LEVERAGING OUR GOD GIVEN ABILITIES

INTRODUCTION:

What if…you were stranded on a disserted island with no supplies, nothing but your **ingenuity** to survive: How would you improve your survivability? What knowledge could you **leverage**? What has God given you to make surviving possible?

DEVOTIONS:

GENESIS 1:27 So God created man in his image, in the image of God he created them; male and female he created them.

God created man in His image. He breathed life into man and animals; however, only in **man did God vest His image.** By imitating Christ, through Whom everything was made, AND by searching His Word, we find purpose and plans for our lives. Scriptures illuminate God's concern for us and creation. Examples of His love, guidance, and instruction in scripture include observing and learning from: creatures great and small, ants, birds, bees, flowers, seeds, fruits and grains, the paths of the Sun, stars, weather, ocean, streams, rivers, and so much more. The universe was created by God for us. He doesn't need this physical world; we do! Clearly, God designed us to observe His creation, to understand his workmanship, and to learn from it.

EPHESIANS 2:10 For we are his workmanship, created in Christ Jesus for good works, which God prepared beforehand, that we should walk in them.

WORKMANSHIP – the degree of skill with which something is made, or a job is done. How can we know God's workmanship:

God created: everything – the universe, natural physical laws, us. Being created in God's image suggests He imbued us with creative abilities as well.

God knows: everything – the hairs on our head, every sparrow that falls, how to clothe or adorn a lily in beauty, and much more. Knowing God includes observing creation. Curiosity is a God-given characteristic essential to science and knowledge.

God worked: 6 days and rested the 7th day. He designed man/woman (and animals) to work and to serve. Work may be as simple as finding food and shelter, or as complex as designing a computer or robot. We were designed for "good works." God is love and He loves His workmanship.

THEME: HOW CAN INGENUITY LEVERAGE OUR GOD-GIVEN ABILITIES?

INGENUITY – the quality of creativity, inventiveness, original and personal solutions.

LEVERAGE – using "something" to maximum advantage.

We can leverage our mental and physical capabilities to glorify God through ingenuity and good workmanship. This may sound complicated, but it frequently boils down to the knowledge and the basic physics you've known since you were a child. Once fully grasped, God's individual gifts to you, your specific environment and situations can be viewed as "your work" for Him.

In a world vastly different than our modern sophisticated environment, such as a disserted island, your personal ingenuity could make all the difference. Throughout this study, we'll learn about God's laws through creation, science, and history. Knowledge of man's past discoveries teaches us how to "step-up" our game with a heaping dose of know-how, leveraging our own ingenuity and personal strengths.

Psalms 90:17 Let the favor of the Lord our God be upon us and establish the work of our hands upon us; yes, establish the work of our hands!

DEFINITIONS (REVIEW AND NEW):

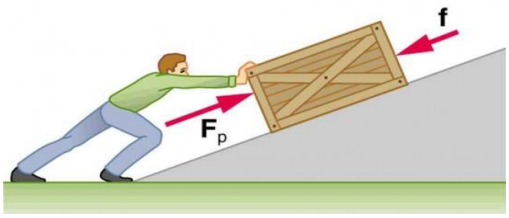
REVIEW

MASS – inertia or resistance to motion, an amount of matter with weight.

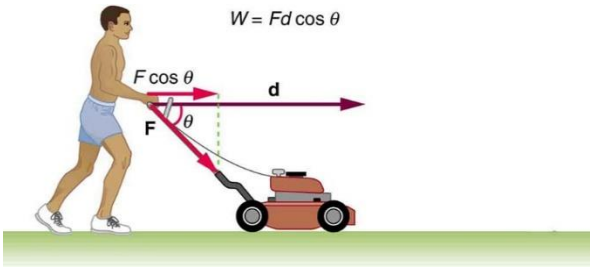
ACCELERATION – a change in motion, positive, negative, or change in direction.

SPEED/VELOCITY – Speed indicates a rate, such as 50 mph, whereas velocity indicates both speed and direction (N,S,E,W and anything in between). Therefore, velocity is a vector quantity, like wind speeds in specific directions.

NEW



FORCE – the cause of change, a push or pull exerted on an object that causes a change in the object's motion, direction, or shape. A force must have both mass and motion to impact something. Think about a block or tackle in football. If a player has no mass, or has too little mass like a feather, no block or tackle could happen. If a player has mass, but no motion or exertion, the moving players could run around, push over, or knock down the "non-resisting" player who refuses to exert energy. Both mass and motion/exertion are necessary. The smaller the mass or the motion, the lower the force or potential for change. Force = mass x acceleration (F = ma).

