

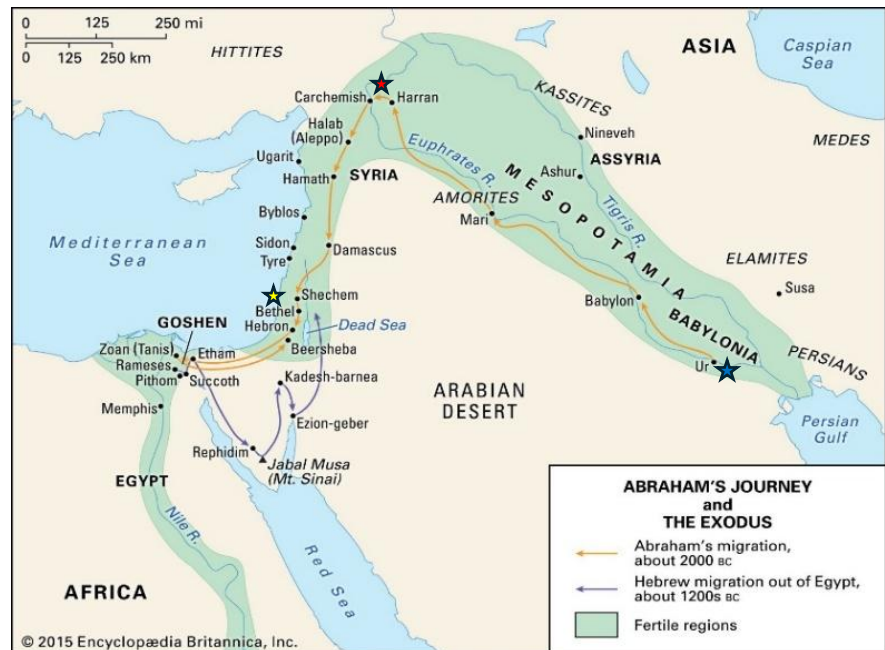
## GO THE DISTANCE

## INTRODUCTION:

**Hebrews 11:8** <sup>8</sup> *By faith Abraham, when called to go to a place he would later receive as his inheritance, obeyed and went, even though he did not know where he was going.*

Less than 500 years after Babel, Abram was called by God to leave his home in Ur and go to Canaan. Abram was not seeking to make a name for himself, like Nimrod, but his name would become great. The difference between Nimrod and Abram was faith in God.

When Abram and his wife Sarai left Ur (blue star on the map), they went to Harran (red star on the map). After a time, they made it to the region of Shechem (yellow star on the map). Travel was difficult, but they followed the rivers whenever possible. See if you can read the map keys and follow Abram and Sarai's path (in gold).



Abram left the promised land, because food was scarce, and went into the land of Egypt. That was not part of God's plan. He soon found trouble in Egypt so he returned to Shechem in Canaan and built his home nearby.

## DEVOTIONS: GENESIS 12:1-9

**GENESIS 12:7** *And the Lord appeared unto Abram, and said, Unto thy seed will I give this land: and there he built an altar unto the Lord, who appeared unto him.*

When Abram stopped at Shechem, God promised him, 'I will give this land to your offspring.' (Genesis 12:7 ESV) God wanted Abram and his descendants to stay there so they could teach others about Him and be a blessing to all others.

**GENESIS 12:2-3** *I will make you into a great nation, and I will bless you; I will make your name great, and you will be a blessing. I will bless those who bless you, and whoever curses you I will curse; and all peoples on earth will be blessed through you.*

Canaan was at the crossroads of trade and travel. Its location allowed Abram and his family to be a blessing to travelers from every direction. Remember, God's plans for our world include helping them know that He loves them.

From Father Abraham to Jesus, God used the Jewish nation to write down His Words and foretell of Jesus's birth, death, and power over the grave. Without the Jewish nation, our Bible would not be complete. When God asked Abraham to go **all in**, he did. He went the distance to be where God wanted his family to be. We're called to "run the race without quitting (perseverance)" and to "fix our eyes on Jesus," rather than "doing our own thing."

**HEBREWS 12:2** *And let us run with **perseverance** the race marked out for us, <sup>2</sup>fixing our eyes on Jesus, the pioneer and perfecter of faith. For the joy set before him he endured the cross, scorning its shame, and sat down at the right hand of the throne of God.*

#### DEFINE:

**ENERGY** – the capacity or ability to do work. Energy resources allow potential or kinetic

#### MAIN TYPES OF ENERGY:

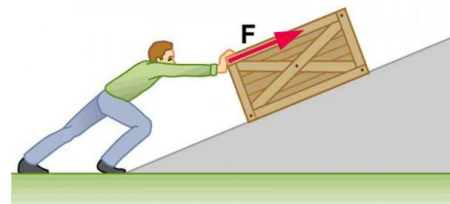


**KINETIC** – **energy in motion**, a form of energy an object has due to its motion. Examples: moving windmills/waterwheels are forms of energy in motion.

