group (up to five objects).	• rolls a number cube and tells how many dots are on it without counting. • counts five blocks and says, ''There are five blocks.''
b. Uses one-to-one correspondence when counting objects.	• puts a cup with each napkin when setting the table. • when playing, matches one car to each block or gives one plate to each doll.
c. Uses one-to-one correspondence to compare the size of a group of objects.	• compares two rows of blocks, two in one line and four in another, and can tell which one has more or less. • matches number of cars to a friend's and says, "I have more."
d. Estimates, then counts to verify the number of objects.	• guesses how many pennies are on the table, then counts the pennies. • While playing at the water table, guesses how many scoops it will take to fill the cup, then count how many while filling the cup.

4. Uses numerical representation.

Indicators	Examples The child ...
a. Uses drawings to represent number.	• draws pictures showing size (e.g., short/tall) and quantity of family members • draws a picture to indicate number of objects or snacks.
b. Identifies numerals in everyday situations.	• selects numerals on the telephone, calculator or computer. • finds and names numerals in books or on signs.
c. Uses ordinal numbers (i.e., first, second, last).	• can identify position in a line of children (e.g., who is first, second, last). • can put three objects in a line and tell you which object is first, middle or last. • tells the position of objects (i.e., first, second, last).
d. Writes some numerals.	• draws numerals in sand or shaving cream • creates numerals with rolled clay or pipe cleaners. • tries to write how old he or she is. • tries to copy a telephone number.
e. Matches numeral with quantity.	• when playing a game with a spinner or number cube, correctly counts the spaces on the game board that match the numeral or symbol. • uses magnetic or flannel numerals to show how many marbles.

II. Geometry and Spatial Sense

1. Investigates positions and locations.

Indicators	Examples **The child ...**
a. Takes objects apart and puts them together.	• builds with interlocking blocks. • puts lids on containers. • completes simple puzzles.
b. Uses actions and words to indicate position and location.	• moves self to show positions during play (e.g., under a table, in the tent, between friends). • uses objects to show position (e.g., puts the bears on/off/on top of/above/below/beside the box). • talks about objects that are on/off/under/in front of/behind/inside/outside/next to/ between/etc.
c. Uses actions and words to indicate movement and orientation.	• moves self to show positions (e.g., up, down, forward, backward, around, through, to, from, sideways, across, back and forth, in a straight or curved path). • explains where objects in a room have been moved. • describes how to get to a location using landmarks. • follows a path or moves through an obstacle course • draws paths or beginnings of a map to show location during play.

2. Explores shapes in the environment.

Indicators	Examples **The child ...**
a. Investigates and talks about the characteristics of shapes.	• says, "A circle is round." • discovers that some blocks stack and some blocks roll. • says that squares and triangles have corners and straight sides
b. Creates and duplicates threedimensional and two-dimensional shapes using a variety of materials	• uses blocks to make other shapes or objects • makes shapes with play dough, pipe cleaners, string or yarn. • attempts to draw shapes and make pictures using shapes • says, after cutting the sandwich, "Look, I made a triangle (or rectangle) with my sandwich."
c. Identifies and names some shapes	• points to or names simple shapes (e.g., box shape, ball shape, circle, triangle, square). • says, "The pizza is round. My piece is triangle-shaped." • says, "The flag is the shape of a rectangle."
d. Indicates if shapes are alike or different using one or more characteristics	• Three-dimensional shapes • says, "A bubble and an orange are both like balls (spheres). • says, "A block (cube) is shaped like a box." • says, "This ball rolls, but this block does not." Two-dimensional shapes • says, "A triangle has three sides," or "A square has four sides." • says, "A circle is curved (round) like a hula hoop."

III. Patterns and Relationships (Algebra)

1. Recognizes relationships in the environment.

Indicators	Examples **The child ...**
a. Matches, sorts and regroups objects according to one or more characteristics.	• sorts plastic foods by size, color, shape or category. • matches objects that are alike (e.g., puts all of the two-hole buttons in one pile and four-hole buttons in another). • matches adult animals to their babies.
b. Orders things according to relative differences.	• sorts stuffed animals from smallest to largest • talks about who is tall, taller, tallest. • arranges a group of blocks from longest to shortest.

