GOD IS

TRUTH

Electricity

Year 7

Term 4

Thinking Skills Truth Yr 7

Energy sources 1 Draw a solar panel. Now redesign it by using the following steps: **B** – igger **I** – instead of **N** – onsense **G** – et rid of **O** – ther uses	**Energy sources 2** Brainstorm 10 innovative ways of encouraging people to use public transport more often.
Energy sources 3 Design a new product by combining a **hovercraft** with a **water pistol.**	**Energy sources 4** **What if the world petrol supplies ran out?** Give 10 different consequences.
Energy sources 5 Electrical energy is an example of God's power in creation. Write an acrostic poem for: **POWERFUL**	**Energy sources 6** Name 10 materials that are **not** used in the construction of a motor vehicle.

Thinking Skills Truth Yr 7

Energy sources 7 Only solar-powered cars should be allowed on the roads. Give 3 good points and 3 bad points for this proposal.	**Energy sources 8** The answer is **"wind".** Give 5 possible questions.
Energy sources 9 Construct a device that can travel at least 10 metres along the ground by using: •A mousetrap •The wheelbase of a toy car •6 rubber bands •One optional piece of equipment	**Energy sources 10** Name 5 things that a **balloon** and a **steering wheel** have in common.
Energy sources 11 What will be the most important form of public transport in 100 years from now? Illustrate your ideas.	**Energy sources 12** Name 4 disadvantages of electric power lines. Now work out an improvement for each of these disadvantages.

Thomas Edison

Biography

Born: 1847 in Ohio, USA
Died: 1931

Best known for: Inventing many useful items including the phonograph and a practical light bulb

Thomas Edison may be the greatest inventor in history. He has over 1000 patents in his name. Many of his inventions still have a major effect on our lives today. Many of his inventions were group efforts in his large invention laboratory where he had many people working for him to help develop, build, and test his inventions.

Childhood
Surprisingly, he did not do well in school and ended up being home schooled by his mother. Thomas was an enterprising young man, selling vegetables, sweets and newspapers on trains. One day he saved a child from a runaway train. The child's father repaid Edison by training him as a telegraph operator. As a telegraph operator, Thomas became interested in communications, which would be the focus of many of his inventions. He set up his first lab in his parent's basement at the age of 10.

Menio Park
This was the place where Thomas set up his inventing business. He and other scientists would do research and then apply the discoveries to useful things that could be manufactured and built on a large scale. There were a lot of employees working for Edison at Menlo Park. These workers were inventors, too, and did a lot of work on Edison's ideas to help turn them into inventions.

Three of his most famous inventions were:

1. The Phonograph - This was the first major invention by Edison and made him famous. It was the first machine that was able to record and playback sound. He said the words to "Mary had a little lamb" as the first recorded voice on the phonograph.

2. Light Bulb - Although he did not invent the first electric light, Edison made the first practical electric light bulb that could be manufactured and used in the home. He also invented other items that were needed make the light bulb practical for use in homes including safety fuses and off/off switches for light sockets.

3. The Motion Picture - Edison did a lot of work in creating the motion picture camera and helping move forward the progress of practical movies.

http://www.ducksters.com/biography/thomas_edison.php

William Tyndale (1494-1596)

Biography

It is hard for us today to imagine not having a Bible in our own language, but it hasn't always been that way. When William Tyndale was a little boy growing up in England in the 1500s, ordinary people did not own Bibles. They had to go to church to hear what the Bible had to say. But there was one problem--the priest read the Bible in Latin, a language only the most educated people could understand.

As William Tyndale grew older and finished college, he felt that God was calling him to translate the Bible into English so that all people could read it for themselves. But--believe it or not--translating the Bible was against the law. Like many others during his time, William Tyndale was called a false teacher and was put to death for his beliefs. Based on historical sources, this is his story as he might have told it.

Growing up in England

“I grew up on a farm in Gloucestershire, England. Life was very difficult for English families. Children worked very hard to help their parents. Disease and famine often killed thousands at a time.

