

## **Why Study the Bible? (An Engineering Analysis of Noah's Ark)**

(appropriate for Mid-schoolers and older)

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(Reference #1: [http://www.worldwideflood.com/ark/hull\\_form/hull\\_optimization.htm](http://www.worldwideflood.com/ark/hull_form/hull_optimization.htm))

(Reference #2: [http://www.worldwideflood.com/ark/safety\\_aig\\_explain/safety\\_aig\\_explain.htm](http://www.worldwideflood.com/ark/safety_aig_explain/safety_aig_explain.htm))

Other youth bible studies by Michael Daily available at: <http://gciweb.org/2011/04/youth-bible-study-materials-michael-r-daily/>

### **Psalm 1:1-6**

**How blessed is the man who does not walk in the counsel of the wicked, Nor stand in the path of sinners, Nor sit in the seat of scoffers! But his delight is in the law of the LORD, And in His law he meditates day and night. He will be like a tree firmly planted by streams of water, Which yields its fruit in its season And its leaf does not wither; And in whatever he does, he prospers. The wicked are not so, But they are like chaff which the wind drives away. Therefore the wicked will not stand in the judgment, Nor sinners in the assembly of the righteous. For the LORD knows the way of the righteous, But the way of the wicked will perish.**

Draw a tree by a stream on the board. Have the kids tell you the characteristics of the tree (firmly planted, yields fruit – character/making disciples, healthy, prospers no matter if it does not rain or what the weather is doing). These benefits are for those who do not follow the advice of the wicked, or hang around people that make fun of good things, and who delight in God's Word and meditate on it day and night.

Ask them what meditate means – it means to think about what you have read and look at it from all different angles to figure out what it means, how it applies to real life, and how it ties in with other things the Bible teaches. The word "meditate" comes from a word that describes how cow's chew their food. They chew on it then swallow it. After some time they spit it up into their mouths and chew on it some more. They do this a number of times. This is how God wants us to chew on his Word.

### **Proverbs 13:13**

**The one who despises the word will be in debt to it, But the one who fears the commandment will be rewarded.**

Those who take God's Word seriously (study it and meditate on it) will be rewarded but those who don't think it is important will end up paying a price.

### **Isaiah 66:1-2**

**Thus says the LORD, "Heaven is My throne and the earth is My footstool Where then is a house you could build for Me? And where is a place that I may rest? "For My hand made all these things, Thus all these things came into being," declares the LORD "But to this one I will look, To him who is humble and contrite of spirit, and who trembles at My word.**

Ask them what it means when God says, "but to this one I will look". It means that this type of person is the type that I pay attention to – the one who is humble, who is sorry for his sins, and who takes God's Word seriously and studies and meditates on it.

### **Deuteronomy 5:29**

**'Oh that they had such a heart in them, that they would fear Me and keep all My commandments always, that it may be well with them and with their sons forever!**

Keeping God's commands makes things go well in life. Don't you want your life to go well?

This next one is my favorite. How many of you have enemies? How would you like to be wiser than your enemies? Would that give you an advantage? How about if you had more insight than your teachers – how many of you would like that? What about if you had more understanding than old men? Turn to Psalm 119.

### **Psalm 119:97-100**

**O how I love Your law! It is my meditation all the day. Your commandments make me wiser than my enemies, For they are ever mine. I have more insight than all my teachers, For Your testimonies are my meditation. I understand more than the aged, Because I have observed Your precepts.**

There is that word meditation again. God's word can give you great wisdom if you study it and meditate on it. Tonight I want to show you one small example of how God's Word can make you smarter than your teachers. We'll use Noah's Ark as the example.

### **Genesis 6:11-17**

**Now the earth was corrupt in the sight of God, and the earth was filled with violence. God looked on the earth, and behold, it was corrupt; for all flesh had corrupted their way upon the earth. Then God said to Noah, "The end of all flesh has come before Me; for the earth is filled with violence because of them; and behold, I am about to destroy them with the earth. "Make for yourself an ark of gopher wood; you shall make the ark with rooms, and shall cover it inside and out with pitch. "This is how you shall make it: the length of the ark three hundred cubits, its breadth fifty cubits, and its height thirty cubits. "You shall make a window for the ark, and finish it to a cubit from the top; and set the door of the ark in the side of it; you shall make it with lower, second, and third decks. "Behold, I, even I am bringing the flood of water upon the earth, to destroy all flesh in which is the breath of life, from under heaven; everything that is on the earth shall perish.**

The Ark was 300 cubits (450 feet) long, 50 cubits (75 feet) wide, and 30 cubits high (45 feet).

