## CHAPTER 6

## Long, Longer, Longest

## Introduction

You are halfway through your first math book! Praise God! You are learning so many good things. Hopefully, you are learning to like math. It is a gift of God.

We use math to help us get things done. You've already learned that numbers tell us the sizes of sets. Numbers can also be used for measuring things!

God likes to measure things. That's the way He has made this world. God measures the oceans in His hands! He knows how much water is in the ocean!
[The Lord] has measured the waters in the hollow of his hand and marked off the heavens with a span, enclosed the dust of the earth in a measure and weighed the mountains in scales and the hills in a balance. (Isaiah 40:12, ESV)

God wants us to measure things too. We measure tall things and short things. We measure heavy things and light things. We measure when we count apples at the store. We can weigh the apples on scales too. God doesn't want us to make mistakes when we measure things. He doesn't want us to cheat. He wants us to be especially honest when we weigh out apples at the store.

> "You shall have a perfect and just weight, a perfect and just measure." (Deuteronomy $25: 15$ )

Measuring is serious work. But measuring is fun too! Let's start measuring things!


## God's Straight World DAY 64

This lesson introduces measurements in the real world, and is followed by one page of review exercises. This will require about 20 minutes of instruction from the parent/teacher.

## Prayer

Memory


Our Father in Heaven, thank You for helping me to learn. You have given us good tools for learning. They help us everyday. Thank You for our math tools. Show us how we can take good care of the things You give us. Amen.

Spend a few minutes
with subtraction flash cards (only exercises whose answer is 6 or less).

How long is your pencil? How long is that hotdog? How far is it from the chair to the wall? These are called lengths. Let's learn how to measure lengths first!

Hold your hand up in front of you. Which finger is the longest? Which is the shortest? Is your pinky the same length as your thumb?

People around the world use two different ways to measure lengths. Their rulers (measuring sticks) have two ways to measure. Look at the ruler in the picture. Do you see the large numbers? The big 1,2 , and 3 show us inches. The little 1,2 , and 3 show us centimeters. One inch is longer than one centimeter. People in China usually use centimeters to measure things. People in America usually use inches to measure things.

How many centimeters do you see on the ruler? How many inches do you see? Are there more centimeters than inches? Yes! That's because a centimeter is smaller than an inch and more of them fit on a ruler.

## Activity

Start measuring your world! Find a ruler. Measure the length of things in the room. Your parent/teacher can help you with this. You might find things that don't line up exactly at a number on your ruler. Just use the closest number if this happens.

1. Let's start with inches. Find things in your room or in the house that are about 1 inch long. Then find things that are about 2 inches long. Then find things that are about 3 inches long. Keep measuring until you've found some things that are 12 inches long.
2. Next, measure things using centimeters. Can you find things that are 5 centimeters long? What about 10 centimeters? Can you find things that are 15 cm ? Keep measuring until you've found some things that are 20 centimeters long.
3. Find a set of three things that are all the same length. Find another set of five things that are the same length.
4. Pick one thing like a box or a book. Find three edges where you can measure different lengths.

You have just used numbers to measure things! This is how we compare the lengths of things.

We cannot measure everything God has made. This world is just too big. That's what God says in Job 38:4-5:


```
                    "Where were you when I laid
the foundations of the earth?
Tell Me, if you have
understanding.
Who determined its
measurements?
Surely you know!
Or who stretched the [ruler]
upon it?"
The answer is clear: God!
```


## Student Exercises

Let's measure these to the nearest inch! Write your answer on the blank line.
Parent/Teacher Note: You may use centimeters if so desired.


## day 65 Practice

## Student Exercises

Try to do these addition and subtraction exercises from memory. You may also use your blocks, stones, or coins if you need help. This will help you get better at adding and subtracting!


God made many numbers. The numbers in this exercise are just a few of God's numbers! Sometimes you will have to count down (or backward) to find the missing number. Sometimes you will have to count up (or forward) to find the number that comes next. Use singles and chunks of 10 from your colored blocks if you need help.

$$
25,26,27
$$

$\qquad$ , 35, $\qquad$
$\qquad$ , $\qquad$ , 40
$\qquad$ , 50, $\qquad$ , $\qquad$
$\qquad$ , $\qquad$ , 55, $\qquad$
$\qquad$ , $\qquad$ , 60

70, $\qquad$ , $\qquad$ , $\qquad$
$\qquad$ , $\qquad$ , $\qquad$ , $\qquad$ , 80

## day 66 God’s Curvy World

This lesson measures rounded objects in God's world, and is followed by an activity and one page of review exercises. This will require about 20 minutes of instruction from the parent/teacher.

## Prayer



Pray your own prayer of thanksgiving and praise to God. Pray for His help on this lesson.

## Memory

Spend a few minutes with subtraction flash cards (only exercises whose answer is 6 or less).

