

WORKMANSHIP

INTRODUCTION:

WORKMANSHIP – the degree of skill with which something is made, or a job is done. God created us for good works. He tells us of His workmanship in the Bible and in many features of Creation. Here’s what we can learn from knowing God and listening to His Word:

God created: everything – the universe, the natural physical laws. 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.



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God worked: 6 days and rested the 7th day. He designed us (and animals) to work and to serve. Work may be as simple as finding food and shelter, or as complex as designing a robot. We were designed for “good works.”

DEVOTIONS:

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.

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.

THEME: HOW CAN WE DO GOOD WORKS?

This may sound hard, but it comes down to knowing God and understanding basic physics – how to work. Physics is the study of matter and energy. You’ve observed matter in motion since you were a young child. You understand work from watching your parents, from doing chores, and from playing, among other things.

By studying physics, we’re learning about the basic natural laws God’s put in motion at the time of creation. Through His laws and man’s past discoveries of these basic principles, we also learn “how things work.” If you know how and why things work, you can invent things that make working easier or better.

If we can make our work better, we’re better workmen. We’ll be able to do more “good works” for others by redeeming our time. Although physics describes work with a formula that can be quantified, the Lord describes work as a calling for each of us.

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):

PHYSICS – the study of matter, energy, and motion.

MATTER – something that has mass and takes up or occupies space.

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

SPEED – the rate of change in position in any direction. **$s = d/t$**
s = speed, d = distance, and t = time.

VELOCITY – the speed of something in a given direction (N,S,E,W and anything in between). Therefore, velocity is a vector quantity, like wind speeds in specific directions.

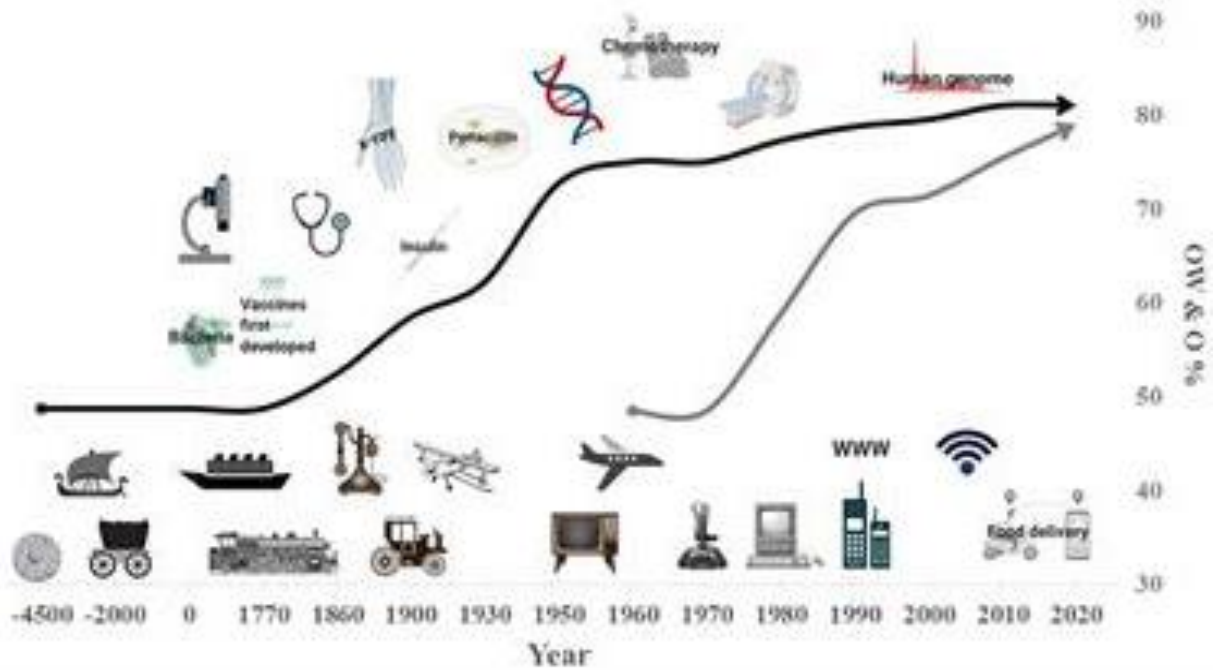
SIMPLE MACHINES/TOOLS – A simple machine is a tool that changes the magnitude or direction of a force by means of a **mechanical advantage**.

RESEARCH

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 our world.