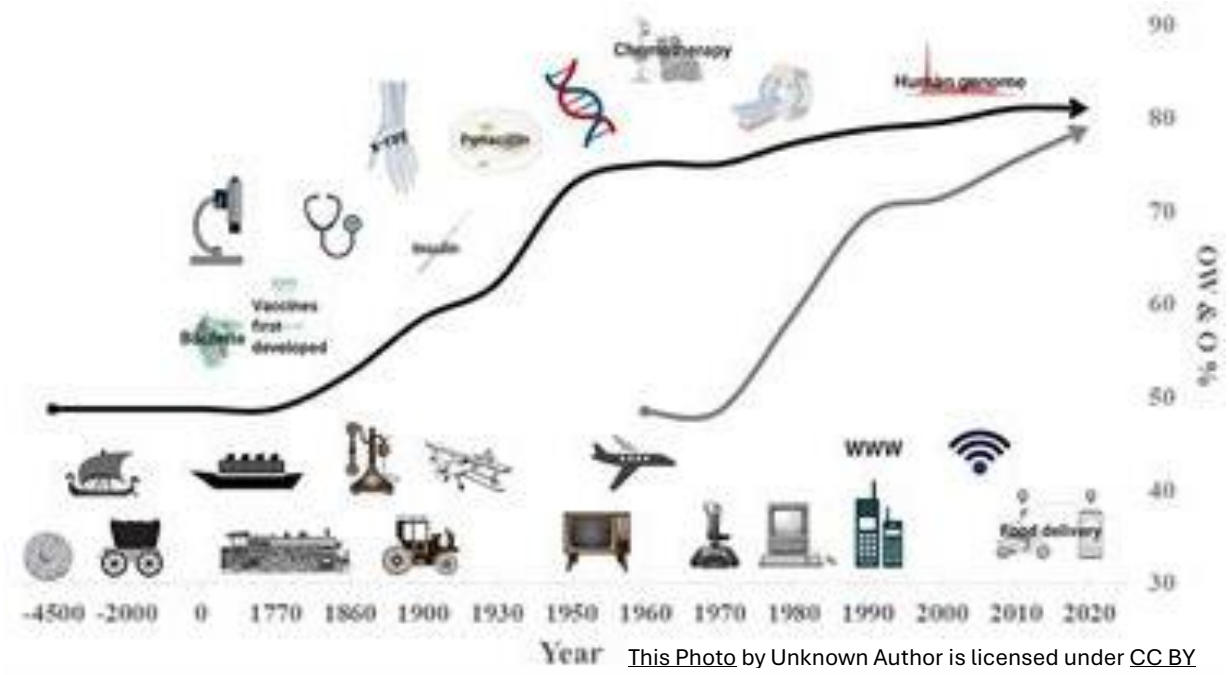


WORK – the transfer of energy to or from an object via application of force, Work = Force (F) x (d) Distance (aka s → for displacement). W = Fd

SIMPLE MACHINES/TOOLS – A simple machine is a tool that changes the magnitude or direction of a force by means of a **mechanical advantage**.

RESEARCH

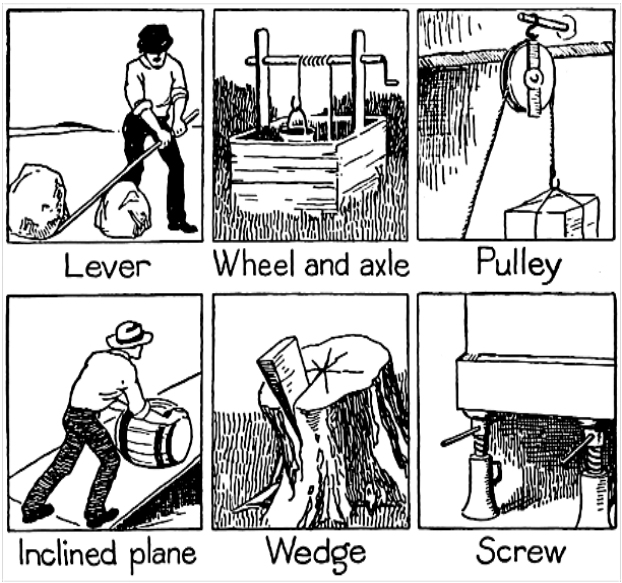
The first step of any scientific investigation: #1) Research what is known/unknown. With our overview of science principles and inventions through time, keep in mind that the science principles behind inventions will indeed come in handy surviving and thriving in the untamed wilderness.



