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HEALTH

Bone Loss in Space

recent study found that spending six months in space can cause astronaut bones to become weaker. The study tracked astronauts who lived and worked in the International Space Station (ISS).

The ISS is located in low Earth orbit where there is very little gravity. It is why you see astronauts in the ISS seeming to float in mid-air. It looks like fun, but there are consequences to the **microgravity** environment.

Leigh Gabel is an exercise scientist at the University of Calgary. She was part of the team studying astronaut bones. She points out that our bones are constantly changing: old bone breaks down so new bone can take its place. From childhood to young adulthood, our bones are constantly growing. However, our bones can start to deteriorate, particularly in old age.

One way to prevent bone loss is exercise. Exercise triggers the body to build up our bones so they are stronger. Earth's gravity actually forces us to exercise. Simply standing and walking around exerts pressure on our bones, but in space, that pressure is gone.

For the study, scientists took **computed tomography** images of the bones of 17 astronauts who spent between four and seven months in space. The images allowed scientists to measure the **bone density** of the tibia (a bone in the leg) and the radius (a bone in the arm).

The researchers took images of the bones four times: once just before the astronaut went into space, once when they returned to Earth, and six months and one year after their return.

They found that astronauts experienced losses in bone density in their tibias. The bone loss was more severe the more time the astronaut spent in space. Astronauts who spent less than six months in space were able to recover their pre-space bone strength after a year back on Earth. Astronauts who spent more than six months in space experienced permanent bone loss in their tibias.

Interestingly, astronauts experienced almost no bone loss in their arms. That made sense



since astronauts often work out their arms to get around, for example by pushing off handles and doorways.

It suggests that weightlifting exercises in space could be important in preventing bone loss in the legs. This could be critical as humans consider longer missions in space.

DID YOU KNOW

It takes about two years to travel to Mars.

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WORD POWER

MICROGRAVITY: Very weak gravity found in an orbiting spacecraft

COMPUTED TOMOGRAPHY: A series of x-ray images taken by a computer that allows it to create a 3-D image of structures in the body **BONE DENSITY:** The amount of minerals in a certain volume of bone (higher bone density means stronger bones)

Science News Q & A

HEALTH

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Bo	one Loss in Space
1.	What did Leigh Gabel point out about our bones?
2.	How does exercise prevent bone loss?
3.	What did the scientists do to conduct the study?
4.	What did they find about bone density in the tibia and the radius?
5.	What do the findings suggest?
CI 1.	RITICAL THINKING Do you exercise? How does exercise affect your body?
2.	What are some ways that astronauts could exercise their legs in space?

Weak Bones

Your bones are in a constant state of renewal. New bone is made and old bone is broken down. When you are young, your body makes new bone faster than it breaks down old bone and your bone mass increases. After your early 20s, this process slows, and most people reach their peak bone mass by age 30. As people age, bone mass is lost faster than it is created.

Osteoporosis occurs when the creation of new bone doesn't keep up with the loss of old bone. Osteoporosis causes bones to become weak and brittle, so brittle that a fall or even mild stresses such as bending over or coughing can cause a fracture. Osteoporosis-related fractures most commonly occur in the hip, wrist, or spine.

Do some research into how we can try to keep our bones strong as we age. Write your findings in the space below.

CLASSROOM READY SCIENCE NEWS • SEPTEMBER 2022

INNOVATION

Calgary Student Creates Life-saving Drone

Alberta. This spring, he won the Canada-wide Science Fair in his age category (Grade 9 to 10). He won the award for the innovation he showed while building a "rescue drone." The drone is designed to help save someone suffering from cardiac arrest (a heart attack) at home.

Du first got the idea during Christmas break last year. He received a toy drone from his parents, however, he couldn't fly it outside because at that time of year Calgary is cold and snowy. Instead, Du started experimenting. He wanted to see if he could modify the drone into an indoor robot that could help someone suffering from a heart attack.

