

تم تحميل هذا الملف من موقع المناهج الإماراتية



الملف ملخص درس أنواع الطاقة Energy of Types

موقع المناهج ← المناهج الإماراتية ← الصف الرابع ← علوم ← الفصل الثاني

روابط مواقع التواصل الاجتماعي بحسب الصف الرابع



روابط مواد الصف الرابع على تلغرام

[الرياضيات](#)

[اللغة الانجليزية](#)

[اللغة العربية](#)

[التربية الاسلامية](#)

المزيد من الملفات بحسب الصف الرابع والمادة علوم في الفصل الثاني

كل ما يخص الاختبار التكويني لمادة العلوم للصف الرابع يوم الثلاثاء 11/2/2020	1
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LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

LESSON 1 SUMMARY TYPES OF ENERGY

What is energy? _the ability to do work

energy	Definition	Example
Kinetic Energy	Movement energy	Running, walking, riding a bicycle
Potential energy	Energy that is stored in an object	Battery
Chemical energy	Energy that is stored in atoms and molecules	Burning wood, food that gives you energy
Nuclear Energy (atomic energy)	Energy that is released when the links between particles are broken	Sun, an explosion
Light Energy	Energy that we can see	Sun, stars
Electrical Energy	Energy that travels through a circuit- wires	circuits
Thermal Energy	Energy that is produced by moving particles	Heat
Sound Energy	Energy produced by vibrations	Radio, music, clapping

Examples of Chemical Energy



Coal



Wood



Food



Petrol



Propane



Photosynthesis

chemicalenergy.net

Examples of Potential Energy:

Stretching a rubber band..

- Stores energy



Water at the top of a waterfall..

- Stores energy

Yo-Yo in held in your hand..

-Stores energy because of position



Drawing a Bow...

-Stores energy because of position

LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

TYPES OF ENERGY LESSON SUMMARY

SOUND ENERGY

sound wave

a wave that transfers energy through a material and spreads outward in all directions from a vibration

موج صوت موجة تنقل الطاقة من خلال مادة وتنتشرها للخارج في جميع الاتجاهات من اهتزاز

Vibration

اهتزاز حركة الجسم للخلف والأمام

Medium

a substance through which waves travel

وسيط مادة تنتقل خلالها الموجات

longitudinal wave

a wave vibrating in the same direction that the energy moves

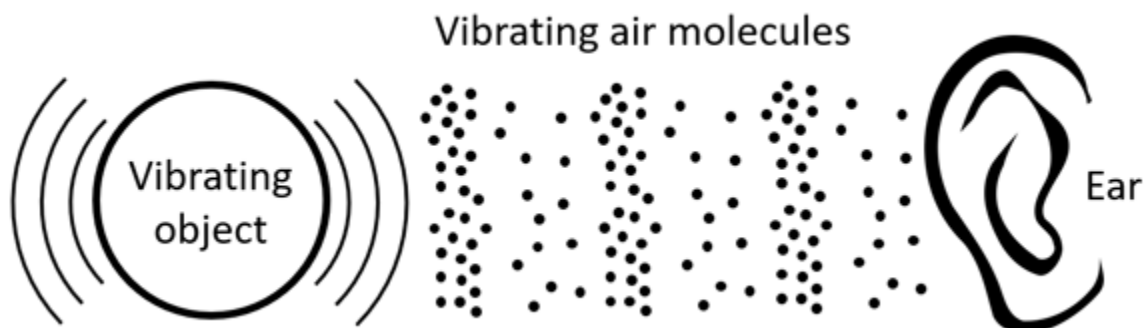
موج قطو قیل موجة تهتز في نفس الاتجاه الذي تتحرك فيه الطاقة