TIMELINE (History): **~4500-4000 BC**

Although we don't know the exact dates when simple tools and machines were employed, it's clear Adam's family/descendants used tools. Archeologists and anthropologist often have vastly different dates for specific tools. Some dates precede 6500 years ago (4500 BC); however, the evidence for these "prehistoric" (earlier than recorded history) artifacts is contradictory or absent and is based on frequently revised frameworks. Tools originating from Mesopotamia (modern day Iraq), where Adam and Eve, Cain, Abel, Seth, and many other sons and daughters lived, are the oldest though few would have survived the global flood about 1600 years after creation.

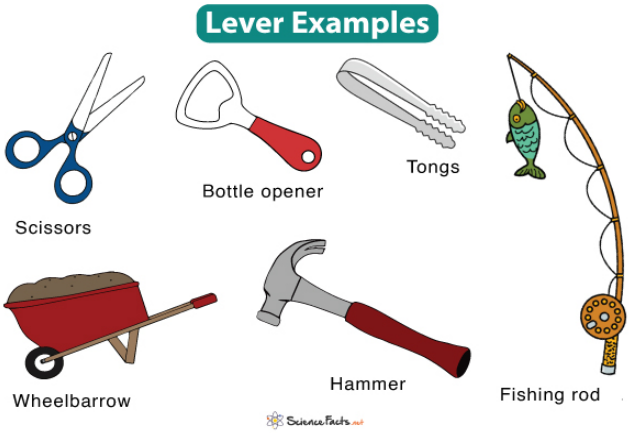
Scripture indicates that God intended Adam and Eve to work. After sin subjugated everything to decay, the Garden of Eden's abundance was no longer accessible to mankind. Adam and Eve were essentially living on a "disserted" island/continent. Immediately, shelter was necessary, land had to be worked, animals domesticated, and beneficial herbs distinguished from poisonous or harmful ones.



Keep in mind, Adam lived 930 years, dying about 750 years prior to the flood. During his lifetime, nearly all simple machines or tools were implemented to work the land, provide food, shelter, clothing, and conveniences.

SIMPLE MACHINES/TOOLS provide a **mechanical advantage**. These **tools:**

- **Lever**
- **Wedge (plow, axe)**
- **Screw**
- **Wheel and Axle**
- **Inclined Plane**
- **Pulley**
- **Rods/Connectors**
- **Springs, Elastic**
- **Paddles/Fans/Blades**
- **Screws/Augers**
- **Floats and Siphons**
- **Clamps/Pincher**
- **Scrapers/Grinders**
- **Ball/Socket/Bearings**



Explore simple machines in your world by looking in your own home, garage, nature, and/or books. Most attempts at inventing or even "macgyvering" (improvising in an inventive way using whatever items are available) were done with one or more simple tools/machines. Knowing how to create new "gadgets" and ingenious tools has made survival through time possible.

Even our own bodies mirror simple machines: levers, paddles, hinges, ball sockets, clamps, scrapers, siphons, and others. How? Where? Imagine how utilizing a lever, paddle, pulley, wedge, or any tool will give you a mechanical advantage.

EQUIPPED/Science Principle:

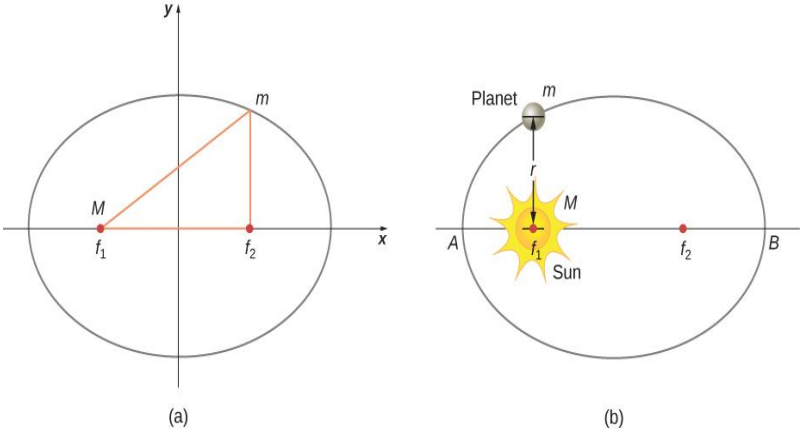
Leverage is also a physics principle known as the exertion of a force by the means of a lever or a mechanical advantage. While a tool or simple machine is not a force itself; it is used to change the magnitude or direction of a force. A tool's benefit is obtained only when a force is applied or used with the tool.