My parents could tell early in my life that I had a gift for learning languages. I was able to go to Oxford University, one of England's finest schools. By the time I graduated, I had mastered SEVEN languages! Of them, Hebrew and Greek were most useful to me, because I could now read the Bible in its original languages.

I learned so much about God as I read the Bible for myself! I knew I had to use the gift God had given me so that others could read the Bible for themselves, too! I was well aware that translating the Scriptures was against the law and could cost me my life, but how could I not do what God was calling me to do?

Church and King Try to Keep Me Quiet

At first I asked the Church authorities for permission to translate the Bible into English. The answer was no. The Church believed that only the Pope and priests were educated enough to truly understand and interpret the Bible.

One day a discussion with a priest became a heated argument when he told me that it was better to be without God's laws than the Pope's. I could not believe what I was hearing! I answered him by saying, "I defy the Pope and all his laws; if God spares my life, I will cause a young farm boy to know more of the Scriptures than you do."

I also did not agree with the Church's teaching that doing good things was the way to get to heaven. The Bible clearly says that salvation is a free gift from God for those who believe. Many in the Catholic Church and also the King of England, Henry VIII, looked for ways to keep me quiet.

Hiding from Spies

I knew I must leave England immediately. I secretly traveled to Germany, where others had also taken a stand against some of the Church's teachings. When I arrived, I quickly changed my name--so no one would be able to find me--and began my work.

Translating the Bible into English was a difficult job. Each word had to be recorded correctly. The language also had to be simple enough for even an uneducated person to understand. It took more than a year for me to complete the New Testament translation.

I had to find a good printer whom I could also trust to keep my whereabouts secret. I could not risk being caught. English spies would be paid well to turn me in. One spy eventually did find out where the first printing was taking place. I narrowly escaped capture, getting away just in time with some of my materials!

The English Bible on English Soil

Once the printing was completed, copies had to get into England without being seized. Smugglers hid the Bibles in shipments where no one expected them: in flour barrels, in trunks with false bottoms, and in airtight boxes inside wine barrels.

The Bibles sold as quickly as they reached England, even though one cost about half a week's earnings (over $100 in today's dollars). Families saved and put their money together, and a farmer would trade an entire load of hay to get just one Bible. Groups would meet together to hear the Word of God for the first time in their own language.

The religious leaders and the King were furious! They tried to destroy as many copies as they could. They also intensified their search to find and arrest me.

A "Friend" Turns Me Over to Killers

I had begun to feel quite safe in Germany. I had also become somewhat of a celebrity. But I let nothing get in the way of completing my task. I worked late every night translating several books of the Old Testament.

One day I met a young Englishman in Germany who seemed to share my ideas about the need to translate the Bible. Over time we became good friends. What I didn't know was that this young man was a spy who would soon betray me. He led me right into the hands of my captors, after inviting me out for a meal. I was jailed, charged with heresy (false teaching), and sentenced to death by burning.

PostScript

The last thing we know about William Tyndale is that he was led through a crowd into the public square. A noose was placed around his neck. His last words were, "God, please open the King of England's eyes." He was then hanged and his body was set on fire.