IMPORTANT-

Longitudinal waves can travel through solids, liquids and gases

Transverse wave can ONLY TRAVEL THROUGH SOLIDS

Sound CANNOT travel in space



LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

TYPES OF ENERGY LESSON SUMMARY LIGHT ENERGY

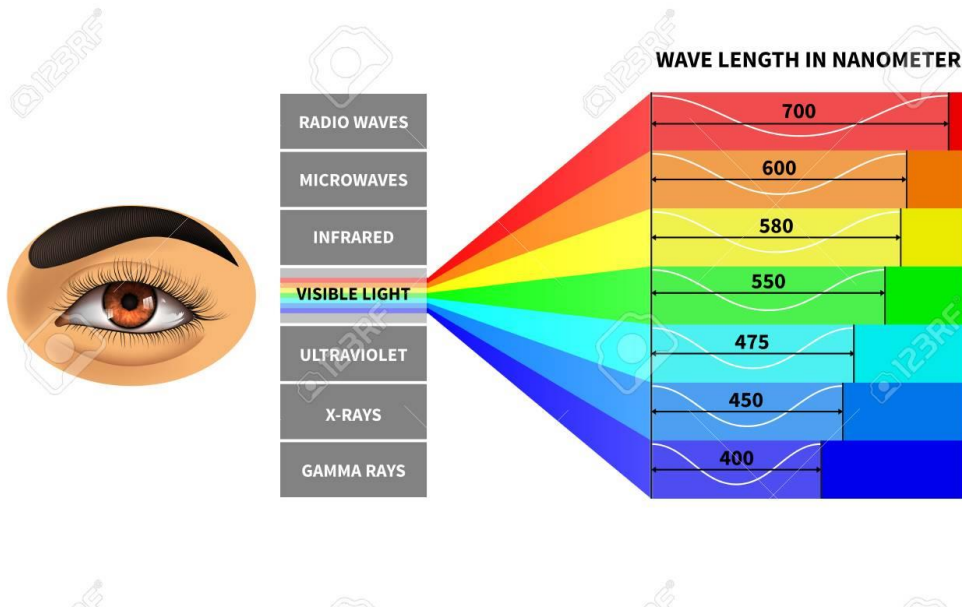
solar cell

a device that uses light from the sun to produce electricity

خ فيلشم ةيس جهاز يستخدم ضوء الشمس لإنتاج

الكهرباء

- Light does not need a medium to travel
- Light can transfer energy- When you stand outside you can feel the Sun on your face
- Solar cells are also called photovoltaic cell
- Different forms of radiation all together are known as the ELECTROMAGNETIC SPECTRUM
- **Human beings can only see the VISIBLE LIGHT** on the electromagnetic spectrum



LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

TYPES OF ENERGY LESSON SUMMARY ELECTRICITY

electric current

_a flow of electricity through a conductor

تيار كه براني تدفق الكهرباء عبر موصّل للكهرباء

Circuit

_a path through which electric current can flow

ادرة مسار يمكن للتيار الكهربائي التدفق خلاله

Conductor

a material through which electricity flows easily

موصّل مادة تتدفق الكهرباء خلالها بسهولة

Insulator

_a material that slows or stops the flow of energy, such as electricity or sound

عازل مادة تمنع أو تُبطئ من تدفق الطاقة، مثل الكهرباء

أو الصوت

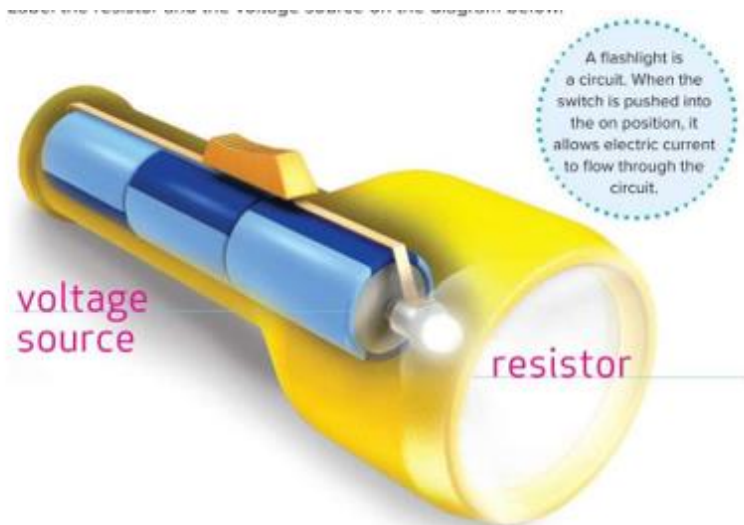
Resistor

_an object that resists the flow of energy in an electrical circuit

مقاوم جسم يقاوم تدفق الطاقة في دارة كهربائية

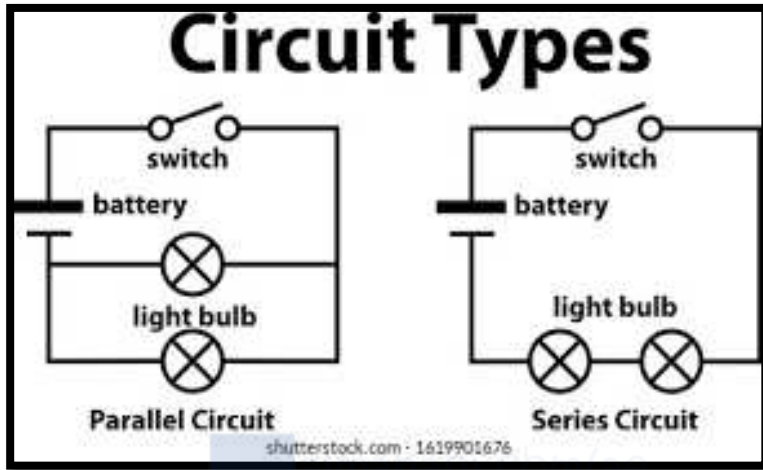
Switch

A device that opens and closes a circuit- Switching lights on and off



LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

READ A CIRCUIT SUMMARY AND TYPES OF CIRCUITS



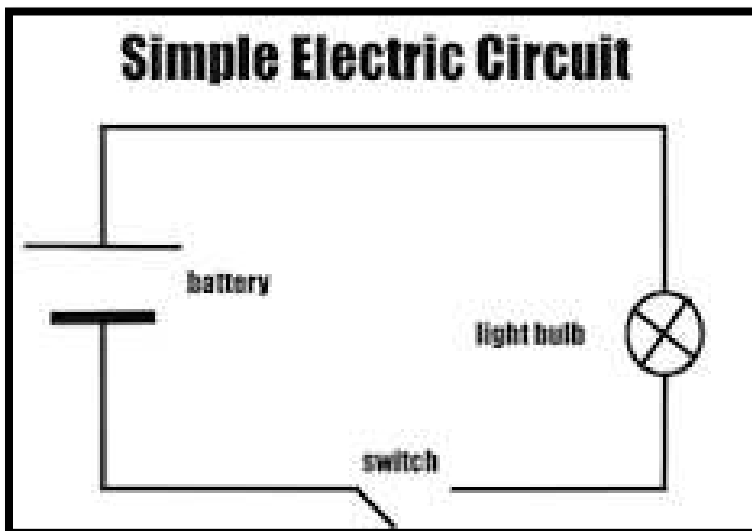
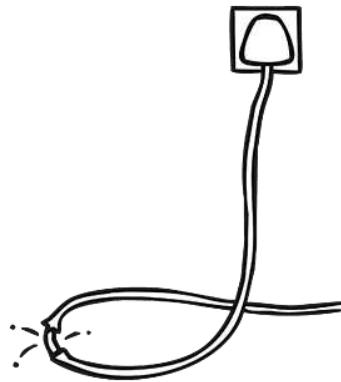
SERIES CIRCUIT: Only goes through one path- If one lightbulb goes out all will go out