Some people suffer from severe heart conditions and are at a high risk for a heart attack. If a patient has an attack at home and collapses without their medications nearby, they could die before an ambulance has time to arrive. Du's idea is that a drone could be used to deliver life-saving medications to that patient. He started making modifications to his Christmas toy to give it some serious new capabilities. For example, he added an extendable arm to the drone that can be used to administer a needle or hand a patient their pills. He designed the arm to also open closed doors. Du added a camera to allow the drone operator (for example a member of an emergency response team) to see and monitor a patient from a remote location.

Each new addition to the drone added complexities Du had to solve. He had to find the right, lightweight materials and engineer them onto the drone in such a way that it could still fly and stay balanced. He spent hundreds of hours testing the drone, often learning from crashes and having to repair it.

Through a lot of trial and error, he finally got the drone to work. Then, Du's science teacher encouraged him to show the drone **prototype** off at an Alberta-wide science fair. When his project won top prize, he submitted it to the Canada-wide Science Fair.



Du has applied for a **patent** and plans to keep improving his medical life-saving technology.

DID YOU KNOW

According to the Heart and Stroke Foundation, about 35 000 people have cardiac arrests in Canada each year. Of those who have a cardiac arrest outside of a hospital, fewer than 10 percent survive.

To view videos, go to: http://resources.dynamicclassroom.ca/books/dzeg



WORD POWER

PROTOTYPE: A first model of something, used to test an idea

PATENT: A legal document that identifies someone as the inventor of something, making it illegal for someone else to copy and sell it without permission

Science News Q & A

INNOVATION

Ca	Calgary Student Creates Life-saving Drone		
1.	Who is Max Du? What did he do this spring?		
2.	Where did Du get his idea for a rescue drone?		
3.	Why did Du want to help people suffering from heart attacks?		
4.	What are some of the modifications Du made to the drone?		
ō.	What problems did Du face?		
CI	RITICAL THINKING Can you think of some other uses for the drone? List a few ideas.		
<u>2</u> .	What kinds of knowledge and skills are needed to adapt a drone in this way?		

Drone Modifications

Drones can be used for many different things, from saving lives to making deliveries. Work on your own or in pairs. Think of a new use for a drone. What kinds of modifications will it need? How will the modifications affect things like speed, distance the drone can fly, and balance? Use the space below to describe your drone or to draw images of the modifications.

TECHNOLOGY

Dealing with Water Shortage

Singapore could be facing a water shortage in the next few decades. It is looking for ways to prevent this from happening.

Singapore is an island **citystate** in southeast Asia. It is home to about 5.5 million people.

Singaporeans use about 430 million gallons of water every day. That is about 10 million bathtubs full of water. That water is used for everything from drinking, taking baths, and cooking to water needed for businesses and factories. However, the country has few natural sources of water. It must import about 40 percent of the water it uses from neighbouring countries. So far, that hasn't been a problem.

That could change. Singapore's water needs are expected to double in the next 40 years as its population increases. As well, climate change could affect how much water is available to the region. As weather patterns change, it is expected that parts of southeastern Asia will start to receive less rainfall. Some rivers are expected to dry up.

That could lead to regional

water scarcity. Neighbouring nations may become less willing to export water to Singapore. That could spell trouble for the millions of Singaporeans who depend on those exports.

Singapore officials are looking for ways to get ahead of the problem. For example, they are encouraging citizens to conserve water by doing things like taking shorter showers and not leaving the tap running when washing dishes. The Singapore government is also building **desalination** plants. These factories turn sea water into fresh, drinkable water. However, desalination plants use a lot of energy.

Singapore is also investing in new technologies that will help it clean and reuse existing water supplies. For example, Singapore startup EcoWorth Technology has created a material called carbon fibre aerogel. The aerogel is like a sponge. When placed in water, it can absorb and trap 190 times its weight in waste and **contaminants**. The material could be used in wastewater plants to clean water on a mass scale. Another Singapore company



called WateRoam has invented a simple, portable water filtration device about the size of a bicycle pump. Water is pumped through a membrane that separates contaminants from the water. This WateRoam device could help families living in rural areas. According to the company, one device can provide clean water to villages of 100 people for up to two years.



