Name: _____ Date: _____

Rocket Stages Drop Away Like Empty Boxes

Circle group

A rocket must carry a lot of fuel to reach space. Most of a rocket is fuel tanks. The rocket burns fuel very fast. The weight of the fuel is a big problem. Every pound makes it harder to climb.

Engineers had a smart idea. They build a rocket in parts called stages. The first stage is at the bottom. It has the biggest engines and the most fuel. It lifts the whole rocket off the ground. It pushes it up through the thick air.

When the first stage runs out of fuel, it is empty and heavy. So it lets go and falls away. Now the rocket is lighter. The second stage lights its own engines and keeps going.

It is like carrying a stack of boxes. You drop each empty box when you are done. Your load gets lighter and lighter. A lighter rocket can speed up faster.

For many years, stages fell in the sea and were lost. Today some stages turn around and land gently. Then they can fly again.

Questions

1. What do most of a rocket's tanks hold?

_____

_____

2. What are the parts of a rocket called?

_____

_____

3. What does the first stage do?

_____

_____

4. What happens to the first stage when it runs out of fuel?

_____

_____

5. What can some stages do today?

_____

_____

6. Why does dropping an empty stage help the rocket?

_____

_____

Words to know

fuel: something burned to make power
stages: the separate parts of a rocket that work one after another
engineers: people who design and build machines
engines: machines that push something forward
load: the weight that something carries

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Rocket Stages Drop Away Like Empty Boxes

Triangle group

A rocket has to carry a lot of fuel to reach space. Most of the rocket is just fuel tanks. The rocket burns the fuel very fast, and the weight of the fuel is a big problem. Every pound the rocket carries makes it harder to climb.

Engineers came up with a smart solution. They build a rocket in parts, called stages. The first stage sits at the bottom. It has the biggest engines and the most fuel. It lifts the whole rocket off the ground and pushes it up through the thick air.

When the first stage runs out of fuel, it is empty and heavy. So it lets go and falls away. Now the rest of the rocket is lighter. The second stage lights its own engines and keeps going.

It is like carrying a stack of boxes. If you drop each empty box when you are done with it, your load gets lighter and lighter. A lighter rocket can speed up faster.

For many years, stages fell into the sea and were lost. Today some stages can turn around and land gently. Then they can fly again.

Questions

1. What do most of a rocket's tanks hold?

_____

_____

2. What are the parts of a rocket called?

_____

_____

3. What does the first stage do?

_____

_____

4. What happens to the first stage when its fuel runs out?

_____

_____

5. What can some stages do today?

_____

_____

6. Why does dropping an empty stage help the rocket go faster?

_____

_____

Words to know

fuel: something burned to make power
stages: the separate parts of a rocket that work one after another
engineers: people who design and build machines
engines: machines that push something forward
load: the weight that something carries

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Rocket Stages Drop Away Like Empty Boxes

Square group

To escape Earth's pull and reach space, a rocket must carry an enormous quantity of fuel. In fact, most of a rocket is nothing but fuel tanks. The rocket burns this fuel at a tremendous rate, and the weight of the fuel creates a serious problem, since every extra pound makes the climb harder.

Engineers devised an ingenious solution: they build a rocket in sections, called stages. The first stage sits at the bottom and holds the biggest engines and the most fuel. It lifts the entire rocket off the ground and drives it upward through the thick air.

Once the first stage has used up its fuel, it is empty and heavy, so it separates and falls away. The remainder of the rocket is now much lighter. The second stage ignites its own engines and continues the journey.

It is like carrying a tall stack of boxes. If you discard each empty box as soon as you are finished with it, your load grows lighter and lighter. A lighter rocket is able to accelerate faster.

For many years, discarded stages fell into the sea and were lost. Today some stages can turn around and land gently, so that they can fly again.

Questions

1. What do most of a rocket's tanks contain?

_____

_____

2. What are the sections of a rocket called?

_____

_____

3. What does the first stage do?

_____

_____

4. What happens to the first stage once its fuel is used up?

_____

_____

5. What are some stages able to do today?

_____

_____

6. Why does discarding an empty stage help the rocket go faster?

_____

_____

Words to know

fuel: something burned to make power
stages: the separate parts of a rocket that work one after another
engineers: people who design and build machines
engines: machines that push something forward
load: the weight that something carries

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: Rocket Stages Drop Away Like Empty Boxes

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: Rocket Stages Drop Away Like Empty Boxes

Easier · 174 words · Flesch-Kincaid grade 2.6

1. Fuel.
2. Stages.
3. It lifts the rocket off the ground and pushes it up through the thick air.
4. It lets go and falls away.
5. Land gently and fly again.
6. The rocket is lighter, so it can speed up more easily.

Triangle: Rocket Stages Drop Away Like Empty Boxes

This passage · 190 words · Flesch-Kincaid grade 3.3

1. Fuel.
2. Stages.
3. It lifts the whole rocket off the ground and pushes it up through the thick air.
4. It lets go and falls away.
5. Land gently and fly again.
6. The rest of the rocket is lighter, so it can speed up more easily.

Square: Rocket Stages Drop Away Like Empty Boxes

Harder · 203 words · Flesch-Kincaid grade 6.6

1. Fuel.
2. Stages.
3. It lifts the entire rocket off the ground and drives it up through the thick air.
4. It separates and falls away.
5. Land gently so that they can fly again.
6. The rest of the rocket is lighter, so it can accelerate more easily.