PARALELL CIRCUIT: If one bulb goes out, the others WILL NOT GO OUT

Your home has parallel circuits

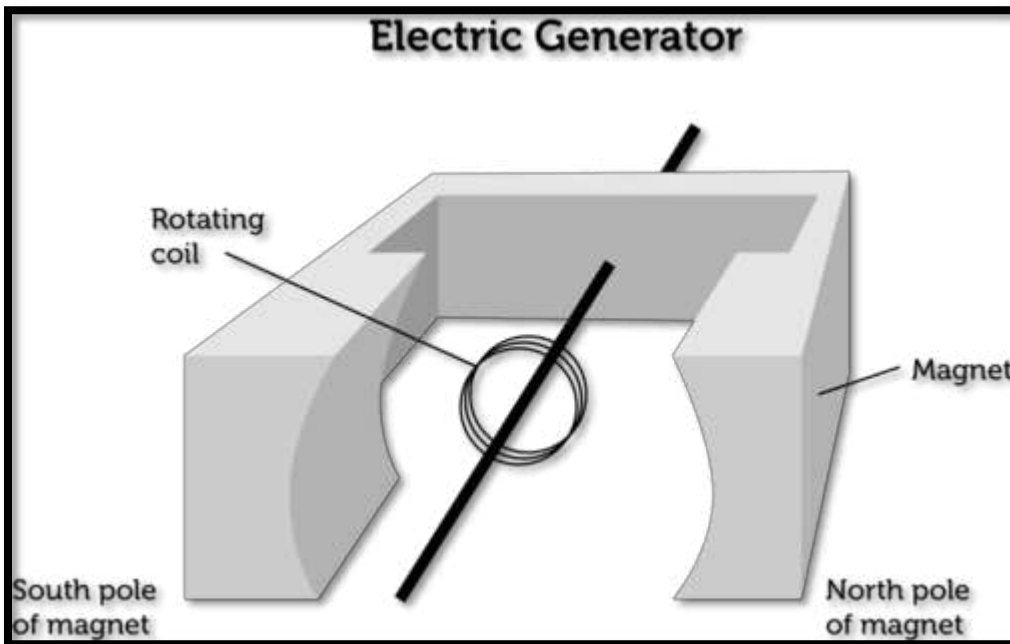
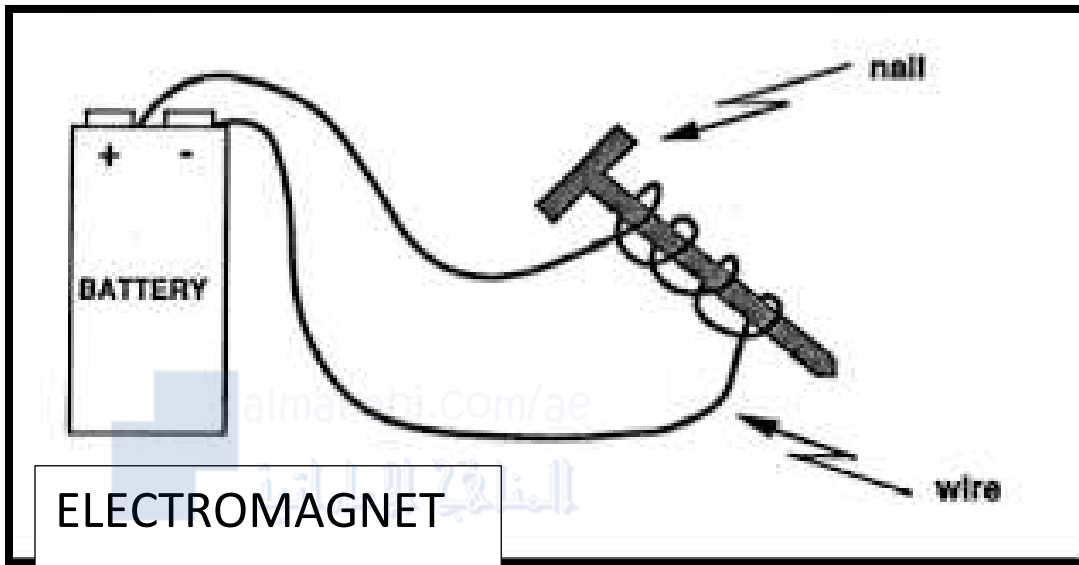
SHORT CIRCUIT- has little or no resistance- It can cause fires and damage appliances

Frayed wires cause short circuits



LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

CLOSED READING SUMMARY- ELECTROMAGNETS AND GENERATORS

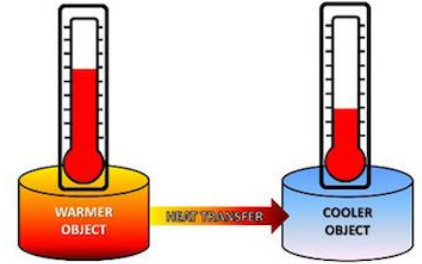


LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

LESSON SUMMARY -HEAT

IMPORTANT

Heat always moves from a warmer object to a cooler object



Heat

the movement of energy from a warmer object to a cooler object

سخونة انتقال الطاقة من جسم أكثر دفئًا إلى جسم أكثر برودة

Conduction

_the transfer of energy between two objects that are touching

توصيل انتقال الطاقة بين جسمين متلامسين

Convection

_the transfer of energy in moving gases or liquid, such as warm air rising above a heater

حَمَل ح ارري انتقال الطاقة الحرارية عن طريق تدفق الغازات أو السوائل، مثل صعود الهواء الدافئ من المدفأة