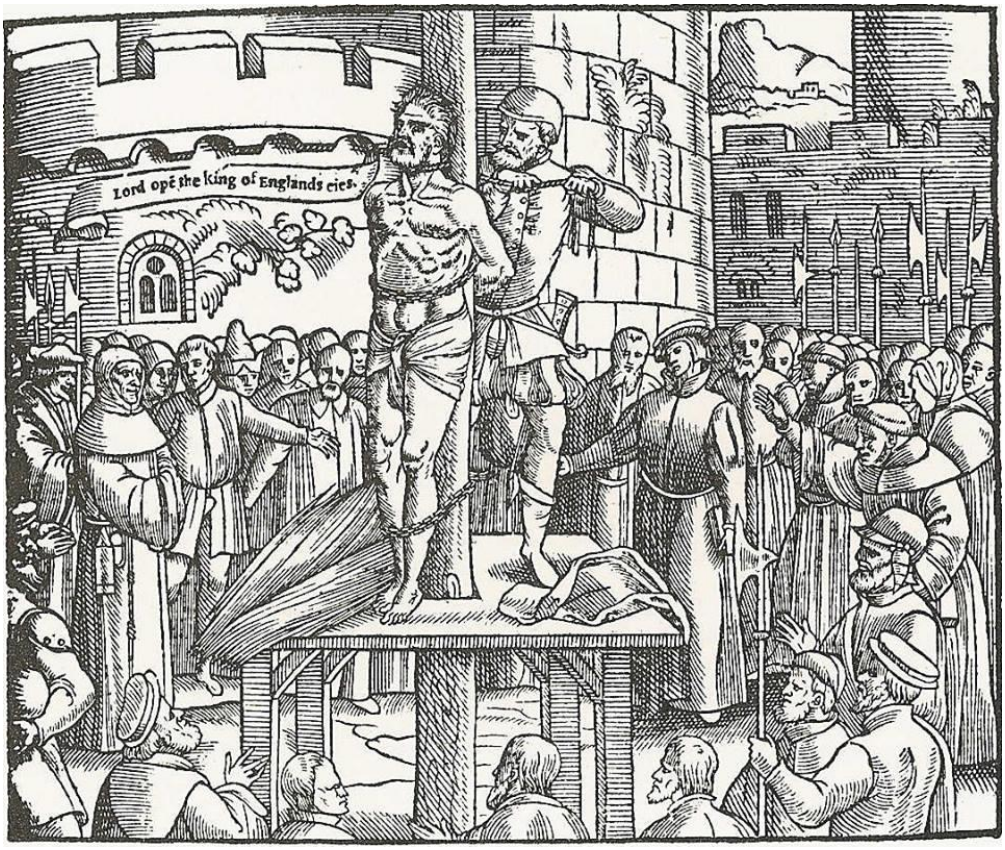
God answered his prayer in a wonderful way. Within one year of William Tyndale's death, the King of England gave approval for an English Bible to be published. Tyndale's Bible was

used as a guide for the new translation. This new translation is the father of the King James Bible that is still read today.

Questions

1. William Tyndale had a talent for learning languages. Instead of burying his talent, he worked hard to develop it and use it for God. What talent has God given you? What can you do to develop your talent and use it for God's glory?
2. It seems strange that some people in the 1500s thought the Pope's law could be more important than God's law. Can you think of a time when you have had to choose between following God's laws and following man-made laws? What did you do?

https://www.christianity.com/church/church-history/church-history-for-kids/william-tyndale-gods-outlaw-11634865.html



Electricity 1
Safety with electricity

Student activities

We plug into electricity in our homes, school and other
Buildings. This electricity has a high *voltage.* This means that it is a very high source of power and heat. If the electricity touches us directly we receive an electric shock which can kill people. It can cause serious burns and stop the heart.

It is dangerous to have electrical devices around water. Electricity travels through water and most other liquids. If a liquid is spilled near an electrical outlet or a device that is plugged in, the electricity can flow through the liquid and shock a person.

Old, damaged electrical cords dangerous! The wires inside electrical cords are covered with a plastic material which protects us. If the wire is exposed it can cause a shock or spark. The sparks from the wire may cause a fire.

Why is it dangerous to:

1. Poke a knife into a toaster when it is going?
2. Poke a nail into an electrical wall socket power point)?
3. Fly a kite near power lines?
4. Hit a nail into a wall near a light switch?
5. Use a hair dryer while you are in the bath?
6. Dry a wet piece of clothing on an electric light?
7. Use cords that have exposed wires.
8. Touch the prongs on an electrical plug while you are pulling it out from the wall.
9. What kind of accident could happen with a toddlers and electricity?