2. Uses patterns in the environment.

Indicators	Examples **The child ...**
a. Recognizes patterns.	• talks about color or pattern in clothing (e.g., says, "I have red and blue stripes on my shirt."). • identifies color patterns that repeat (e.g., red, blue, red, blue).
b. Duplicates and extends patterns.	• imitates a pattern of sounds and physical movement (e.g., clap, stomp, clap, stomp …). • continues rhythmic patterns • completes the patterns in a story (e.g., says, "Brown Bear, Brown Bear, what do you see?"). • repeats a pattern according to size, color, shape, while stringing beads. • predicts what comes next when an adult "reads" the pattern using simple vocabulary (e.g., car, car, boat, car, car, _____).
c. Creates patterns.	• creates simple patterns with beads or blocks according to color, size or shape • creates simple patterns when drawing, coloring or painting. • Creates simple patterns when lining up to go outside (e.g. boy, girl, boy, girl)

IV. Measurement

1. Makes comparisons.

Indicators	Examples **The child ...**
a. Compares objects using measurable features.	• uses words to describe opposites (e.g., big/little, long/short, heavy/light). • chooses the largest snack. • says, "My bucket is heavier." • says, "This crayon is shorter."
b. Describes measurement.	• talks about an object being longer than another object.

	• uses a variety of language to describe measurement (e.g., shorter, taller, wider, bigger, heavier, lighter, holds more, hot, cold).
c. Orders three or more objects according to length or size differences.	• puts pans (or measuring cups) inside each other. • places ribbons in order by length. • puts cars in a row according to size.
d. Uses language associated with time in everyday situations	• says, "Snack time comes after recess time." • says, "It's nighttime because it is dark." • says, "I eat breakfast in the morning." • says, "My birthday comes in the summer."
e. Anticipates, remembers and predicts a sequence of events.	• says, "I brush my teeth before I go to bed." • says, "We went to the library and then the grocery store." • recalls recent events and talks about them (e.g., says, "Yesterday we went to the zoo."). • tells stories such as *The Three Little Pigs* with events in order. • points out when a familiar story is not told in the correct order.

2. Uses measurement.

Indicators	Examples **The child ...**
a. Explores ways to measure.	• fills a container with solids or liquid (e.g., sand, ice cubes, water). • pours liquid from one container to another container. • sees how many blocks it takes to cover a sheet of paper.
b. Measures using objects.	• places a string next to an object to measure length • uses the toy thermometer to measure the "patient's" temperature • imitates using a ruler when helping dad.

V. Exploring Data (Probability)

1. Collects, organizes and displays information. (Charting and Graphing)

Indicators	Examples **The child ...**
a. Asks questions to gather information	• asks, "What is your favorite color?" • asks, "How many brothers and sisters do you have?" • asks, "What do you like to play outside?"
b. Sorts and classifies objects into groups.	• puts objects together that have the same use (e.g., blocks, dishes, vehicles, clothes). • groups objects by their height, size, color or shape.
c. Explains how the grouping was done.	• tells how the buttons were sorted. ''I put the red bottons together.'' • tells why he put the red cars in a group and the blue cars in a group.
d. Uses charts and graphs to evaluate information.	• says after looking at the chart, ''two kids have birthdays in July.'' • says, ''I have five trucks and four cars.'' • says after looking at the graph, ''More buttons are red.''

Integrating Faith:

All four mathematical operations are recorded in Genesis 1-2 creation account. For example, God made a day and he divided it into evening and morning. He made one day; then He added something to it. He commanded animals to multiply upon the earth, adding numbers of "like things" to His creation. He subtracted a rib from Adam; then He added another human, Eve.

Mathematically, **addition** is the basis of all other operations. So we start there. The first thing God did was to add something to the nothing that existed—the heavens and the earth (Gen. 1:1). His first act was one of addition. Addition is generally used in connection with added blessings, usually a result of obedience. However, sometimes the term “add” has an undesirable connotation such as when God adds a curse as a result of disobedience. Addition and **subtraction** are operational inverses. Inverse means "reverse order." In other words, it is a doing/undoing relationship.

Addition is related to **multiplication** in that multiplication is simply a quick way to do addition. For example, when we say "3x5," all we're saying is "3 added together 5 times" or "5 added together 3 times." Multiplication is based upon addition. Therefore, scripturally speaking, it too is viewed in terms of blessings. An example of this is God's command to "be fruitful and multiply" to fill the earth. God multiplied His creation in the initial six-day period. Now we are commanded to imitate what He has done, in obedience to His law of replenishing His kingdom and exercising dominion over it.