## $\mathbb{L}$ Lesson

Let's keep measuring things in God's great big world! In our last lesson, we measured straight things. This time we will measure curvy things.

You can use a string or a soft sewing tape measure to measure curvy things. If you use a string, your parent/teacher will show you how to do it.

God made the earth round. Have you ever wondered how far it is around the whole earth? You would need a really big tape measure to figure it out. The earth is 25,000 miles ( $40,000 \mathrm{~km}$ ) around at the equator (its middle)! If you were flying in a jet, it would take you 50 hours to travel around the world.


## Activity

Let's have some fun measuring God's curvy world!
Measure your wrist. Wrap the string or soft tape measure around your wrist. Pinch and hold the place where the string or tape measure meets its beginning. If you use a tape measure, find the closest number to your pinched place. If you use a string, you will need to place it over a ruler to see what number your pinched place is closest to. This number is about how big your wrist is.

Measure your chest. Measure your waist. Measure your neck. This is how your parents can figure out what size you need when they buy shirts and pants for you.

Measure your head. This will tell you your hat size.
You might also want to measure other curved things like:

- Cups, jars, and bottles
- Musical instruments such as a violin
- Other things around the house such as a candle holder
- Toys such as round blocks



## CHAPTER 6 | LONG, LONGER, LONGEST

## Student Exercises

Look at these sets. Circle the one shape that is different from the others in each set. Can you explain why it is different? One of these exercises has two answers. God makes things different in different ways.
ㅇ․ Discuss the group with the red circle, green square, and red square. What is it that makes each of these look different from the others in the group?


206

## Practice DAY 67

## Student Exercises

How are these numbers working together? Are they using addition or subtraction? Remember, addition makes bigger numbers. Subtraction makes smaller numbers.

Decide how these numbers are working together. How do 6 and 6 work together to make 12? Of course, they must be added! Write " + " or " - " in each circle to show how they work together.

| $6 \oplus 6=12$ |
| :--- |
| $7 \bigcirc 3=10$ |

$10 \bigcirc 2=8$
$9 \bigcirc 3=6$
$2 \bigcirc 2=4$

$\square$


## CHAPTER 6 | LONG, LONGER, LONGEST

It's fun making doubles. It's a great pattern! There is just something nice about it! Can you figure out these addition exercises from memory?


208

## Practice DAY 68

## Student Exercises

Fill in the rest of the numbers on the number line. Start with 25 . Then use the number line to do the exercises.

Remember, you will count up (to the right) for addition. You will count backwards (to the left) for subtraction.


These are addition and subtraction exercises. You can use your stones if you need help finding the missing number. For the addition exercises, ask, "How many stones do you have to add to get the bigger number?" Hint: What number is smaller? Start with that number. How many stones do you need to add to the small number to get the big number?

Let's do the first subtraction exercise together: What minus 3 equals 2? Use your imagination for this one. Pretend your dad gave you some pickles. But you can't remember how many he gave you because you already ate some. How many pickles did your dad give you? Suddenly you remember that you ate 3 pickles. Then you see there are only 2 pickles left on your plate. The 3 pickles in your stomach plus the 2 on your

INOU IN. 11plate means your dad must have given you 5 pickles! 5 is the missing number. Now, you can say " 5 pickles (from Dad) minus 3 pickles (eaten) equals 2 pickles (on the plate)."
What minus 3 equals 2?
$\square$What plus 0 equals 0 ?
$\qquad$

$$
+0=0
$$

What plus 0 equals 1 ?

$\qquad$

$$
+0=1
$$

What minus 4 equals 3 ?
$\qquad$ $-4=3$
What plus 2 equals 4 ?

$\qquad$

$$
+2=4
$$

What plus 5 equals 5 ?

$\qquad$

$$
+5=5
$$

What plus 1 equals 6 ?

$\qquad$

$$
+1=6
$$

What minus 2 equals 7 ? ..... $-2=7$

## Lengths and Shapes day 69

This lesson explores more measurements in the real world and introduces multi-digit addition. It is followed by one page of new exercises. This will require about 20 minutes of instruction from the parent/teacher.

## Prayer

## Memory

Spend a few minutes with subtraction
flash cards (subtracting from numbers 1-6).

## Lesson

"Have the people make an ark of acacia wood-a sacred chest 45 inches long, 27 inches wide . . ." (Exodus 25:10, paraphrase)

God told the children of Israel to build the Ark of the Covenant-a beautiful golden box to hold the Ten Commandments God gave them. He told them to make it out of acacia wood. He told them exactly what its measurements should be.

You have already learned how to measure the length of lines. This means we can measure all the way around any shape. First, we measure each side. Then we add these lengths together.

This rectangle has four sides. One side is 2 inches long. Another side is 3 inches long. The third side is 2 inches long. The last side is 3 inches long. How big is the whole shape? To find the length all the way around the shape, we need to add all the sides together. Our addition equation is: $2+3+2+3$.


