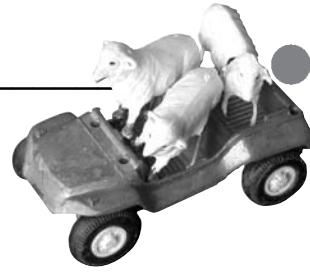


Name: _____



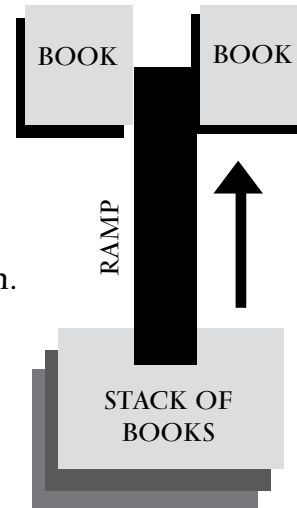
Sheep in a Jeep

Checkpoint Lab

Follow the directions below. If your team is working, put the green cup on top. If you have a question, put the red cup on top. If you are finished with a part and you are ready for a check from your teacher, put the red cup on top.

Part **A** Motion and Forces

- Tape the sheep (or other animal) into the jeep with one piece of tape.
- Stack some books until they are about **5 cm** high.
- Raise one end of the ramp and place it on the books.
- Make a chute with some books at the end of the ramp.
- Push the jeep *up* the ramp to the top.



1 What force caused the jeep to move *up* the ramp?

- Now let the jeep roll *down* the ramp without pushing it.

2 What force caused the jeep to move *down* the ramp?

Checkpoint A

Name: _____



Sheep in a Jeep

Checkpoint Lab cont.

Part **B** Changing the Height of the Ramp

- Release the jeep without pushing from the top of the **5 cm** high ramp.
- Measure in centimeters how far it rolls from the end of the ramp and record under Trial 1 Distance. (If it falls off before reaching the bottom, do over!)
- Repeat for Trial 2 and Trial 3.
- Find the average distance the jeep rolled by adding the three distances and dividing by 3.

Ramp Height	Trial 1 Distance	Trial 2 Distance	Trial 3 Distance	Average Distance
5 cm				

Make a prediction: If you raise the ramp to **10 cm** high, will the jeep roll a longer distance or a shorter distance from the end of the ramp?

- Now raise the ramp to **10 cm** high and release the jeep without pushing.
- Measure in centimeters how far it rolls from the end of the ramp and record under Trial 1 Distance. (If it falls off before reaching the bottom, do it over!)
- Repeat for Trial 2 and Trial 3.
- Find the average distance the jeep rolled by adding the three distances and dividing by 3.

Ramp Height	Trial 1 Distance	Trial 2 Distance	Trial 3 Distance	Average Distance
10 cm				

Name: _____



Sheep in a Jeep

Checkpoint Lab cont.

Part **B** Questions

1 Were there any trials that your team didn't record? Why or why not?

2 What was the average distance the jeep rolled with a **5 cm** high ramp?

3 What was the average distance the jeep rolled with a **10 cm** high ramp?

4 Did the jeep roll a shorter or longer distance when you raised the ramp?

5 Write a conclusion: How does the height of the ramp affect the distance the jeep rolls? What is your evidence?

Checkpoint B

Name: _____



Sheep in a Jeep

Checkpoint Lab cont.

Part C Changing the Surface

- Change the ramp back to **5 cm high**. Release the jeep from the top of the ramp without pushing.
- Measure in centimeters how far it rolls from the end of the ramp and record under Trial 1 Distance. Repeat for Trial 2 and Trial 3.
- Find the average distance the jeep rolled by adding the three distances and dividing by 3.

Floor Surface	Trial 1 Distance	Trial 2 Distance	Trial 3 Distance	Average Distance
Tile				

Make a prediction: If you cover the tile floor at the end of the ramp with sandpaper, will the jeep roll a longer distance or a shorter distance from the end of the ramp?

- Now cover the floor at the end of the ramp with two sheets of sandpaper taped together and release the jeep without pushing.
- Measure in centimeters how far it rolls from the end of the ramp and record under Trial 1 Distance. Repeat for Trial 2 and Trial 3.
- Find the average distance the jeep rolled by adding the three distances and dividing by 3.

Floor Surface	Trial 1 Distance	Trial 2 Distance	Trial 3 Distance	Average Distance
Sandpaper				

Name: _____



Sheep in a Jeep

Checkpoint Lab cont.

Part **C** Questions

1 Did the jeep roll a shorter or longer distance when you covered the tile floor with sandpaper? _____

2 Write a conclusion: How does the surface of the floor affect the distance the jeep rolls? What is your evidence? _____

Checkpoint C

Name: _____



Sheep in a Jeep

Checkpoint Lab cont.

Part **D** "Sheep-Belts"

- Remove the tape from the sheep and place the sheep back in the jeep.
- Change the ramp to **10 cm** high.
- Place a book flat on the floor **20 cm** from the end of the ramp.

Make a prediction: What will happen to the sheep when the jeep hits the book?

- Release the jeep from the top of the **10 cm** high ramp without pushing it. Let it hit the book.

Part **D** Questions

1 What happened to the sheep when the jeep hit the book? Why?

2 Why is it important to always wear a seat belt in a moving vehicle?

Checkpoint D