

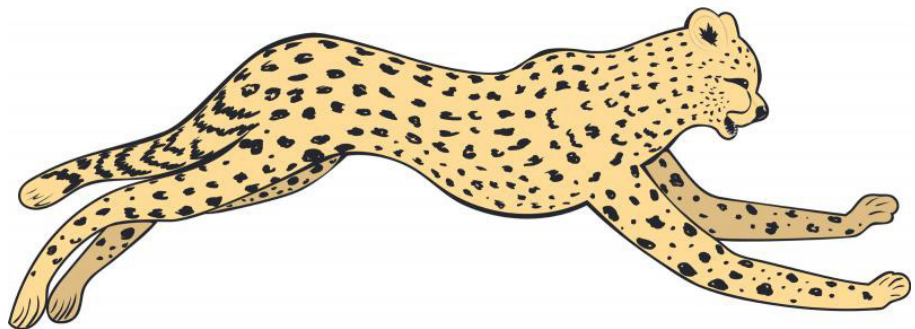
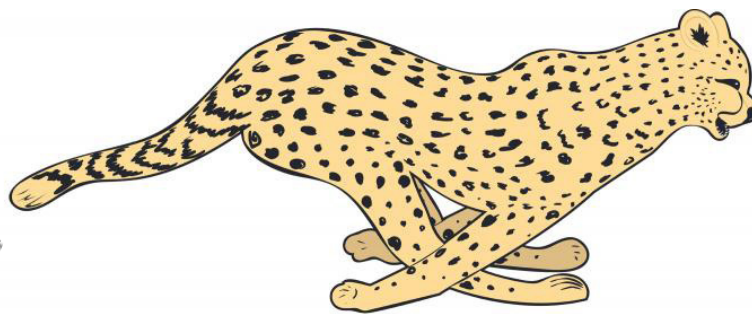
Science News

FOR GRADES 3, 4 & 5

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CHEETAHS



LIFE-SAVING
DRONE



FOSSIL FUELS

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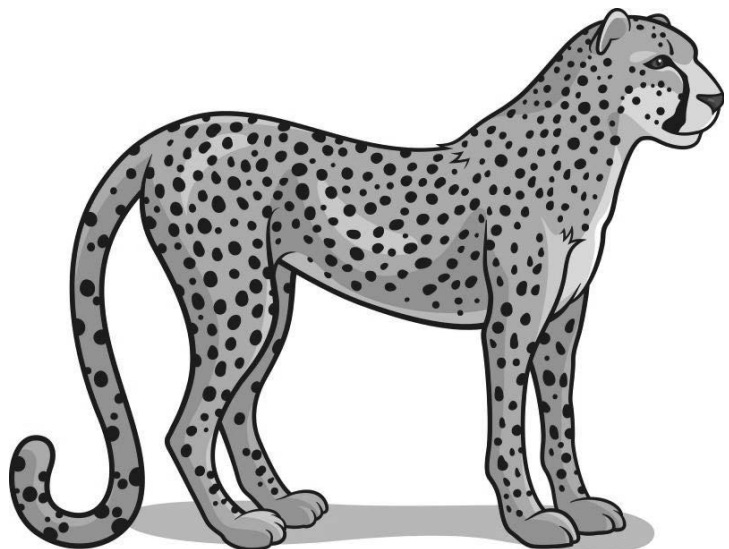
CHEETAHS

Imagine riding in a car and watching a yellow animal with dark spots run past you. The fastest animal in the world is a large species of cat called a cheetah. These animals are known for their speed and special abilities.

Cheetahs live mainly south of the Sahara Desert in Africa and in northeastern Iran. Adult cheetahs can be between 1.1 and 1.4 metres long, and their tails can measure an additional 65 to 80 centimetres. They can weigh between 35 and 54 kilograms, and males are usually larger than females. They chirp, growl, or purr instead of roaring like other big cats.