God told Noah what dimensions to build the Ark. But what if he tried to figure out what dimensions to use on his own? The only way Noah could have done that would be to build different boats with different dimensions, try them out, and see which one worked the best. To really find the best boat dimensions how many different boats would he have to build? (hundreds). How long would it take to build that many different boats (many hundreds of years). It would take too long and be too expensive to figure it out that way. Fortunately, God told him the answer and he did what God said.

Today we have powerful computers that can simulate different shapes of boats and tell you how good they are. The way the computer does this is called, "Monte Carlo Simulation". In a Monte Carlo simulation a model of a very short boat is put into the computer. The computer then simulates how the boat will perform against all the different types of waves it will encounter. After the simulation the computer lengthens the boat by one foot and does the simulation again. After each simulation the computer makes the model of the boat another foot longer.

Because the computers today are so powerful they can simulate the performance of millions of different boat shapes in just a few hours just by changing the boat length one foot at a time. The best boat shape for a particular mission can be determined by the computer down to the inch – and that is how we design boats today. But Noah did not have computer simulations to help him. But guess what? The computer simulations show that the dimensions or shape of Noah's Ark are perfect for a boat that is strong, stable, and comfortable.

Figuring these dimensions out without God's help would have been impossible because there are conflicting requirements for what Noah's Ark had to do. Specifically, there were 3 things that Noah's Ark needed:

- 1) It needed to be strong enough to ride the waves of a worldwide flood and not have hull fracture – you don't want your boat to break in half and sink if a big wave comes along do you? To make a boat strong you would like it to be short lengthwise and tall in the water. But if you make it short in length and tall in the water it becomes less stable.
- 2) It needs to be stable enough that if a big wave comes along it won't capsize – you don't want your boat to tip over and sink if a big wave comes along do you? To make a boat stable you need to make it short in the water and wide sideways. But if you make it too short in the water and too wide sideways the boat rides like a rollercoaster and people and animals will wobble around and get hurt.

- 3) It needs to have a smooth or comfortable enough ride that people and animals can live on the boat without getting hurt. If not designed properly the boat could be strong and stable but would feel like a rollercoaster – people and animals would be falling and breaking their legs or getting hurt. What if Ham went flying off the Ark? There goes half of Africa! To make a boat have a smooth ride you need to make it long in length and thin in width. But if you make it too long in length and too thin in width the hull strength goes down and your boat could break in half if a big wave hits it.

So figuring out the right dimensions would not have been easy or obvious for Noah.

About 100 years ago (1909) the United States built the biggest all wood boat we have ever made. It was a schooner called the Wyoming. The Wyoming was not as big as the Ark. It was about 300 feet long (the length of a football field) but the Ark was over 450 feet long which appears to be the limit for how large you can build an all wood boat. Bigger ships we build today use steel instead of wood but steel is a manmade alloy which was not available to Noah.

Unfortunately, the poor guy who designed the Wyoming did not read his Bible and instead of building his wood boat with the proportions of the Ark he decided to build a bigger version of smaller boats of that time period. The problem was these boats had proportions that were long and thin compared to the Ark. We know from our computer simulations today that that shape had weak hull strength.

The problem with the Wyoming is that its weak hull strength did not cause the boat to break in half but the high stresses in the hull caused the wooden planks it was made out of to flex apart back and forth. As the planks flexed apart water would rush in. As a result the Wyoming had a severe problem with leaking. The only way to keep the boat from sinking was to install a steam engine to power a pump to constantly pump out the water leaking in. In addition the guy cheated and put in iron rods to reinforce the wood hull. His boat design was considered a failure. If he had read his Bible and used proportions similar to the Ark his boat design would have been considered innovative and successful and he would have been thought to be smarter than all his teachers!