## CHAPTER 6 | LONG, LONGER, LONGEST

Let's start by adding the first two numbers together. What are the first two numbers? 2 and $3!2+3=5$. Now we cross out the $2+3$. We write 5 where the first 2 and 3 used to be in the equation.

$$
\begin{array}{r}
2+3+2+3= \\
5+3+2+3= \\
5+2+3=
\end{array}
$$

Now add 5 and the next number: $5+2$. What is $5+2$ ? It's 7 ! Now we can cross out the 5 +2 . We write 7 where 5 and 2 used to be in the equation.

$$
\begin{aligned}
5+2+3 & = \\
3+7+3 & = \\
7+3 & =10!
\end{aligned}
$$

Now we finish by adding $7+3$ to get 10 . The length around the rectangle is 10 inches! Now try these three addition exercises yourself. Find the sum of the first two numbers and cross them out. Write their sum in the first blank below the exercise. Then add that sum to the last number. What is your answer?


## Student Exercises

Measure the sides of each shape in centimeters. How long is each side? Add the sides together to find the length around the whole shape. Write your answer inside each shape.


## DAy 70 Practice

## Student Exercises

Use a string to measure these lines. Lay the string over the curvy line as best as you can. Mark the length on the string. Then measure the length in inches using a ruler. Write the answer in the box.


Let's add three numbers! Find the sum of the first two numbers and cross them out. Write their sum in the first blank below the exercise. Then add that sum to the last number. What is your answer?

$$
2+4+1=
$$

$\qquad$

$$
+1=
$$

$\qquad$

$$
1+2+3=
$$

$\qquad$
$+3=$

$$
6+2+1=
$$

$\qquad$

$$
\ldots+1=
$$

$\qquad$

$$
5+7+1=
$$

$\qquad$

$$
+1=
$$

$\ldots+1=$
$4+4+3=$ $\qquad$
$+3=$ $\qquad$
$\qquad$
$+3=$ $\qquad$
$7+0+2=$ $\qquad$
$+2=$ $\qquad$
$2+4+6=$ $\qquad$
$+6=$ $\qquad$

## CHAPTER 6 | LONG, LONGER, LONGEST

Pretend that your parent has given you these little gifts. They ask you share with two friends. Draw a circle around your share. Draw another circle around one friend's share. Draw one more circle around the other friend's share. We call each share $1 / 3$ of the full amount. Can you say "one third?"

How many cupcakes do you see altogether?
Write the number of cupcakes each person gets below.
Your name $\qquad$
Friend's name $\qquad$
$\qquad$
Friend's name $\qquad$
$\qquad$


How many candied apples do you see altogether? Write the number of candied apples each person gets below.

You
Your first friend
Your second friend $\qquad$


How many chocolates do you see altogether? Write the number of chocolates each person gets below.

You
Your first friend
Your second friend


Draw lines to cut this sandwich into 3 equal parts for you and your 2 friends.


Cut this apple pie into 3 equal pieces for you and your 2 friends. Everybody gets the same-sized piece. Everybody gets $1 / 3$ (one third) of the pie. Can you say one-third? That's a big piece of pie!


## day 71 Huge Creations!

This lesson compares measurements to God's nature, and is followed by one page of review exercises. This will require about 15 minutes of instruction from the parent/teacher.

## Prayer

## Memory

Spend a few minutes
with subtraction
flash cards
(subtracting from numbers 1-6)

## \$4. Activity

So far, we've measured small things. We've used small inches and centimeters to measure small things. But God made big things that need to be measured too. God gave us big measurements (like feet and meters) to measure big things. One foot is 12 inches. One meter is 100 centimeters. That's a lot of centimeters!

Let's measure some big things now.


How tall are you in inches? About how tall are you in feet? How tall is your mother or your brother or your sister?

How tall is the mother elephant in the picture? You can make a good guess by looking at the children. It looks like the mother elephant is about as tall as two children, one on top of the other. Let's say the two children are about the same height as you. How tall is that elephant? It's about as tall as your height plus your height again. Add: Your height in feet + your height in feet $=$ Mama Elephant's height.


This is a whale shark. How long is that whale shark? Can you see the scuba divers in the picture? Let's say the scuba divers are 6 feet tall. How many scuba divers could lie down, lining up head to toe, along the whale shark's back?

Whale sharks can grow up to 60 feet in length! Ten scuba divers could line up head to toe on a whale shark that big.

How big is this castle? Can you see the little people walking on the beach? Yet the people would look even smaller to us if they climbed up to the castle walls far behind them. The castle is a fortress that protects people from the enemy. God is our fortress.