**POTENTIAL** – **stored energy** with the capacity to do work due to its position, properties, or forces acting upon it. Example: Food or calories to "run" your body.

**CALORIE**: A quantity of energy in food that people and animals need to do work.

**WORK** – Work = Force (F) x (d) Distance  
Examples: pushing a box 5 feet up a ramp.



**RODS (or pins)** – a cylinder-like object often used to hold gears or wheels.

**AXLES** a rod that holds a wheel

**FIXED WHEELS** – wheels are fixed to a shaft so both rotate; **FREE WHEELS** spin on a stationary rod/pin. Gears are often free; whereas, waterwheels and windmills need to be fixed to their rods/shafts to do work.

**RPM** – Revolutions per minute, **rev/min**, and **rps** is revolutions per second



## THEME: GO THE DISTANCE

**1 Corinthians 9:24** <sup>24</sup> *Do you not know that in a race all the runners run, but only one receives the prize? So run that you may obtain it.*

Running is WORK! You need calories (potential energy) to run (kinetic energy) over a distance,  $\text{Work} = \text{Force} \times \text{distance}$ . Water running into a waterwheel, or air flowing through a windmill, is needed for the wheels to move or do work. The faster these wheels turn, the greater their energy. Each turn is called a revolution. The number of revolutions per minute (RPM) tells you how hard the wind is blowing or how fast the water is flowing through the wheels.

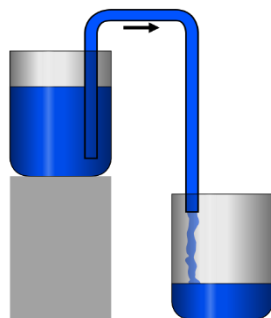
Any invention that takes the hard work off “us” and puts it onto a machine or tool is considered progress. Since water is heavy and difficult to transport, early cities were located near water sources. Wells, aqueducts, or canals made it possible to inhabit regions further away from water sources.

### TIMELINE/Introduction (History): After the Flood

**2000-1000 BC** Egyptian Siphons, Sundial, (Gravity) Waterwheels BC Water towers (Tower of Babel/Pyramids and Ziggurats to Abraham)

Near the end of the Bronze Age, people recognized the power of gravity, water, and wind to do work. It was apparent that water flows downward. Wheels were utilized to elevate water or to rotate shafts.

### EARLY INVENTIONS:



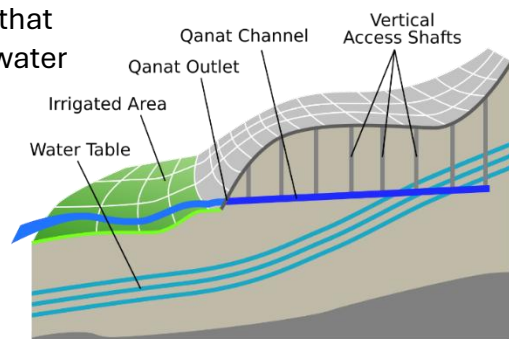
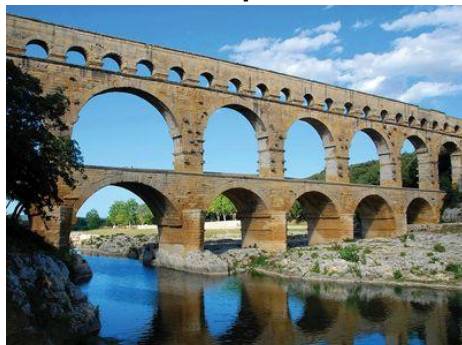
**Aqueducts** – water channels/canals above ground

**Qanat** – pipes underground connecting with gravity-driven water

**Siphons** – a tube used to bring fluids upward, by removing constraints (priming or removing air), draining downward to a lower level

**Waterwheels** – a water device that taps into the energy of moving water by means of paddles or temporary containers.

### Roman Aqueducts



### Persian Qanats

Around 2000 BC, God sent Abram out the promised land. Our nation owes its foundations, laws, and understanding of right and wrong to the Hebrew nation called out by God to be a BLESSING to the world.



**GENESIS 12:2-3** *I will make you into a great nation, and I will bless you; I will make your name great, and you will be a blessing. I will bless those who bless you, and whoever curses you I will curse; and all peoples on earth will be blessed through you.*

**EQUIPPED/Science Principle:**

**Harnessing resources takes ingenuity.**



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For example, this image contains: a) an oxen team turning a long rod; b) rotating another rod or axle, attached to a wheel, c) dipping containers in and out of a stream to lift water; d) dumping the water into an aqueduct or water canal. **WORK DONE!** The water will flow downward to reach its destination. Because the wheel lifts the water, the water has gained potential energy to do work.