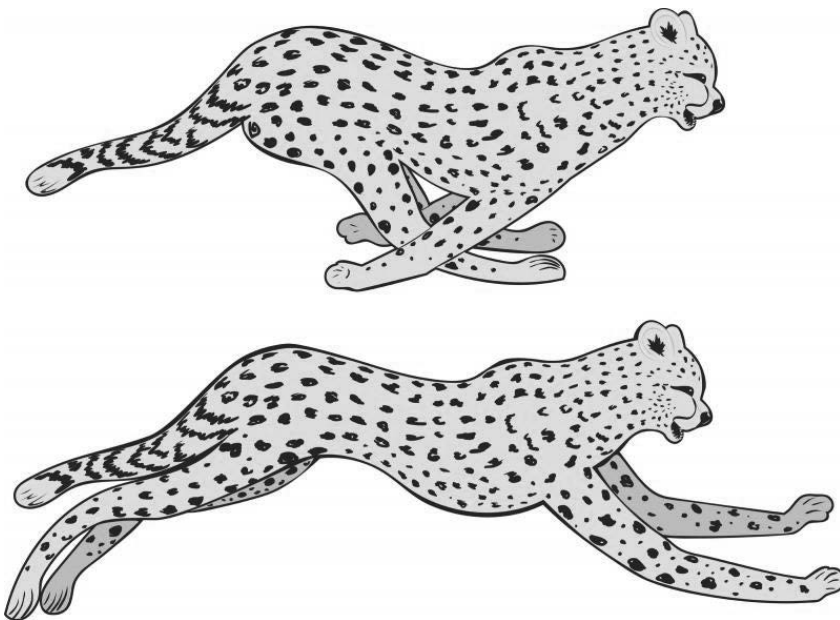
The colouring of cheetahs is special. These animals have yellow fur with black spots on the top of their bodies and they have white bellies. They have black lines on their faces going from the corners of their mouths to the edge of each eye. Scientists believe that these stripes help to keep the sun out of the cheetahs' eyes. They have long legs and especially long **spines** to help them run quickly. Their long, flattened tails act as rudders and help them keep their balance when they are running.

Cheetahs eat animals like rabbits, **warthogs**, and **gazelles**. They use their speed to catch their **prey**. These large cats can reach speeds of 95 kilometres per hour in just three seconds, but they usually only run at



these speeds for less than a minute. Males normally live and hunt in groups, but adult females tend to live alone.

Scientists believe that between 9000 and 12 000 cheetahs are still living in the wild, but the numbers are decreasing. Most of these cheetahs live in the grasslands and open plains of Africa, but they can live in many different environments.



Spine: The backbone

Warthog: A type of wild hog that lives in Africa

Gazelle: A graceful, fast-running antelope found in Africa and Asia

Prey: An animal that is hunted by another animal for food

CHEETAHS QUESTIONS

1. What is the fastest animal in the world?

2. How long can cheetahs' tails measure?

3. Cheetahs _____ instead of roaring like other big cats.

4. Cheetahs have yellow fur with _____ on the top of their bodies and they have white bellies.

5. What do scientists believe about the black lines on cheetahs' faces?

6. Their long, flattened tails act as _____ and help them keep their balance when they are running.

7. Cheetahs can reach what speeds?

8. How many cheetahs are living in the wild?

WORLD'S FASTEST ANIMALS

Below is a list of the fastest land animals in the world. This list looks at the top recorded speed of a species and ranks them from one to five.

1. Cheetah 120.7 kilometres per hour

The cheetah can go from a standing start to over 95 kilometres per hour in three seconds. Its top speed is around 120 kilometres per hour, but it can only sprint at top speed for around 60 seconds.

2. Pronghorn 88.5 kilometres per hour

The pronghorn has the strength to run over long distances, with the ability to run at a maximum speed of 56 kilometres per hour for 6 km.

3. Springbok 88 kilometres per hour

The springbok can maintain their speed only for short distances. Their special skills are 3-metre-high bounce-like jumps, and sharp turns while running.

4. Wildebeest 80.5 kilometres per hour

The wildebeest is surprisingly fast for its size. Their build lends them to endurance running rather than sprinting.

5. Lion 80.5 kilometres per hour

The lion has a top speed of 80 kilometres 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.

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. What are the special skills of a springbok?