God is our refuge and strength,
A very present help in trouble.
Therefore we will not fear,
Even though the earth be removed,
And though the mountains be carried into the midst of the sea . . . (Psalm 46:1-3)
The LORD is my rock and my fortress and my deliverer . . . (Psalm 18:2)

## CHAPTER 6 | LONG, LONGER, LONGEST

## Student Exercises

Try to do these addition and subtraction exercises from memory. You may also use your blocks, stones, or coins if you need help. This will help you get better at adding and subtracting. Pray that God will help you with the harder exercises.


220

## Practice DAY 72

## Student Exercises

Measure the sides of each shape in centimeters. How long is each side? Add the sides together to find the length around the whole shape. Write your answer inside each shape.


## CHAPTER 6 | LONG, LONGER, LONGEST

Compare these numbers! God made some numbers bigger than other numbers. Which number is bigger? Which number is smaller? Fill in the blank with the correct symbol: < (smaller than) or > (bigger than). Then read the math sentence. Remember, the baby shark eats the bigger number!


222

## Practice DAY 73

## Student Exercises

How many chunks of 10 do you need to make these numbers? How many singles (1s) do you need? Write the answers in the blanks.
$35 \longrightarrow 10 \mathrm{~s}$


Let's add three numbers! Find the sum of the first two numbers and cross them out. Write their sum in the first blank below the exercise. Then add that sum to the last number. What is your answer?


$$
3+0+2=
$$

$\qquad$
$+2=$ $\qquad$

$$
3+3+3=
$$

$\qquad$

$$
\ldots+3=
$$

$\qquad$

$$
2+2+6=
$$

$\qquad$

$$
+6=
$$

$\qquad$
$4+3+2=$ $\qquad$
$+2=$ $\qquad$

$$
5+3+0=
$$

$\qquad$

$$
\ldots+0=
$$

$\qquad$

$$
4+4+4=
$$

$\qquad$

$$
+4=
$$

$\qquad$
$6+4+1=$ $\qquad$

$$
+1=
$$

$\qquad$

## Go Measure God's World! day 74

This lesson integrates math into everyday life. This is an essential element to learning. The child is encouraged to apply God's patterns and wisdom to life in the home and community. Take a break from memory work and academic exercises, and identify ways to make math part of your everyday life. The following are suggestions or examples, but other ideas may be added to the list.

## \$. Activity

Let's use our new math skills to serve God! God tells us:
Let all things be done decently and in order. (1 Corinthians 14:40)
God loves order! Do you remember the verse about the Ark of the Covenant?
"Have the people make an ark of acacia wood-a sacred chest 45 inches long, 27 inches wide, and 27 inches tall." (Exodus 25:10, paraphrase)

God wanted the people to make the ark a special size. He told them how long the ark should be. He told them how wide the ark should be. He also told them how tall it should be. God wanted the people to make the ark in a special way.

Measuring is one way we can bring order. The people obeyed God by measuring. They followed His order.

You know how to measure things now. There are new ways to use this in your home. There are new ways to use this in your life. You can measure to bring order and beauty to your home and life!

## 1. Part of taking care of God's world is filling it with beauty.

Sometimes we make our homes beautiful by hanging pictures on the walls. Make sure that the pictures are centered. How far is it from one side of the picture to the edge of the wall? How far is it from the other side of the picture to the other edge of the wall? Are they the same? If so, the picture is centered. If not, do you know how to fix it?

Sometimes we make our homes beautiful by decorating. When we celebrate seasons and holidays, we are celebrating God's goodness. What holiday season is coming up? How can you help to decorate the home? Here are some ideas:

- When hanging decorations on the wall, measure the length between each decoration. Try to make a nice pattern.
- When making decorations, cut out patterns that are the same size. Measure and mark your cutouts to make sure they are all the same.

2. Make a jump rope for your friend, brother, or sister. How tall is that person? The jump rope should be 3 feet longer than the height of the person using it. This means if your friend is 4 feet tall, your rope needs to be 7 feet long. You can buy rope at the hardware store. Most stores sell rope by length. Finish by making the handles out of plastic pipe.
> 3. Help your father or mother fix or build something for the home. You might build a fence or table out of wood. Or you could put a fence post in the ground. Maybe the bed slats under the bed need to be fixed. You will need to measure the pieces of wood before you cut them.

You could also help replace the window blinds in your home. You will need to measure the height and width of the window so you can buy the right blinds.

## 4. Before buying clothes or shoes, you need to know your size.

Measure your chest, your waist, your legs' inseam, and your neck. Your parent/teacher can help you figure out your shirt and pants size using conversion charts online.

Find your shoe size by tracing your foot on paper. Your parent/teacher can help you find your shoe size by referring to a conversion chart online.
5. Keep track of your height. Measure your height for a few months or a year. Mark your height on a wall (or on paper attached to the wall). Praise God for your growth! This is another sign that you are healthy and strong.