**WORK** – the transfer of energy to or from an object via application of force,  
**Work = Force (F) x (d) Distance**

Work moves things over a distance. If you think about it, a world with no motion or forces is like a photo. Nothing moves. That would be a very boring world. Thankfully, this is not the world in which God placed us to live. Motion is key.

**GEAR-UP/Practical Illustration:**

**Energy and work are measured with the same units.**

However, the amount of energy needed to do the work is often greater than the amount of work done. Energy is often lost due to friction, resistance, transfer, or waste.

#### **EXPERIMENT: Kinetic and Potential Energy**

This experiment shows water's ability to do work. Calories are the original source of energy for you to "lift" the water and the tube.



**SUPPLIES:** water, measuring cup, wrapping paper tube, cellophane (tape if desired), bottle cap, towel, and oyster crackers.

Determine the distance 10 to 50 mL of flowing water can move an oyster cracker. Start with 10 mL (or an ounce), then continue adding more water as needed to travel the full distance.

- STEP ONE: Create a trough (using a cardboard tube from wrapping paper). Cut in half lengthwise.
- STEP TWO: Mark a start position for an oyster cracker ~5 centimeters in from the start. Mark out 1 decimeter increments from start to the end of the tube.
- STEP THREE: Line the tube with cellophane. Place the tube on a towel with a bottle cap to elevate it. (Measure angle if possible.)
- STEP FOUR: Set the oyster cracker on the start position.
- STEP FIVE: Pour the water into the tube in the first 5 centimeters location.
- STEP SIX: Measure the distance between the start and the finishing location.

Lifting Water transfers kinetic energy from you to the higher water (**potential energy** until it is poured). Once the water is poured, the moving water has **kinetic energy**. Flowing water does work as gravity pulls it downward. The faster the **RPM's** are, the greater the work.

#### **GOT-IT/Apologetics:**

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**1 Timothy 4:7** *I have fought the good fight, I have finished the race, I have kept the faith.*

Sometimes we have to fight to win. When scientists have: 1) A bias against Supernatural causes (God); 2) A belief that simple things evolved into complex things; 3) A “name it and claim it” idea. That is, if science can “name it,” science owns it, not God. Rather than crediting God for nature or human reasoning, some scientists think their discovery or know of it means it belongs to them. Knowledge apart from God is foolishness; therefore, science without God can become foolishness. Science belongs to people of faith as well as non-believers.



God put matter and energy into our universe in the beginning for us to use. Even though we need to learn how to do things, or what things are, we are not the owners or masters of nature. We need to thank God and give Him glory, not science, for all the things He made and does.

#### **REFLECTION/Devotion:**

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**John 14:6** *Jesus answered, "I am the way and the truth and the life. No one comes to the Father except through me."*

God revealed in His Word, first to the Jews then to Christians. Those who see “TRUTH,” will know the Lord and be set free. They will also know the way to our Father in heaven. Our lives should mirror the heroes of faith who trusted what God said and obeyed. His Word is to be believed. His truth is what will save us, what will lead us on the right path, and what will give us a future. We may not know what our future holds, but we know who holds the future.

**John 8:32** *Then you will know the truth, and the truth will set you free.*

## REMEMBER THESE THINGS/Devotion:

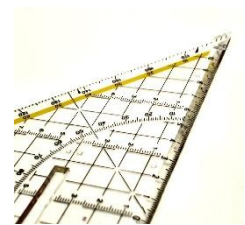
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"Wheels make the world go round" is a saying that means: there is **something** so important and essential that even ordinary things wouldn't happen without it. Think of all the ways our lives would be different without wheels. Then, consider how important brakes or anchors are! A runaway train, an unanchored ship, or a spinning wheel that breaks free... "Jesus take the wheel," is a song that calls for God to take both our anchor and our forward motion in His hands. There's no better place for Him to be than "at the wheel" of our own life.

**John 16:13a** *But when he, the Spirit of truth, comes, he will guide you into all the truth.*

Going the distance requires energy, perseverance, running as if to win, staying on course, and trusting the plan God lays out for you. Abraham had to travel to a distant land to be at the crossroads of the world, to be a blessing to all nations. He had no idea "how" he would accomplish God's plan, he only knew he should trust and "GO."



**Jeremiah 29:11** *For I know the plans I have for you," declares the Lord, "plans to prosper you and not to harm you, plans to give you hope and a future.*