Division is related to multiplication in the same way subtraction is to addition. In division, you unmultiply. In other words, you split up what has been multiplied. Division implies a result. For example, God's division of mankind at the tower of Babel was a result of disobedience to His law. (For a treat, use a concordance to look up all the instances of God's exercising His mathematical laws in the basic operations.)

Mathematics, then, demonstrates that God has given us His law with blessings and curses. Addition and multiplication are generally related to blessings as a result of obedience; subtraction and division

are often related to curses as a result of disobedience.

We can also see God in the mathematical notion of **place**. Just as God designed a dwelling place for Himself—the Tabernacle—so He designed a dwelling place for numbers. The mathematical notion of place is the understanding that numbers make sense only in their notational context. In other words, just as a string of words in language means nothing without grammar and syntax, so place value determines the meaning of numbers in notation. This is the "decently and in order" principle (1 Cor. 14:40) which is the key to the placement of numbers in their meaningful context. Furthermore, in place value, you have the recognition of the cyclical nature of numbers in the cycle of the moon, year, and seasons—all God-ordained according to His law. From the position of convenience, as well as reflecting order in the universe, we need to realize that numbers do occur in patterns and cycles.

God's nature is also revealed through the patterns and cycles of fractions, time, and money. **Fractions** are essentially division problems. Fractions take a whole and divide it into parts, whether it's one pie divided into eight pieces or one apple divided into halves. This simply reflects that wholes are made up of parts. This is reflective of God's unity and His plurality—three Persons in one God.

That aspect of God's creation which we call **time**, we also enumerate. We divide it into parts of the whole. Time is created by God with a beginning and an ending. However, God does not reside in time, which is the passage of one moment to the next, measuring the duration of actions. Time deals with God's plan for the universe. He works all things after the counsel of His own will (Eph. 1:11). Measurement and passage of time are constant reminders that man is not autonomous. God appoints the time of our birth and time of our death (Heb. 9:27). We cannot escape time. God expects us to look at its patterns and use it His way and for His glory! Like the psalmist, we should exclaim, "What is man that thou art mindful of him? . . . As for man, his days are like grass; as a flower of the field, so he flourishes" (Ps. 8:4; 103:15).

Money is another part of God's creation, which we enumerate. Money is simply an application of quantity and quality to the things

God has made. It is related to weights and measures, which are numerical qualities of physical objects. In the Scriptures, money is derived from the weight of a valuable substance. Silver, gold, and copper are the metals valued highly enough to be used as coinage. The whole point of a coin is that it is the value of that weight of that particular precious metal. Money is necessary to the functioning of a commercial economy (viz., the accepted value of different animals as sacrifices in Levitical law). Gold and silver are seen as being created by God for use as money. Our modern notion of money being backed by the state is not found in Scripture. Correct use of money is one aspect of exercising dominion for Christ.

Everything in God's creation has numerical quality, its little mathematical tab. Applying mathematical principles and operations practically in God's universe helps to fulfill His commandments to use all things lawfully. Solving **word problems** by taking the tools of math and applying them to practical situations is a major way of accomplishing that objective. Such an understanding is required for the exercise of wise stewardship over the resources God has given. If children have nothing but math facts in their heads and don't learn to apply these in a godly way for godly purposes, their knowledge is useless.

Math values are taught over and over - "precept upon precept, line upon line, here a little, there a little" (Isa. 28:10). If they do happen to remember, their sin nature will quickly tempt them to choose to forget. So then, if a child is prone to forget, should we stop teaching godly values because we feel "It's too hard" or "They'll never get this . . ."? For example, if some little children are consistently mean to one another, in spite of frequent godly admonitions, are we to simply quit teaching Ephesians 4:32 for awhile, and let them beat each other up in the meantime? The answer is obvious: "No way!"

Math is truth because God made it that way. For God's creation is so reflective of His grandeur that it ought to bring us all to our knees shouting: "You, LORD, have made me glad through Your work; I will triumph in the works of Your hands. O LORD, how great are Your works! Your thoughts are very deep" (Ps. 92:4-5).

Adapted from : http://www.christcentercurriculum.com/article-ccp-math-roots-in-scripture.php