Electricity 2
What is electricity?

Electricity is a source of power that humans can use. It is part of God's creation. God provided us with electricity when He made the world for us to live in. Electricity can be seen in nature in the form of lightning. Electricity is energy.

Energy makes something work. It makes things move, heat up, or light up.

Here are some sources of energy:

- Fossil Fuels - Coal, Oil and Natural Gas
- Water (hydro) Power and Ocean Energy
- Nuclear Energy
- Solar Energy from the sun
- Wind Energy

People have learned how to take these natural forms of energy and convert them into electrical energy. Energy is produced by these fuels in power stations. The electricity goes along wires from the power station to our homes.

Everything in the universe is made of atoms. These are too tiny to see. In the atoms are little components called electrons. They can travel along a wire to produce electricity.

1. What do we use electricity for?
2. When can electricity be seen in nature?
3. What fuel sources can be used by power stations to make our electricity?

Electricity 3
Renewable and non- renewable energy

We need energy for heat, light, transport, cooking and electrical appliances.

Electricity has to be produced in power stations and sent along wires to our homes and cities. The electricity can be produced from renewable or non-renewable sources of energy.

Renewable means that if is always available and does not run out.
Non-renewable means that it will run out if we keep using it.

Non-renewable sources: Coal, gas and oil.
Power stations burn these fuels to make electricity. These fuels are called fossil fuels because they are made up of dead and decayed plants that have been buried for thousands of years. Once they are taken from the ground they are used for fuel. It would take thousands more years to replace them. The burning of these fuels also causes pollution.

Renewable sources:
Waterwheels get energy from rivers.
We can get solar energy from the sun.
We can get energy from wind.

These can be quickly replaced.

1. *How does electricity get to our homes and cities?*
2. *What is non-renewable energy? List some sources.*
3. *What is renewable energy. List some sources.*
4. *Why is it better to use renewable sources of energy?*

Electricity 4
Static electricity

Static electricity is stored electricity. It can be stored in objects. People and the clouds.

In a storm, static electricity sometimes builds up in the clouds This can give us thunder and lightning.

Rubbing a piece of plastic, like a plastic ruler or comb, can charge it with a type of electricity.

This is called static electricity, on *non-moving* electricity.

Experiment:
(Experiments with static electricity work best on a dry day.)

Rub a plastic ruler, pen or comb with a piece of fabric. Wool works best. Rub about 20 times.
Bring it close to some small bits of paper.
Now bring it close to someone's hair.

1. *What happened?*
2. *Static electricity is also called _____ electricity.*
3. *When you rub a plastic ruler on fabric you _____ it with electricity.*

Electricity 5
Conductors and insulators

Electricity will travel through some things very well. These are called *conductors*. Other things will not conduct electricity. These are called *insulators*.

With your teacher, join up a battery and bulb with wires. Test some different materials and see which ones the electricity will travel through. These are the conductors. The bulb will light up. The insulators will not allow the electricity to pass through. The bulb will not light up.

Here are some things to try: rubber, plastic, an iron nail, wood, copper, aluminium foil, glass, paper, a cup or pottery. You will think of other things.

Make two lists: conductors and insulators.

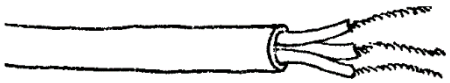
Insulators can stop us getting an electrical shock.
What insulating material is used around wires in an electrical cord?

Your body is a conductor of electricity. This is why it is very dangerous to fool around with electricity.

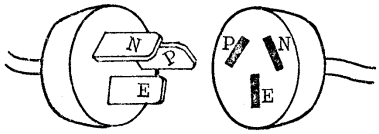
Electricity 6
Three-pin plugs

Every day you plug something into the main electricity supply. You use a 3-pin plug to do this. These plugs are wired up in a special way. You can get a shock if your plug is not correctly wired.