LIFE-SAVING DRONE

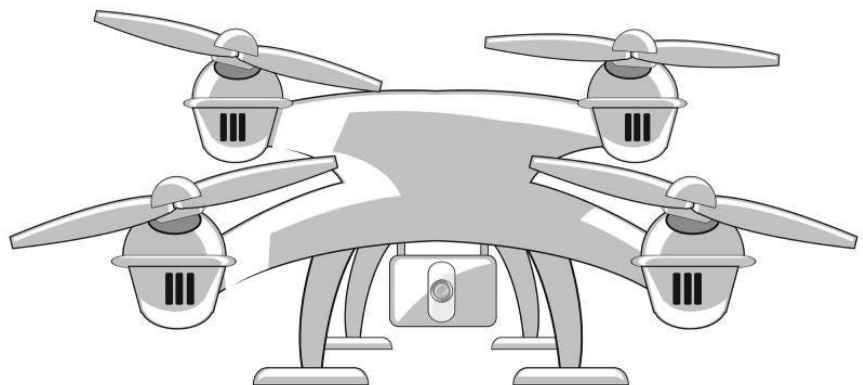
A teenager named Max Du from Calgary may have come up with an idea that could save thousands of lives, at the age of 14. His rescue drone could help many people having heart attacks get help quickly enough to save their lives.

For injuries like broken or sprained ankles, getting help quickly is not usually important. These types of health issues are painful but not life-threatening. Heart attacks are different. The **victims** normally need help within a few minutes from doctors or nurses who know the best treatments. Most heart attacks happen away from hospitals, so people don't get the help they need.

Getting help quickly with a drone could help save many lives. Max Du's drone is designed to gather information for health care workers and to give medication. The drone has a special **extendable**

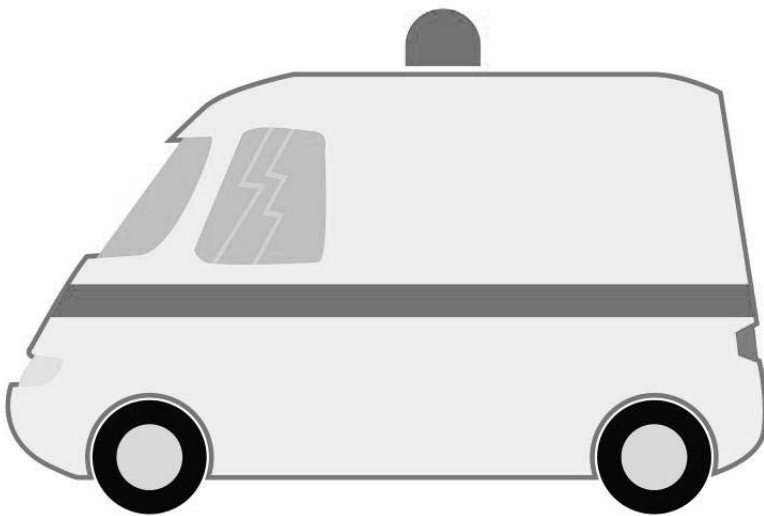
arm for giving **injections** and other treatments. This helps the sick person to survive until the **paramedics** arrive. A camera on the drone can help paramedics monitor the patient's symptoms and progress.

Designing a drone for these tasks took work and thought. It had to be strong enough to hold the extra equipment but still light enough to



fly. Max worked on these problems until he found a way to make the drone both strong and light. The special design allows the drone to go inside a house and to go upstairs or downstairs to give either pills or an injection to the sick person. The machine can get to patients in seconds instead of the minutes or longer that it can take for an ambulance to get to the person.

Sometimes, a good idea can come from an unexpected source. Max Du's project could be the beginning of new life-saving techniques for victims of heart attacks, strokes, and more.



Victim: A person who is hurt, killed, or made to suffer

Extendable: Able to be made longer or larger

Injection: The introduction of medicine into the body through a thin needle

Paramedic: A person who is trained to give emergency medical treatment but who is not a doctor or a nurse

LIFE-SAVING DRONE QUESTIONS

1. How old is Max Du?

2. People having _____ normally need help within a few minutes from doctors or nurses who know the best treatments.

3. Max Du's drone is designed to do what?

4. The drone has a special extendable arm that does what?

5. A _____ on the drone can help paramedics monitor the patient's symptoms and progress.

6. The drone had to be _____ enough to hold the extra equipment but still _____ enough to fly.

7. The special design allows the drone to do what?

8. The machine can get to patients in _____ instead of the minutes or longer that it can take for an ambulance to get to the person.

BUILD A DRONE

Drones can be used for many different things, from saving lives to making deliveries. Work on your own or with a classmate. Think of a new use for a drone. What kinds of changes will it need? What tools or equipment do you need to add to it? Use the space below to describe your drone or to draw images of the parts.