This Photo by Unknown Author

Your arm is a compound lever, from your arm to your elbow, and elbow to shoulder. Think about throwing a ball. With a hand alone, even the strongest hand in the world, how far could you throw the ball. Put it on a stick (like a fetch stick) and your hand alone gains a mechanical advantage.

Work is about motion, i.e. force applied over a distance equals WORK. If you think about it, a world with no motion is like a still image, a photograph that would be a very boring existence. Thankfully, this is not the world in which God placed us to live. Motion is key. Earth is in constant motion around the Sun. The solar system and the stars we see are in constant motion around the center of the Milky Way galaxy.

The first person to accurately describe motion, including the motion of the planets around the Sun was Sir Isaac Newton. He declared that the same FORCE that causes things to fall to the Earth causes the planets to orbit.



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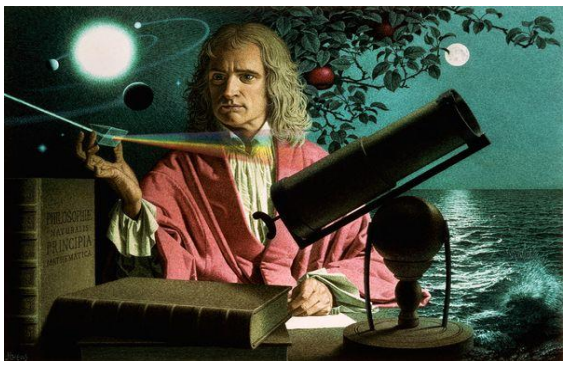
The Sun's mass acts as a gravitational force tugging the planets towards the center. When we understand the forces causing or resisting motion, we can use this knowledge to leverage our WORK. Newton describes essential aspects of moving objects in the following laws:

NEWTON'S LAWS OF MOTION

Newton's 1st Law – the **Law of Inertia** which states an object in motion stays in motion, an object at rest remains at rest unless a force acts upon it.



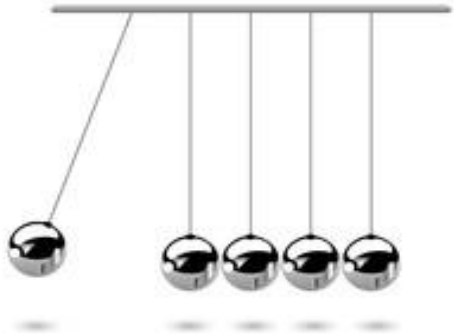
Newton's 2nd Law – the definition a force which is: **Force = mass x acceleration**

Newton's 3rd Law – for every action there exists an equal and opposite reaction, also known as the **action/reaction law**.

GEAR-UP/Practical Illustration: **1 Newton = 1 kgm/s²**

Force, F = ma, is measured by adding numeric quantities to the "F, m, and a" in this equation. To honor Newton, the SI unit for force is "Newtons." One Newton is defined as the force needed to move/accelerate 1 kg mass, 1 meter distance.

If the force only acts instantly, and is no longer applied, such as a cue ball hitting another ball in the game of pool, the acceleration may last only a second, leaving an object in motion, but not accelerating. However, if the force is continually applied, such as a falling object under the pull/force of gravity, its speed will continue to increase with each second until a counter force is exerted on it.



The force of an object hitting another object is clearly seen with a Newton cradle. One ball strikes, accelerating a resting ball into a moving state. The masses and acceleration exert forces on the other balls. Eventually, friction and heat dissipate the force in multiple directions within the balls.

OVERCOME/Math: **1 kilogram = 2.2 pounds**

CONCEPT – What work could one Newton of force do?

A small orange weighs ~.1 kg or 100 grams. To move/roll an orange 1 meter requires approximately .1 Newton of force/push (with no friction). To lift an orange up 1 meter, against the pull of gravity of 9.8 m/s², would require .98 Newtons, rounded to 1 N.

Try this: Place your hand on the table, palm up. Set an orange on your 3 middle fingers. Attempt to flick the orange upward while keeping your hand flat on the table. The amount of force applied (.1 m x 9.8 m/s² = F). Can you feel the difference between the force needed to roll the orange verses the force needed to lift the orange (~10 x more force).