Singapore is just 733 square kilometres in size. That is about one-eighth the size of Prince Edward Island.

To view videos, go to: http://resources.dynamicclassroom.ca/books/dzeg



WORD POWER

CITY-STATE: A city and its surrounding area that is also an independent, self-governing country

DESALINATION: A process that removes salt from seawater

CONTAMINANT: A polluting or poisonous substance that makes something impure

Science News Q & A

TECHNOLOGY

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ealing with Water Shortage
How much water is used in Singapore? What is it used for?
Where does Singapore get its water?
How could the water supply become a problem?
What are Singapore officials encouraging citizens to do? What else are they doing?
What are some of the new technologies in which Singapore is investing?
RITICAL THINKING How does Canada compare to Singapore when it comes to natural sources of water?
What else could the government do to help solve the water shortage problem?

ENVIRONMENT

Cheetahs Making a Comeback in India

f you are an antelope living in India, you may soon be quaking in your hooves. That is because a fearsome predator is about to make a long-awaited return: the cheetah.

At one time, India was a home to cheetahs. In fact, cheetahs once roamed across large stretches of Africa, the Middle East, and India. However, the cheetah was declared extinct in India in 1952.

Why did the cheetah become extinct in India? The reason is men hunted the big cats throughout the 1800s and into the first half of the 20th century. During that time, India was a colony of Great Britain. British officials offered money to hunters who killed cheetahs. It was part of an effort to make the country safe from deadly predators.

Yadvendradev Jhala is the dean of the Wildlife Institute of India. He says cheetahs were an important part of Indian culture going back thousands of years. He points out the word itself— "cheetah"—comes from the **Hindi** word "chita," meaning "spotted one." After India won independence from Great Britain in 1947, efforts began to bring the cheetah back home. The first attempt was in the 1970s, when the government of India proposed to trade some lions to Iran in exchange for cheetahs. However, the deal fell through.

Now, Jhala and other Indian conservationists have arranged to have 20 cheetahs transported to India from South Africa and Namibia. The cheetahs were mostly captured from **reserves** in the two African countries.

The cheetahs were given antibiotics and vaccinated for diseases. Now they are awaiting the trip to their new home. They will be transported to Kuno National Park, a wildlife sanctuary in India's Madhya Pradesh state. The cheetahs will be **quarantined** for a month before being released into the wild. It is hoped the cheetahs will mate and produce babies—eventually forming a stable population living on the Indian grasslands.

Jhala has been working on the cheetah's return for 20 years. He can't wait to see these majestic



creatures once again loping across the Indian landscape. The antelope in India might not agree. Antelope are one of the cheetah's favourite prey. However, Jhala says this will be a good thing. It will restore a part of the natural habitat, helping to keep antelope populations in balance.

DID YOU KNOW

The cheetah is considered the fastest land animal in the world. It can reach up to 120 kilometres per hour at top speed.

To view videos, go to: http://resources.dynamicclassroom.ca/books/dzeg



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WORD POWER

HINDI: The official language of northern India

RESERVE: An area of natural wilderness where human development like cities and farms aren't allowed to protect the plants and animals living there **QUARANTINE:** When people or animals are placed in isolation for a period of time to make sure they don't have any infections or diseases they could pass on to others

Science News Q & A

ENVIRONMENT

Cheetahs Making a Comeback in India

1. Why did the cheetah become extinct in India?

2. What does Yadvendradev Jhala say about cheetahs?

3. When did they first try to return cheetahs to India?

4. What have Jhala and other conservationists been able to do?

5. What has been done with the cheetahs? What will happen next?

CRITICAL THINKING

1. What are your thoughts on re-introducing cheetahs to India? Do you think it will work? Explain your answer.

2. Why do you think British officials thought cheetahs were deadly predators?

World's Fastest Animals

Below is a list of the fastest land animals in the world. There are different ways to rank the speed of fast animals. This list looks at the top recorded speed of a species and ranks them from one to ten.