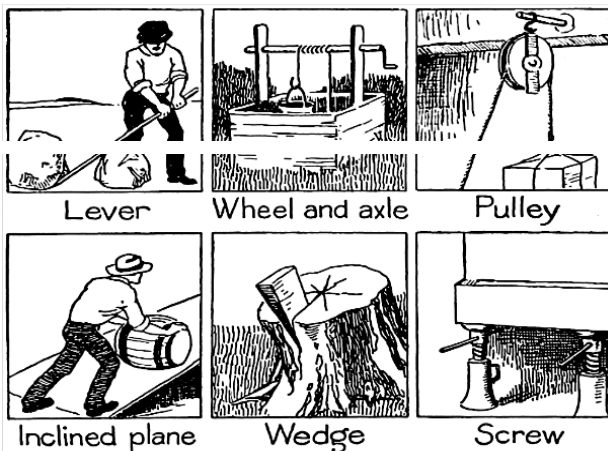
Electricity wouldn’t have been possible if God hadn’t created the ELECTROMAGNETIC FORCE. Water or steam power require gravity and the amazing properties of a water molecule to be successful. While simple tools and machines are man’s workmanship designed to help man survive and serve a greater role in the lives of others, these tools require God’s provisions in our natural world.

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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. Dates for specific tools vary. Some dates precede 6500 years ago (4500 BC); however, the evidence for these "prehistoric" (earlier than recorded history) artifacts 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 although 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 needed shelter. They needed to work the land, domesticate animals, and distinguish good herbs from harmful ones.

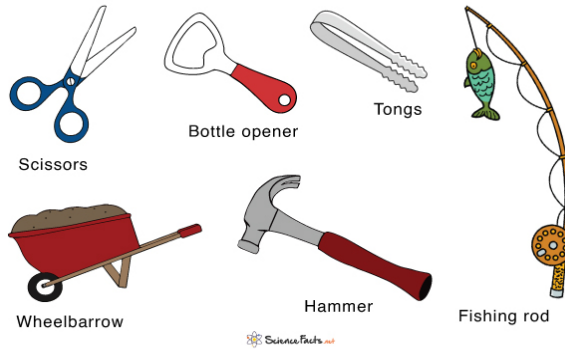
Adam lived 930 years, dying about 750 years prior to the flood of Noah's day. During his lifetime, nearly all simple

machines or tools were implemented to work the land, provide food, shelter, clothing, and to make life easier.

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

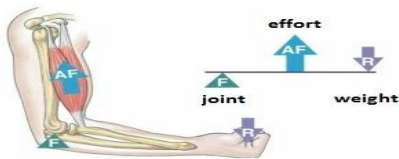
Lever
Wedge (plow, axe)
Fulcrum
Wheel and Axle
Rods/Connectors
Pulleys, Springs, Elastic
Screws/Augers
Inclined Plane
Floats and Siphons
Paddles

Lever Examples



Even our own bodies mirror simple machines: levers, wedges/paddles, hinges, ball sockets, clamps, scrapers, wedges, siphons, grinders, and others. How? Where? Your arm is a 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.

Third order lever - most common



Explore simple machines in your world by looking in your own home, garage, nature, and/or books. Knowing how to create new “gadgets” has made survival through time possible. We’ll explore these gadgets or simple tools throughout these lessons.

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EQUIPPED/Science Principle: LEVERS & WORK

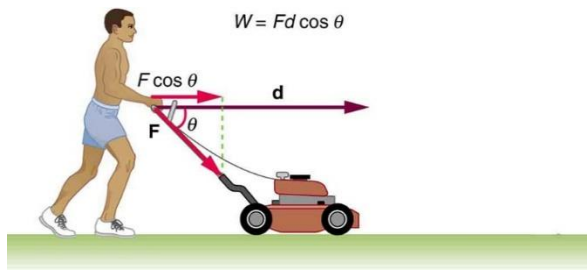
A lever is a simple machine, not a force itself; it’s used to change the magnitude or direction of a force. A tool’s benefit is obtained only when a force is applied or used with the tool.

WORK – the transfer of energy to or from an object by the application of a force which causes something to change or move. Again, think about what your “fetch” stick helps you do.



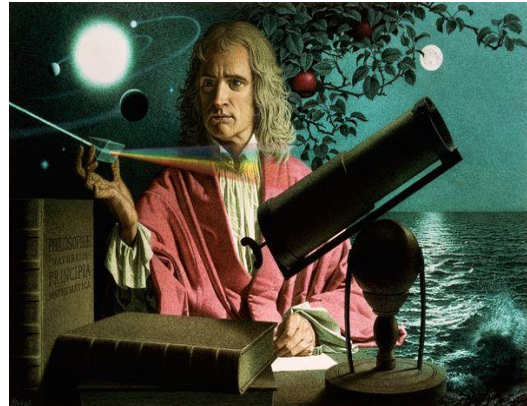
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Work is force applied over a distance. If you think about it, a world with no motion is like a still image, a photograph that would be a very boring existence. Thankfully, this is not the world in which God placed us to live. Motion is key.