Inside the lead:



Inside the plug:



The wires in the lead must be connected to the three pins in this way:
The brown wire goes to the letter “P” (Phase).
The blue wire goes to the letter “N” (Neutral)
The green/yellow wire goes to the letter “E” (Earth).

1. *If you need to repair an electrical fault, or put in a new power point in your home, who should you employ to do the job?*
2. *What could happen if the wires were not connected correctly to the 3-pin plug?*

Some plugs have only two pins. The “E” pin is missing. These plugs are not as safe as three-pin plugs.

Electricity 7
History of electricity

The electric light bulb was not discovered until 1879.

After many experiments, Thomas Edison (U.S.A.) invented a light bulb that could be used for about 40 hours without burning out. By 1880, his bulbs could be used for 1,200 hours.

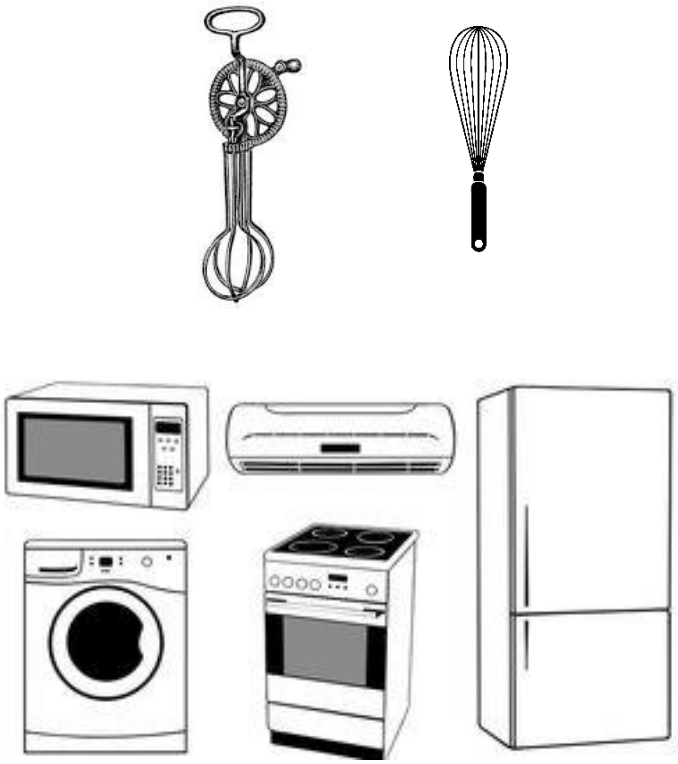
In 1882 Thomas Edison opened a power station in New York City. The power station was one of the world's first central electric power plants and could power 5,000 lights.

1. *What did people use for light before the light bulb was invented?*
2. *How did people cook without electricity?*
3. *What do you consider to be the most important uses of electricity today?*
4. *Write a description of how your family would live if there was no electricity.*

Electricity 8
What did we do without electricity?

Make a table to show the appliances used today, who uses it, and how the job used to be done before had electricity in our homes.

Appliance	Who uses	How it used to be done



Electricity 9
Electricity in the home

Make a list of all the things in your home that use electricity.
Think about hearing, cooling, lighting, appliances and entertainment. Make a table and show which things use the mains power and which things use batteries.

Remember that things that operate by battery are still using electricity. Batteries contain stored electricity.

Appliance	Mains or battery	Who uses it

Electricity 10
Let’s not waste electricity

Electricity is an important part of our lives. It costs money to produce. It also uses resources to make. Some people have a habit of using much more electricity than they need to.

Explain why the following things waste electricity:

- Don’t leave lights on when you leave a room.
- Don’t use air conditioning when you could use a fan.
- Don’t leave the fridge door open.
- Don’t put hot things in the fridge.
- Don’t have long hot showers
- Don’t leave the TV on if no one is watching it.
- Don’t iron your clothes unless you really need to.
- Don’t allow hot taps to drip.

Make a poster telling people not to waste electricity. As well as using words, include at least 5 pictures to explain.