1. Cheetah 120.7 km / 75 m per hour

The cheetah can accelerate from a standing start to over 95 km per hour in 3 seconds. Its top speed is around 120 km per hour, by far the fastest land animal in the world. This fast speed is limited to very short bursts, with cheetahs able to sprint at top speed only for around 60 seconds.

2. Pronghorn 88.5 km / 55 m per hour

Ranging from Canada to California, the pronghorn has the stamina to run over long distances, with the ability to run at a maximum speed of 56 km per hour for 6 km.

3. Springbok 88 km / 55 m per hour

The springbok is a smallish gazelle that lives in herds across southern Africa. Aside from their speed, which they can maintain only for short distances, their special skills are 3-metre-high bounce-like jumps, and sharp turns while running. This allows them to shake off chasing predators.

4. Wildebeest 80.5 km / 50 m per hour

There are two species of wildebeest found in East and Southern Africa – the blue wildebeest and black wildebeest – both of which are surprisingly fast for their size. Their build lends them to endurance running rather than sprinting, which helps them in their continual overland migration.

5. Lion 80.5 km / 50 m per hour

The lion has a top speed of 80 km per hour. Like the cheetah, the lion can only manage their top speed for short bursts, meaning they need to stalk close to their prey and work as a team to ensure a successful hunt.

6. Blackbuck 80 km / 50 m per hour

The blackbuck (or the Indian antelope) is found across southern Asia in India, Nepal, and Pakistan. They are able to maintain their top speed of 80 km per hour for over 1.5 km, helped by their huge strides of 6.5 metres.

7. Hare 80 km / 50 m per hour

Hares have long, powerful hind legs that help them reach speeds of up to 80 km per hour to evade predators in their grassland habitats. Similar in form to common rabbits, hares have longer ears and live alone or in pairs above ground, which is why they need to be quick to get away from predators.

8. Greyhound 74 km / 46 m per hour

Greyhounds belong to a family of hunting dogs called sighthounds and have been bred over hundreds of years to become the fastest dogs in the world, with a recorded top speed of 74 km per hour.

9. Kangaroo 71 km / 44 m per hour

Kangaroos are large marsupials found only in Australia and some New Guinea islands. Their long, strong back legs and muscular tails are made for speed, and they have been recorded hopping at 71 km per hour in short bursts, considerably faster than their cruising speed of around 25 km per hour.

10. African wild dog 71 km / 44 m per hour

The endangered African wild dogs have a successful hunt percentage of over 60 percent. This is a result of their speed and stamina, amongst other things. They can sprint at 66 km per hour in short bursts, and run for longer distances at 60 km per hour.

- 1. Which animals can only maintain their speed for short distances?
- 2. Which animals can maintain their speed over long distances?
- 3. How fast can a cheetah run?
- 4. How fast can a lion run?
- 5. Which animals can run at a speed of over 85 km per hour?
- 6. What is the cruising speed of a kangaroo?
- 7. What are the special skills of a springbok?
- 8. What is the sprinting speed of an African wild dog?



BIG IDEAS

What Are Fossil Fuels?

n certain places around the world, if you dig underground, you will discover resources called fossil fuels. The three main fossil fuels are coal, oil, and natural gas. Humans discovered that if you burn these fuels, they release energy.

The earliest fossil fuel discovered was coal. It is believed that humans have burned coal to create heat since the days of cavemen. However, it was during the **Industrial Revolution** that coal became important. Coal was burned to power machines like steam engines and generators, which in turn powered ships, trains, and factories. Coal is still burned today to generate electricity.

In the 1800s, it was also discovered that you could burn oil and natural gas to generate energy. In fact, both have a higher **energy density** than coal. It was also discovered that oil could be **refined** to create gasoline and jet fuel. This triggered the transportation age of automobiles and airplanes.

As the world's energy needs have grown, we have come to

depend on fossil fuels to power our transportation networks and factories, and to generate electricity and heat for our homes. We also use oil and natural gas to create plastics found in millions of products we use every day.

