	TEAM: Team 8	
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Smartphone- accelerations into physics situations	Italy	Benedetta Campanini Giorgia Sensi
	EXPERIMENT: tracking the velocity of a wheel.	

1. ORIENTATION

We will put a phone inside a car wheel and roll it off a hill. With the phyphox app we will measure the speed of the wheel. Then we will use a bigger wheel and do the same measurements. Then we will look which one goes faster.

1. Research question:

Does the velocity of a wheel depend on its size?

Sub-questions:

- What is the difference in angular velocity between wheels with different diameters?
- What is the difference in orbital velocity between wheels with different diameters?

2. Hypothesis

The bigger wheel will go faster than the smaller one because a bigger wheel covers more distance in one circular rotation, it will have a higher velocity than the smaller wheel.

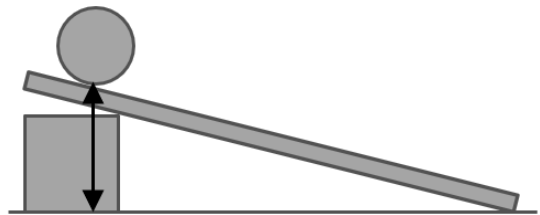
Therefore, the orbital velocity of the biggest wheel will be higher than the orbital velocity of

the smallest wheel. As the smaller wheel has to make more rotations to cover the same distance. When you have a wheel with a bigger diameter the orbital velocity will be less.

2. PREPARATION

1. Material:

- Wheels
- A slope
- Phone
- Duck-tape
- ruler



2. Method:

- measure the radius of the wheel.
- Put the phone in a wheel using duck-tape so it can't move.
- let it roll off a hill.
- it is easier to do this with a timed measurement: press on the three points in the right upper corner and press on timed measurement.
- Delayed start 5s and duration experiment 20s.
- Press on start button and Measure orbital velocity using Phyphox, we will use the Roll-movement function of phyphox to do this.
- Export the data.
- Calculate the angular velocity.
- Do this with multiple wheel sizes, with every wheel size three times.

3. DATA ANALYSIS and DISCUSSION

1. **Observations and Measurements:**

2. **Discussion:**

4. REFLECTION

1. **Conclusion:**

2. **Comparison** of the results of the different countries

3. **Reflection:**

5. REFERENCES