FOSSIL FUELS

Every day, you eat food to build up your muscles and give you energy. Food is fuel for people and animals. Vehicles like cars or trucks also need fuel to run. Often, they use fossil fuels for energy. These fuels can be useful, but they have a negative side.

Fossil fuels come from plants and animals that died millions of years ago. When layers of rock press down on the remains of these plants and animals, the pressure and heat cause oil, coal, or natural gas to form. Tiny creatures and plants called plankton help form oil and natural gas. Other plants turn into coal. Oil, natural gas, and coal are the three main types of fossil fuels.

For many years, fossil fuels have been the main source of energy for transportation, heating, and electricity. People drill holes deep into the Earth to find oil and natural gas. Then they pump it out and turn it into gasoline for vehicles and tar for paving roads. These are just some of the uses. Coal is the most common fossil fuel. It looks like rocks and is often found in swamps.

Together, these fossil fuels give power, light, heat, and even plastics to people. They are also part of making steel. Without steel and plastics, many activities would be very difficult. Fossil fuels are very important in many people's lives.



Because they take so long to form, fossil fuels are **nonrenewable** and will run out. They can also cause pollution that harms the environment. Burning fossil fuels causes about one-third of the world's carbon **emissions**. These emissions can cause health problems for people and destroy the environment.

Even though fossil fuels have helped build societies, finding new sources of energy is important for everyone.



Nonrenewable: From sources that will be used up

Emissions: Substances released into the atmosphere

FOSSIL FUELS QUESTIONS

1. What do vehicles like cars and trucks use for energy?

2. Fossil fuels come from _____
that died millions of years ago.

3. When layers of rock press down on the remains of these plants and animals, the _____ cause oil, coal, or natural gas to form.

4. What are the three main types of fossil fuels?

5. What do people do to find oil and natural gas?

6. What is the most common fossil fuel?

7. Because they take so long to form, fossil fuels are nonrenewable and will _____.

8. Burning fossil fuels causes about one-third of the world's _____

_____.

TYPES OF FOSSIL FUELS

The three main types of fossil fuels are coal, oil, and natural gas. Below are descriptions of each of these.

Coal is made up of the energy from plants that grew in swamps. Layers of rocks and dirt covered those plants for over a million years. The rocks and dirt produced a lot of pressure and heat. The combined result turned those plant remains into coal. In order to get to the coal, you have to dig deep into the ground.

Crude oil (petroleum) is a thick, black liquid found underground. Crude oil comes from fossilized organic material such as plants and animals. Oil has a wide variety of uses and is often used as a fuel and in cosmetics, medicine, paint, and lubricants. Crude oil is converted at oil refineries into a range of different fuels including gasoline (petrol), diesel, kerosene, jet fuel, and liquified petroleum gas (LPG).

Natural gas is usually found in pockets above oil deposits. It can also be found in rock layers that don't contain oil. Natural gas is mainly made up of methane gas. Most natural gas is burnt as a fuel to produce energy. It burns with a clean blue flame, causing little pollution.



Use the information on the previous page to answer the following questions.

1. Which type of fossil fuel burns with a clean blue flame?

2. Which type of fossil fuel is a thick black liquid?

3. Which type of fossil fuel is mainly made up of methane gas?

4. Which type of fossil fuel is made up of the energy from plants that grew in swamps?

5. Which type of fossil fuel is used in cosmetics, medicine, paint, and lubricants?

HANDS-ON SCIENCE

HOW DOES A BOAT FLOAT?

Teachers: This experiment can be done in the classroom as a demonstration or group activity, or it can be assigned as homework.

Buoyancy is the force of water pushing up on something. Sometimes it is enough to make things float, sometimes not. How does it work?