All three fossil fuels were formed from organisms, mainly small plants and animals like algae and zooplankton, that lived in shallow seas and lakes millions of years ago. When they died, they decayed into organic matter that sank to the bottom of lakes and seas.

Over millions of years, that organic matter was covered by many layers of sediment. As that happened, heat and pressure gradually changed the organic matter into coal, oil, and natural gas. The reason they are called "fossil fuels" is that they are made from the fossils of organisms that once were alive.

Because it took millions of years to make these fuels, they are called nonrenewable. Once we use up what is in the ground, we won't be able to make any more. That is one reason why some are calling for us to switch



to renewable energy sources like solar, wind, and hydroelectricity.

An even bigger reason is that burning fossil fuels creates greenhouse gases like carbon dioxide and methane. The burning of fossil fuels over the past two centuries has been one of the main causes of global warming and climate change.

DID YOU KNOW

While efforts are being made to use less fossil fuels, they currently still supply almost 80 percent of all energy used in the world.

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WORD POWER

INDUSTRIAL REVOLUTION: The period between 1760 and 1850 when new machinery, sources of power, and ways of manufacturing products were developed in

Western Europe and North America ENERGY DENSITY: The amount of energy contained in a certain volume of material **REFINE:** To convert oil into other substances, such as gasoline, diesel, propane, and jet fuel

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Science News Q & A

BIG IDEAS

What Are Fossil Fuels?

1. How was coal used in the past?

2. What was discovered in the 1800s?

3. For what do we use fossil fuels?

4. How are fossil fuels formed?

5. What problems are there with fossil fuels?

CRITICAL THINKING

1. Do you think that we should switch to renewable energy sources? Explain your answer.

2. Explain the difference between renewable and nonrenewable energy.

Science News Quiz

BONE LOSS IN SPACE

- 1. One way to prevent bone loss is ______.
- 2. The researchers found that astronauts experienced losses in bone density in which bones?

 A. Skull
 B. Spine
 C. Pelvis
 D. Tibia

CALGARY STUDENT CREATES LIFE-SAVING DRONE

- The drone is designed to help save someone suffering from cardiac arrest at home.
 True False
- 2. Max Du added a ______ to allow the drone operator to see and monitor a patient from a remote location.

DEALING WITH WATER SHORTAGE

- 1. How many gallons of water are used in Singapore every day?A. 13 millionB. 43 millionC. 430 millionD. 4 billion
- 2. The Singapore government is building ______ plants to turn sea water into fresh, drinkable water.

CHEETAHS MAKING A COMEBACK IN INDIA

1. British officials offered money to hunters who killed cheetahs as part of an effort to make the country safe from deadly predators.

True False

2. Arrangements have been made to have 20 cheetahs transported to India from ______ and Namibia.

WHAT ARE FOSSIL FUELS?

- 1. The three main fossil fuels are ______.
- 2. We use oil and natural gas to create ______ found in millions of products we use every day.

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Science News Answer Key

Bone Loss in Space

- 1. What did Leigh Gabel point out about our bones? She points out that our bones are constantly changing: old bone breaks down so new bone can take its place. From childhood to young adulthood, our bones are constantly growing. However, our bones can start to deteriorate, particularly in old age.
- 2. How does exercise prevent bone loss? Exercise triggers the body to build up our bones so they are stronger. Earth's gravity actually forces us to exercise. Simply standing and walking around exerts pressure on our bones, but in space, that pressure is gone.
- 3. What did the scientists do to conduct the study? For the study, scientists took computed tomography images of the bones of 17 astronauts who spent between four and seven months in space. The images allowed scientists to measure the bone density of the tibia (a bone in the leg) and the radius (a bone in the arm). The researchers took images of the bones four times: once just before the astronaut went into space, once when they returned to Earth, and six months and one year after their return.
- 4. What did they find about bone density in the tibia and the radius?