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

NEWTON'S LAWS OF MOTION



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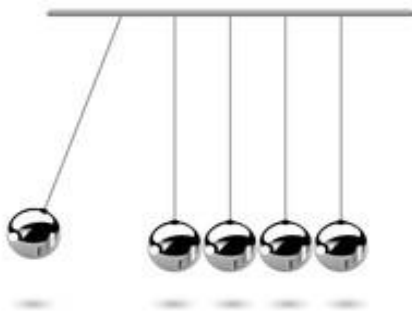
Newton's 1st Law – the **Law of Inertia** which states an object in motion stays in motion, an object at rest remains at rest unless a force acts upon it.

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: $s = d/t$ and $v = \text{speed and direction}$

Newton's 1st Law describes an observation. Objects at rest, remain at rest, objects in motion remain in motion (unless a force acts upon them). Using Newton's cradle



(pictured to the left), it's apparent that the balls rest remain motionless unless moved. If one is moved, that is, a force acts upon it, it changes position. If released, the force of this ball will cause a motionless ball to move (**Newton's 2nd Law**). The first ball that was moved and released, stops moving due to an equal but opposite force (**Newton's 3rd Law**); whereas the last ball is launched because the force/momentum was transferred. These transfers

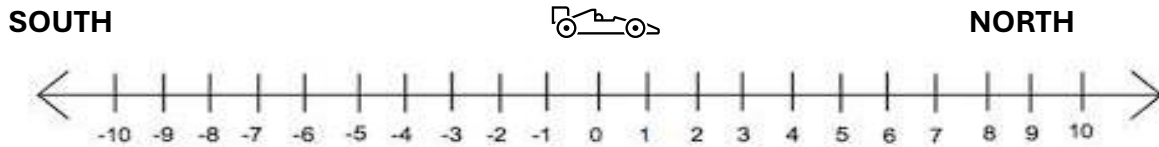
continue until the energy to do work is dissipated.

Speed is a rate of change in position, such as 50 mph (miles per hour). This speed indicates that an object moves a distance of 50 miles in one hour time. **Velocity**, on the other hand, gives **speed and direction**. **EXAMPLE:** If you travel for 2 hours, moving a total distance of 100 miles, your average speed would still 50 mph. However, if during these 2 hours, you drove 1 hour to a ball game that was canceled, and 1 hour back home, for a total of 100 miles, your average speed would still be 50 mph but your velocity would be 0 because your position at the end of the 2 hours was the same as your starting position.

OVERCOME/Math: NUMBER LINES/Speed and Velocity Calculations

UNDERSTAND the difference between speed and velocity?

Use this number line to determine the difference between traveling in one direction versus traveling in two directions. Left is South, Right is North, and numbers represent hours in each direction.



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Practice using a number line or mathematical equations to solve this problem.

PROBLEM: Your car is moving at a constant speed of 10 mph. It travels 5 hours north, then 3 hour south. What is its speed and velocity?

Speed: 10 mph The car maintained the same speed throughout!

Velocity: 2 ½ mph 20 miles in 8 hours = 50 mi + (-30 mi) = 20 mi

Distance/Direction →: 5 hrs x 10 mi/hr + -3 hrs x 10 mi/hr

Vectors: → can be any direction. In this case they were opposite.

GOT-IT/Apologetics:

Much of physics is self-evident which means we can test it to see if it's true. Scientific laws, such as Newton's Laws of Motion, are self-evident. They are reliable and can be referred to as truth; however, beware of science that is not grounded in truth. Theories in science are not self-evident but are simply man's best hypotheses or guesses, often constructed in a framework that does not allow for "God's designs," divine intelligence, supernatural creation or cataclysmic destruction, such as the flood of Noah.

Don't trust in science when it seems to contradict the Bible or your faith. Test both, your faith or Biblical interpretation and the science itself. It is possible to misinterpret scripture; however, it's more common for humans to get their science wrong than their trust or faith in God. God's power, knowledge, and workmanship are unmatched. Having faith in Him, through Christ who makes all things possible, means trusting in His workmanship.

1 Thessalonians 5:21 Test all things; hold fast what is good.

1 John 4:1 Behold, do not believe every spirit, but test the spirits.

WRAP-IT-UP:

Man's workmanship is visible throughout history as he creates technological advances. These advancements are neither good, nor evil, but how they're used can be either for good or evil. Therefore, we must take hold of what is good, such as medical treatments or worldwide radio transmissions, and use it to seek and save the lives, hearts, and minds of the nations.

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

REMEMBER THESE THINGS

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



LEVER (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. We could call it "leverage" which means a source of power or advantage. 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. You can also try your hand at making a simple machine, a catapult.