You will need:

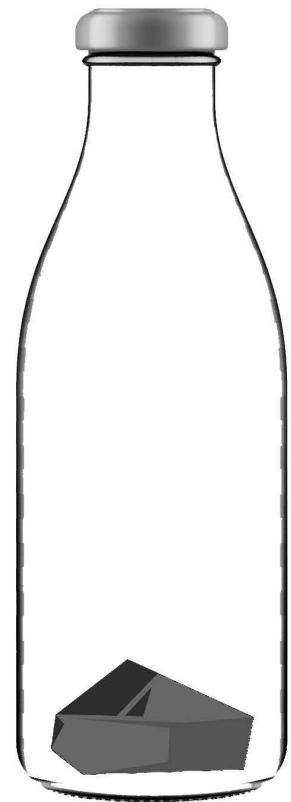
1. A bucket or tank
2. A water source to fill up bucket (a faucet or backyard hose)
3. Air tight jar, not small, but small enough to fit in bucket
4. A bunch of rocks, different sizes, but small enough to fit in the jar at the same time

Safety:

1. Don't drink the water.
2. Don't get anyone wet!

Steps:

1. Fill the bucket with water.
 2. Put the rocks, one at a time, in the water. Do they float?
-



3. Take the empty jar, close the lid tightly and put it in the water. Does it float?

4. Take the rocks out of the water. Put the smallest one in the jar. Close the lid and put the jar back in the bucket. Does it float?

5. One rock at a time, add more of the rocks to the jar. Each time you add one more rock, put the lid back on and see if the jar still floats. Does it still float?

6. Why do you think the rocks float when they are in the jar, but sink if they are not?

7. If you fill the jar with enough rocks, you will eventually be able to make it sink. Why?

ANSWER KEY

CHEETAHS

1. What is the fastest animal in the world? **A large species of cat called a cheetah**
2. How long can cheetahs' tails measure? **65 to 80 centimetres**
3. Cheetahs **chirp, growl, or purr** instead of roaring like other big cats.
4. Cheetahs have yellow fur with **black spots** on the top of their bodies and they have white bellies.
5. What do scientists believe about the black lines on cheetahs' faces?
Scientists believe that these stripes help to keep the sun out of the cheetahs' eyes.
6. Their long, flattened tails act as **rudders** and help them keep their balance when they are running.
7. Cheetahs can reach what speeds? **95 kilometres per hour**
8. How many cheetahs are living in the wild? **Between 9000 and 12 000**

WORLD'S FASTEST ANIMALS

1. **Cheetah, springbok, lion**
2. **Pronghorn, wildebeest**
3. **120.7 km per hour**
4. **80.5 km per hour**
5. **3-metre-high bounce-like jumps and sharp turns while running**

LIFE-SAVING DRONE

1. How old is Max Du? **14**
2. People having **heart attacks** normally need help within a few minutes from doctors or nurses who know the best treatments.
3. Max Du's drone is designed to do what? **Gather information for health care workers and to give medication**
4. The drone has a special extendable arm that does what? **Gives injections and other treatments**
5. A **camera** on the drone can help paramedics monitor the patient's symptoms and progress.
6. The drone had to be **strong** enough to hold the extra equipment but still

light enough to fly.

7. The special design allows the drone to do what? **Go inside a house and to go upstairs or downstairs to give either pills or an injection to the sick person**
8. The machine can get to patients in **seconds** instead of the minutes or longer that it can take for an ambulance to get to the person.

FOSSIL FUELS

1. What do vehicles like cars and trucks use for energy? **Fossil fuels**
2. Fossil fuels come from **plants and animals** that died millions of years ago.
3. When layers of rock press down on the remains of these plants and animals, the **pressure and heat** cause oil, coal, or natural gas to form.
4. What are the three main types of fossil fuels? **Oil, natural gas, and coal**
5. What do people do to find oil and natural gas? **Drill holes deep into the Earth**
6. What is the most common fossil fuel? **Coal**
7. Because they take so long to form, fossil fuels are nonrenewable and will **run out**.
8. Burning fossil fuels causes about one-third of the world's **carbon emissions**.

TYPES OF FOSSIL FUELS

1. **Natural gas**
2. **Oil**
3. **Natural gas**
4. **Coal**
5. **Oil**

HANDS-ON SCIENCE

Everything in or on water pushes some water aside, even if just a little bit. This is called displacement. When you get into a full bathtub, the water rises. This is because you “displaced” some of the water with your body and it had to go somewhere. The key to floating is that the object must displace an amount of water that is equal to its own weight. Suppose you had a block of wood that was 1 foot square that weighs about 50 pounds. If we lower the wood into the water, the wood will move down into the water until it has displaced 50 pounds of water. That means that 50 pounds of water are pushing back up on the block and making it float.