They found that astronauts experienced losses in bone density in their tibias. The bone loss was more severe the more time the astronaut spent in space. Interestingly, astronauts experienced almost no bone loss in their arms. That made sense since astronauts often work out their arms to get around, for example by pushing off handles and doorways.

5. What do the findings suggest?

It suggests that weightlifting exercises in space could be important in preventing bone loss in the legs. This could be critical as humans consider longer missions in space.

Calgary Student Creates Lifesaving Drone

- 1. Who is Max Du? What did he do this spring? Max Du is a 14-year-old student living in Calgary, Alberta. This spring, he won the Canada-wide Science Fair in his age category (Grade 9 to 10). He won the award for the innovation he showed while building a "rescue drone."
- 2. Where did Du get his idea for a rescue drone? Du first got the idea during Christmas break last year. He received a toy drone from his parents, however, he couldn't fly it outside because at that time of year Calgary is cold and snowy. Instead, Du started experimenting. He wanted to see if he could modify the drone into an indoor robot that could help someone suffering from a heart attack.
- 3. Why did Du want to help people suffering from heart attacks?

Some people suffer from severe heart conditions and are at a high risk for a heart attack. If a patient has an attack at home and collapses without their medications nearby, they could die before an ambulance has time to arrive. Du's idea is that a drone could be used to deliver life-saving medications to that patient.

4. What are some of the modifications Du made to the drone?

He added an extendable arm to the drone that can be used to administer a needle or hand a patient their pills. He designed the arm to also open closed doors. Du added a camera to allow the drone operator (for example a member of an emergency response team) to see and monitor a patient from a remote location.

5. What problems did Du face?

Each new addition to the drone added complexities Du had to solve. He had to find the right, lightweight materials and engineer them onto the drone in such a way that it could still fly and stay balanced. He spent hundreds of hours testing the

Science News Answer Key

drone, often learning from crashes and having to repair it.

Dealing with Water Shortage

1. How much water is used in Singapore? What is it used for?

Singaporeans use about 430 million gallons of water every day. That is about 10 million bathtubs full of water. That water is used for everything from drinking, taking baths, and cooking to water needed for businesses and factories.

- 2. Where does Singapore get its water? The country has few natural sources of water. It must import about 40 percent of the water it uses from neighbouring countries.
- 3. How could the water supply become a problem? Singapore's water needs are expected to double in the next 40 years as its population increases. As well, climate change could affect how much water is available to the region. Neighbouring nations may become less willing to export water to Singapore.
- 4. What are Singapore officials encouraging citizens to do? What else are they doing? They are encouraging citizens to conserve water by doing things like taking shorter showers and not leaving the tap running when washing dishes. The Singapore government is also building desalination plants. These factories turn sea water into fresh, drinkable water.
- 5. What are some of the new technologies in which Singapore is investing?

Singapore startup EcoWorth Technology has created a material called carbon fibre aerogel. The aerogel is like a sponge. When placed in water, it can absorb and trap 190 times its weight in waste and contaminants. The material could be used in wastewater plants to clean water on a mass scale. Another Singapore company called WateRoam has invented a simple, portable water filtration device about the size of a bicycle pump. Water is pumped through a membrane that separates contaminants from the water. According to the company, one device can provide clean water to villages of 100 people for up to two years.

Cheetahs Making a Comeback in India

- 1. Why did the cheetah become extinct in India? The reason is men hunted the big cats throughout the 1800s and into the first half of the 20th century. During that time, India was a colony of Great Britain. British officials offered money to hunters who killed cheetahs. It was part of an effort to make the country safe from deadly predators.
- 2. What does Yadvendradev Jhala say about cheetahs?

He says cheetahs were an important part of Indian culture going back thousands of years. He points out the word itself—"cheetah"—comes from the Hindi word "chita," meaning "spotted one."

3. When did they first try to return cheetahs to India?

After India won independence from Great Britain in 1947, efforts began to bring the cheetah back home. The first attempt was in the 1970s, when the government of India proposed to trade some lions to Iran in exchange for cheetahs. However, the deal fell through.