Radiation

energy that comes from a source in the form of waves or particles

إشعاع شكل من أشكال الطاقة يأتي من مصدر في شكل موجات أو جسيمات

conduction

convection

radiation



LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

LESSON SUMMARY PRODUCING THERMAL ENERGY

- Rubbing your hands together produces thermal energy
- Kinetic energy- your hands moving – changes into thermal energy- you can feel your hands getting hotter
- Burning Something creates thermal energy- when wood burns in a fire it gives off heat.
The chemical energy in wood turns into thermal energy



LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

LESSON SUMMARY ENERGY FROM NON-RENEWABLE RESOURCES

natural resource

_something that is found in nature and is valuable to humans

مُور دطب عيي شيء يوجد في الطبيعة وذو قيمة كبيرة بالنسبة للبشر

nonrenewable resource

a natural material or source of energy that is useful to people and cannot be replaced easily

مُور دغ م ريتجدد مادة طبيعية أو مصدر طبيعي للطاقة مفيد للبشر ولا يمكن استبداله بسهولة

fossil fuel

_a source of energy made from the remains of ancient, once-living things

وقو دأحفوري مصدر من مصادر الطاقة يتكوّن نتيجة تحلل بقايا الكائنات الحيّة القديمة

- Natural Resources can be living or non-living

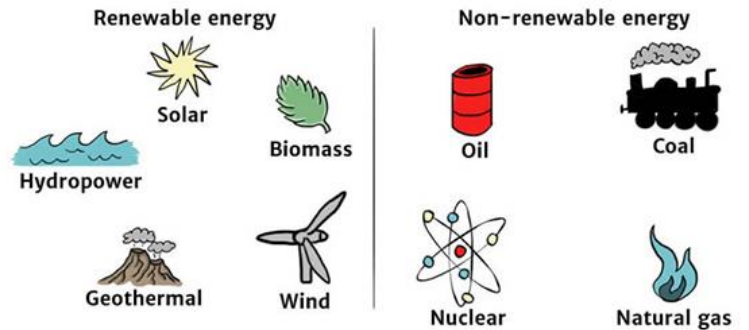
Natural Resources	
LIVING	NON-LIVING
Animals	Air
plants	Water
	Sunlight
	Soil
	rocks
	Minerals

- Natural Resources are divided into 2 groups:
- RENEWABLE RESOURCES
- NON-RENEWABLE RESOURCES
- Non-renewable resources cannot be easily replaced

FOSSILS FUELS

- Coal
- Oil- also called petroleum
- Natural Gas

Renewable and Non-Renewable Energy Sources



LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

LESSON SUMMARY ENERGY FROM RENEWABLE RESOURCES

renewable resource

a useful material that is replaced quickly in nature

مؤر م تـتـجـدـد مـادـة مـفـيـدة تُسـتـبـدـل بـصـورـة سـرـيـعـة طـبـيـعـيـاً

alternative energy source

a source of energy other than the burning of a fossil fuel

مـصـدـر طـاق ب دـيـل مـصـدـر لـلـطـاقـة بـخـلاف حـرق الـوقـود

solar power

power obtained from solar energy to generate electricity using solar cells

لـاطـاق لـا تـشـم قـيـس الطـاقـة المـأخـوذـة مـن طـاقـة الشـمس

لـتـولـيـد الكـهـربـاء بـاسـتـخـدـام الخـلايا الشـمـسيـة

geothermal energy

energy obtained from Earth's interior

لـاطـاق اة لـأرض لـا تـيـح ارضـيـة الطـاقـة الـتي يـمـكـن الحـصـول

عـلـيـها مـن داخـل الأرض

hydroelectricity

electricity produced by waterpower

لـاكـه بـراء لـا هـيـدرو يـلك ةي الكـهـربـاء النـاتـجـة عـن طـاقـة المـيـاه

Renewable

Solar



Wind



Hydro



Biomass



- A renewable resource can be quickly replaced
- Water, wind, Sunlight, plants and animals are renewable resources
- Biomass- Comes from living or formerly living material
- Solar Power comes from the Sun
- Geothermal Energy- comes from inside the Earth
- Hydropower- Energy that comes from moving water
- Hydroelectricity-Electricity produced by water power
- Wind Energy- comes from the wind

LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

LESSON SUMMARY IMPACT OF ENERGY USE

<p><u>conservation</u> the act of saving, protecting, or using resources wisely صون عملية الحفاظ على الموارد أو حمايتها أو الاستخدام الرشيد لها</p>	<p><u>Pollution</u> any harmful substance that affects Earth's land, air, or water تلوث أي مادة ضارة تؤثر على اليابسة أو الهواء أو الماء بالأرض</p>
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BIG QUESTION: What are some negative (bad) effects of obtaining energy

resources?