Noah's Ark was the focus of a 1993 study headed by Dr. Seon Hong at the ship research center KRISO, based in Daejeon, South Korea. Dr. Hong's team compared 12 hulls of different proportions to discover which design was most practical. No hull shape was found to significantly outperform the 4,300-year-old biblical design. In fact, the Ark's careful balance is easily lost if the proportions are modified, rendering the vessel either unstable, prone to fracture, or dangerously uncomfortable. The research team found that the proportions of Noah's Ark carefully balanced the conflicting demands of stability (resistance to capsizing), comfort ("seakeeping"), and strength.

In fact, the Ark has the same proportions as a modern cargo ship. Noah's Ark had dimensions of 450 feet long, 75 feet wide, 45 feet high or proportions of 30X, 5X, 3X. Modern container ships have proportions of 30X long, 5X wide, and 1.5X high but another 1.5X of the height is made up of shipping containers on top of the boat matching the proportions of Noah's Ark. <http://www.bbc.com/news/magazine-21432226>

The study also confirmed that the Ark could handle waves as high as 100 ft (30 m) – tall as a 10 story building.

Compared to the Ark, modern passenger ships (cruise ships) are longer and thinner. Why is that? Longer and thinner provides a smoother, more comfortable ride – How important is that in a cruise ship? Its very important because people take cruise ships to have fun. If the ride is not smooth you won't sell very many tickets. But we know that the hull strength will be less due to this shape. So, we use technology (steel) to make up the strength that was lost using the longer, thinner hull shape.

Also, today we have satellite technology that can look out and see if there are storms in the ocean causing big waves. If there are we just don't let the boats go out – that is how we compensate for the reduction in stability for a longer, thinner ship.

So we can build a more comfortable passenger boat today because we have steel and satellites to compensate for the lesser strength and stability of these ships. But for the mission the Ark had to accomplish the proportions of the Ark, given by God, were perfect according to computer simulations.

This is just one small example of how studying the Bible can make you wiser than your teachers and help you be successful in life.

The Bible also has instructions on how to have a good marriage, raise kids, be a good businessman, have good relationships with others – everything we need to have a prosperous life.

So make sure you invest time in studying and meditating on God's Word.

**Notes:**

If you wish to use a video clip to help support this study please use, "Noah's Ark, Thinking Outside the Box" from Answers in Genesis: <https://answersingenesis.org/media/video/bible/noahs-ark-thinking-outside-box/>

The video is about 25 minutes long. However, if you have video editing software you can purchase the video and edit this down to about 12 minutes.

**Wyoming (schooner) – Wikipedia**

The *Wyoming* was a wooden six-masted schooner, the largest wooden schooner ever built. She was built and completed in 1909 by the firm of Percy & Small in Bath, Maine. The *Wyoming* was also one of the largest wooden ships ever built, the longest wooden ship ever built, 450 ft (140 m) from jibboom tip to spanker boom tip, and the last six-mast schooner built on the east coast of the US. Because of the extreme length of the *Wyoming* and its wood construction, it tended to flex in heavy seas, which would cause the long planks to twist and buckle, thereby allowing sea water to intrude into the hold. The *Wyoming* had to use pumps to keep its hold relatively free of water. In March 1924, it foundered in heavy seas and sank with the loss of all hands.

[http://en.wikipedia.org/wiki/Wyoming\\_\(Schooner\)](http://en.wikipedia.org/wiki/Wyoming_(Schooner))

**QUIET TIMES ALONE WITH GOD**

***JEREMIAH 15:16***

**THEME: *Why Study the Bible? (Noah's Ark)***

**PASSAGE FOR MEDITATION: *Psalm 1:1-6, Proverbs 13:13***

**How does this passage relate to the theme?**

**When I reflect on this passage, does it primarily convict, encourage or challenge me? Explain why:**

**How will I apply this passage to my life in the coming week and is there anything I can do today to make this passage a part of my Christian life?**

**PASSAGE FOR MEDITATION: *Isaiah 66:1-2, Deuteronomy 5:29***

**How does this passage relate to the theme?**

**When I reflect on this passage, does it primarily convict, encourage or challenge me? Explain why:**

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**PASSAGE FOR MEDITATION: *Psalm 119:97-100, Genesis 6:11-17***

**How does this passage relate to the theme?**

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