4. What have Jhala and other conservationists been able to do?

Jhala and other Indian conservationists have arranged to have 20 cheetahs transported to India from South Africa and Namibia. The cheetahs were mostly captured from reserves in the two African countries.

5. What has been done with the cheetahs? What will happen next?

The cheetahs were given antibiotics and vaccinated for diseases. Now they are awaiting the trip to their new home. They will be transported to Kuno National Park, a wildlife sanctuary in India's Madhya Pradesh state. The cheetahs will be quarantined for a month before being released into the wild.

Science News Answer Key

World's Fastest Animals

- 1. Which animals can only maintain their speed for short distances? Cheetah, springbok, lion, kangaroo
- 2. Which animals can maintain their speed over long distances? Pronghorn, wildebeest, blackbuck, African wild dog
- 3. How fast can a cheetah run? 120.7 km per hour
- 4. How fast can a lion run? 80.5 km per hour
- 5. Which animals can run at a speed of over 85 km per hour? Cheetah, pronghorn, springbok
- 6. What is the cruising speed of a kangaroo? 25 km per hour
- 7. What are the special skills of a springbok? 3-metre-high bounce-like jumps and sharp turns while running
- 8. What is the sprinting speed of an African wild dog?

66 km per hour

What Are Fossil Fuels?

- How was coal used in the past? It is believed that humans have burned coal to create heat since the days of cavemen. However, it was during the Industrial Revolution that coal became important. Coal was burned to power machines like steam engines and generators, which in turn powered ships, trains, and factories.
- 2. What was discovered in the 1800s? In the 1800s, it was also discovered that you could burn oil and natural gas to generate energy. In fact, both have a higher energy density than coal. It was also discovered that oil could be refined to create gasoline and jet fuel. This triggered the transportation age of automobiles and airplanes.

3. For what do we use fossil fuels? As the world's energy needs have grown, we have come to depend on fossil fuels to power our transportation networks and factories, and to

generate electricity and heat for our homes. We also use oil and natural gas to create plastics found in millions of products we use every day.

4. How are fossil fuels formed?

All three fossil fuels were formed from organisms, mainly small plants and animals like algae and zooplankton, that lived in shallow seas and lakes millions of years ago. When they died, they decayed into organic matter that sank to the bottom of lakes and seas. Over millions of years, that organic matter was covered by many layers of sediment. As that happened, heat and pressure gradually changed the organic matter into coal, oil, and natural gas.

5. What problems are there with fossil fuels? Because it took millions of years to make these fuels, they are called nonrenewable. Once we use up what is in the ground, we won't be able to make any more. Also, burning fossil fuels creates greenhouse gases like carbon dioxide and methane. The burning of fossil fuels over the past two centuries has been one of the main causes of global warming and climate change.

Science News Quiz

BONE LOSS IN SPACE

- 1. One way to prevent bone loss is **EXERCISE**.
- The researchers found that astronauts experienced losses in bone density in which bones?
 D. Tibia

CALGARY STUDENT CREATES LIFE-SAVING DRONE

- 1. The drone is designed to help save someone suffering from cardiac arrest at home. True
- 2. Max Du added a **CAMERA** to allow the drone operator to see and monitor a patient from a remote location.

DEALING WITH WATER SHORTAGE

- How many gallons of water are used in Singapore every day?
 C. 430 million
- 2. The Singapore government is building **DESALINATION** plants to turn sea water into fresh, drinkable water.

CHEETAHS MAKING A COMEBACK IN INDIA

- British officials offered money to hunters who killed cheetahs as part of an effort to make the country safe from deadly predators. True
- 2. Arrangements have been made to have 20 cheetahs transported to India from **SOUTH AFRICA** and Namibia.

WHAT ARE FOSSIL FUELS?

- 1. The three main fossil fuels are COAL, OIL, AND NATURAL GAS.
- 2. We use oil and natural gas to create **PLASTICS** found in millions of products we use every day.