Name: _____ Date: _____

A Wind Tunnel Technician Makes Air Visible

Circle group

You cannot see air. But air pushes on everything that moves through it. A wind tunnel technician finds ways to show what air is doing. This helps engineers make faster, safer things.

A wind tunnel is a long tube with a strong fan. The fan blows air past an object. The object stays still. This is a clever trick. A model car in a tunnel feels almost the same push as a real car on a road. And it is cheaper to test a small model than a full machine.

To make air visible, the technician may let out a thin stream of smoke near the model. The smoke follows the air. Everyone can watch it curve around the shape. Tiny threads on the surface work too. They show which way the air flows. Sensors under the model measure how hard the air pushes.

Many things are tested this way. Airplane wings, race cars, bicycles, and tall buildings have been in wind tunnels. If a design has too much drag, engineers change the shape. Then they test it again.

Questions

1. What does a wind tunnel technician try to show?

_____

_____

2. What blows the air in a wind tunnel?

_____

_____

3. How does smoke help the technician?

_____

_____

4. What do the sensors under the model measure?

_____

_____

5. Name two things tested in wind tunnels?

_____

_____

6. Why is it good to test a small model?

_____

_____

7. What might engineers do if a design has too much drag?

_____

_____

Words to know

technician: a worker with special training in a skill or tool
engineer: a person who designs and builds machines or structures
model: a smaller copy of a real thing
sensor: a tool that detects and measures something
drag: the force of air that slows something down

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: _____

A Wind Tunnel Technician Makes Air Visible

Triangle group

You cannot see air, even though it pushes on everything that moves through it. A wind tunnel technician finds ways to show what the air is doing. The job helps engineers design faster, safer, and more efficient things.

A wind tunnel is a long tube with a powerful fan. The fan blows air past an object, and the object stays still. This is a clever trick. A model car held in a tunnel feels almost the same push from the air as a real car driving down a road. It is also much cheaper and easier to test a small model than a full machine.

To make air visible, the technician may release a thin stream of smoke near the model. The smoke follows the air, so everyone can watch it curve around the shape. Tiny threads taped to the surface work too, since they show which way the air flows. Sensors under the model measure how hard the air pushes on it.

Many things are tested this way. Airplane wings, race cars, bicycles, and even tall buildings have all been placed in wind tunnels. If a design causes too much drag, engineers change the shape and test it again.

Questions

1. What does a wind tunnel technician try to show?

_____

_____

2. What blows air through a wind tunnel?

_____

_____

3. How does smoke help the technician?

_____

_____

4. What do the sensors under the model measure?

_____

_____

5. Name two things that have been tested in wind tunnels?

_____

_____

6. Why is it useful to test a small model instead of a full machine?

_____

_____

7. What might engineers do if a design has too much drag?

_____

_____

Words to know

technician: a worker with special training in a skill or tool
engineer: a person who designs and builds machines or structures
model: a smaller copy of a real thing
sensor: a tool that detects and measures something
drag: the force of air that slows something down

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: _____

A Wind Tunnel Technician Makes Air Visible

Square group

Air cannot be seen, even though it pushes against everything that travels through it. A wind tunnel technician devises ways to reveal what the air is doing. This work helps engineers design vehicles and structures that are faster, safer, and more efficient.

A wind tunnel is a long tube equipped with a powerful fan. The fan drives air past an object while the object remains motionless. This is an ingenious trick. A model car held inside a tunnel experiences almost the same push from the air as a real car traveling along a road, and it is far cheaper and simpler to test a small model than a full-sized machine.

To make the air visible, the technician may release a thin stream of smoke close to the model. The smoke follows the air, so everyone can watch it bend around the shape. Tiny threads taped to the surface serve the same purpose, because they indicate the direction in which the air is flowing. Sensors beneath the model measure how forcefully the air pushes against it.

A wide variety of things are tested in this manner. Airplane wings, race cars, bicycles, and even tall buildings have all been placed inside wind tunnels. If a design creates too much drag, engineers alter its shape and test it once more.

Questions

1. What does a wind tunnel technician attempt to reveal?

_____

_____

2. What drives air through a wind tunnel?

_____

_____

3. How does smoke assist the technician?

_____

_____

4. What do the sensors beneath the model measure?

_____

_____

5. Name two things that have been placed inside wind tunnels?

_____

_____

6. Why is it advantageous to test a small model rather than a full-sized machine?

_____

_____

7. What might engineers do when a design creates too much drag?

_____

_____

Words to know

technician: a worker with special training in a skill or tool
engineer: a person who designs and builds machines or structures
model: a smaller copy of a real thing
sensor: a tool that detects and measures something
drag: the force of air that slows something down

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: A Wind Tunnel Technician Makes Air Visible

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

Circle: A Wind Tunnel Technician Makes Air Visible

Easier · 179 words · Flesch-Kincaid grade 3.1

1. What air is doing as it moves past an object.
2. A strong fan.
3. It follows the air, so people can see how it flows around the model.
4. How hard the air pushes on it.
5. Airplane wings, race cars, bicycles, or tall buildings.
6. It is cheaper and easier than testing a full machine.
7. Change its shape and test it again.

Triangle: A Wind Tunnel Technician Makes Air Visible

This passage · 200 words · Flesch-Kincaid grade 5.1

1. What the air is doing as it moves past an object.
2. A powerful fan.
3. It follows the air so everyone can see how the air flows around the model.
4. How hard the air pushes on it.
5. Airplane wings, race cars, bicycles, or tall buildings.
6. It is cheaper and easier than testing the real thing.
7. Change its shape and test it again.

Square: A Wind Tunnel Technician Makes Air Visible

Harder · 218 words · Flesch-Kincaid grade 7.5

1. What the air is doing as it moves past an object.
2. A powerful fan.
3. It follows the air, so everyone can watch how the air bends around the model.
4. How forcefully the air pushes against it.
5. Airplane wings, race cars, bicycles, or tall buildings.
6. It is far cheaper and simpler than testing the real thing.
7. Alter its shape and test it once more.