- Burning fossil fuels causes air pollution
- HABITAT LOSS- Animals can lose their homes because of drilling, mining and cutting trees
- Building dams can prevent some fish from migrating- (moving to another place)
- Wind turbines can affect the habitat of birds
- Birds can get hurt or killed when they fly into the blades of wind turbines

LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

LESSON SUMMARY CONSERVATION

conservation

the act of saving, protecting, or using resources wisely

صون عملية الحفاظ على الموارد أو حمايتها أو الاستخدام الرشيد لها









BIG QUESTION: How can we conserve energy?

REDUCE- means to use less of something

REUSE- something that can be used more than once

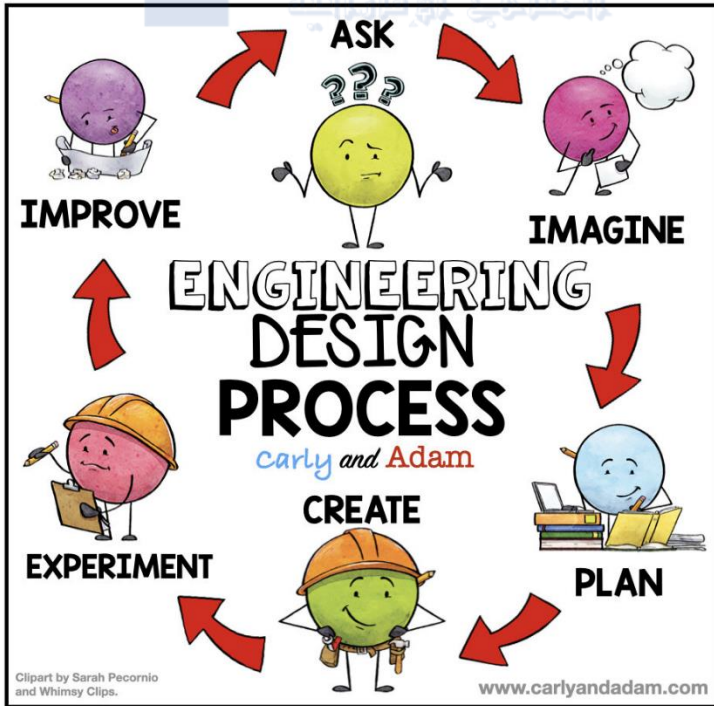
RECYCLE- To make an item into a new product

Guidelines for Energy Conservation	
 <p>Turn off the lights when you leave the room.</p>	 <p>Turn off hot water when you aren't using it.</p>
 <p>Turn off electronic equipment when you aren't using it.</p>	 <p>Carpool or use public transportation whenever you can.</p>
 <p>Use water-conserving showerheads and take shorter showers.</p>	 <p>Turn the heat or air conditioning down when you are not home. Insulate windows and doors to prevent heat loss.</p>

LESSON SUMMARIES TERM 2 GRADE 4 USING ENERGY

LESSON SUMMARY DESIGN ENERGY SOLUTIONS

<p><u>Constraint</u> something that limits or restricts someone or something قيّد شيء ما يحدُّ أو يقيد شخصًا أو شيئًا ما</p>	<p><u>criteria</u> standards on which a judgment or decision may be based عماي ري مبادئ قد يستند إليها حكمٌ أو قرارٌ</p>
<p><u>design process</u> a series of steps that engineers follow to come up with a solution to a problem عم لا ةيلتصميم سلسلة من الخطوات يتبعها المهندسون للوصول إلى حلٍّ لمشكلة ما</p>	<p><u>Prototype</u> an original or first model of something from which other forms are copied or developed نموذج أولي نموذج أصلي أو أولي لشيء ما يجري نسخ أو تطوير نماذج أخرى منه</p>



Engineers use the design process to create a solution to a problem