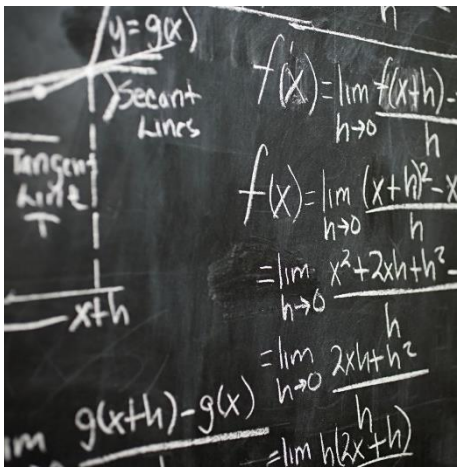
PROBLEM
How much force would be required to lift a 6.6 lb melon?
(Let's change units first to calculate force in Newtons: 6.6 lbs = 3 kg. The opposing/downward force is 9.8 m/s^2; so, the upward force must counter gravity.)

F = ma
F = 3 kg x 9.8 m/s^2
F = 29.4 kgm/s^2 or 30 N

ANSWER: 30 Newtons of force must be used to lift a 6.6 lb melon.

GOT-IT/Apologetics:

Science investigations often oppose God; that is, they "assume" nature, not God created everything. While purely naturalistic science can identify and describe God's laws, it cannot identify first **CAUSES**! Scientists are handicapped in the most basic pursuit of a cause/effect scientific theory. They must invent, speculate, or theorize an untestable solution whenever God's action is the cause. The deeper scientists dive into the mechanics of life, the more difficult it becomes to theorize or believe that time and chance alone could be the creative force.



Whenever "man" omits God, foolishness takes over. Imagine if all man's creative talents, work, knowledge, and understanding were applied to serving God and others, how different our world today would be. Through time, man devised many imaginative theories about how Earth is suspended in space. Some cultures suggested that the earth rested on the back of a huge turtle (Native Americans and Chinese), or on the backs of elephants standing on a turtle (Hindus), rather than on what scripture (Job 26:7) says, "the earth hangs on nothing."

Although the laws of motion are known and accepted as self-evident principles, new theories advance the origins/cause of the earth, sun, and galactic motion as dark unknown matter. These ideas are supported by actual scientific laws, but the theories attempting to determine the **ORIGIN of galactic/stellar/planetary motion** are not "laws" but simply speculations. Unknown dark matter exists, but it fails to illuminate any foundational truths, or first-causes, such as where dark matter originated or how mass itself influences gravity. It's much like "kicking the can" further into unknown territory. Every "solution" leads to more questions than answers. Be vigilant. Don't unwittingly accept "theories" or speculations about causes or explanations about "laws" that go beyond testable, repeatable, observable phenomena.

2 COR 10:5 We demolish arguments and every pretense that sets itself up against the knowledge of God, and we take captive every thought to make it obedient to Christ.

WRAP-IT-UP:

Our workmanship should model our Maker's. While we could never create the natural world and all the resources it provides, we can learn from it and use our God-given ingenuity as God intended. The key to "good works" is that our work must align with God's desires for us. We must acknowledge Him, or our ingenuity leads to futility.

Simple tools and machines are inventions that leverage the work God set before us. Though we'd rather live in the Garden of Eden, in full communion with God, our situation is vastly different and our challenges many-fold. We must bloom where we're planted, in this day and age, with our personal God-given gifts, and within our specific set of circumstances. No one can be us (you, me, anyone else), so figure out how you can be the best you!

REMEMBER THESE THINGS

Throughout our lessons, remembering what we learn is key to understanding.

LEVERAGE (a hammer):
PHIL 4:13 I can do all things through Christ who strengthens me.
Christ is our source of strength; the force enabling us to do good works. If we choose not to leverage our gifts and talents by seeking His will for us, we cheat ourselves and others. Learn to lean on Him for strength.

Levers are essential tools to do work. We use this physical or mechanical advantage everyday (our own arms, legs, or tools).

WORK (hands):
COL 3:23 Whatever you do, work heartily as unto the Lord, not unto man.

There's nothing more liberating than working unto the Lord. Our workmanship extends to everything we do, each and every day. Brother Lawrence shares his insights in the book, *The Practice of the Presence of God*. Genuine joy fills a believer whose work is dedicated to God, not man.

Create your own "memory keeper" for instilling truth and understanding. It may be a box, a shelf, an altar, tree, mobile, almost anything that can hold or display your memory tools. Family altars, perpetual calendars, doorpost signs or other visible **MARKERS** are great help with memory retention. God's workmanship and our call to be Christ-like. Make your own hands and hammer images using clay, markers, wood, or any medium to remind you of the goals from this lesson.