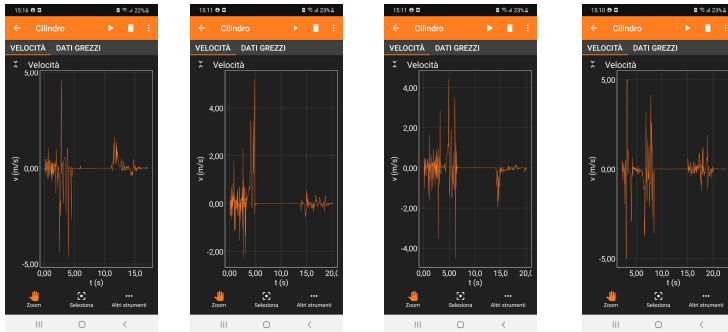


### 3. DATA ANALYSIS and DISCUSSION

#### 1. Observations and Measurements:



radius of the smallest wheel: 25 cm  
radius of the largest wheel: 28 cm

#### 2. Discussion:

-The velocity of the second biggest wheel is higher than the smaller one but the biggest has a lower velocity than the both.

- The angular velocity of the smallest wheel is 13 rad/s and the angular velocity of the biggest wheel is 10,4 rad/s

-The orbital velocity from the smallest wheel is 3,25 m/s. The orbital velocity of the second biggest wheel is 2,9 m/s.

#### 4. REFLECTION

##### 1. Conclusion:

The size of the wheel doesn't affect the velocity. The bigger the mass the higher the gravitational force on the wheel that makes it roll down the slope.

- The angular velocity is almost the same with the 2 smallest wheels but the largest wheel has the smallest angular velocity so we can conclude that the bigger the wheel the lower the angular velocity is, which is logical.

The angular velocity from the second biggest wheel is higher but this is because we only had one good measurement.

- The bigger the wheel the smaller the orbital velocity, we know this because the orbital velocity of the biggest wheel is way lower than the smaller wheels. We only have one measurement of the middle wheel so this could be not accurate.

##### 2. Comparison of the results of the different countries:

Our results are different than theirs, their results are very high by checking in kilometers per hour.

##### 3. Reflection:

#### 5. REFERENCES

orbital velocity smallest wheel: 3,25 m/s

orbital velocity biggest wheel: 2,9 m/s

angular velocity smallest wheel: 13 rad/s

angular velocity biggest wheel: 10,4 rad/s

**Velocity****Metadata Device****Metadata Time****Time (s) Velocity (mGyroscope y (rad/s)**

0,1109583 0,28227702 1,12910807  
0,1503243 0,03854178 0,15416712  
0,1905803 -0,0485065 -0,1940261  
0,2302473 -0,2946852 -1,1787409  
0,2703923 -0,0587385 -0,234954  
0,3102483 -0,6257742 -2,5030968  
0,3504993 0,38215348 1,52861392  
0,3902843 0,38016817 1,52067268  
0,4305593 -0,052019 -0,208076  
0,4702143 0,16071483 0,64285934  
0,5107563 0,25570437 1,02281749  
0,5503563 -0,0810351 -0,3241404  
0,5903013 -0,1989321 -0,7957283  
0,6309233 0,51242048 2,0496819  
0,6705653 -0,6911368 -2,7645471  
0,7103973 0,27479392 1,09917569  
0,7513773 -0,4881768 -1,9527072  
0,7903093 0,32809192 1,31236768  
0,8311183 -0,8327048 -3,3308191  
0,8703963 0,733401 2,933604  
0,9103563 0,29861766 1,19447064  
0,9503043 0,39040017 1,56160068  
0,9902523 -2,8253472 -11,301389  
1,0307323 -0,7467255 -2,986902  
1,0703533 4,3184166 17,2736664  
1,1102693 -0,6245524 -2,4982097  
1,1503623 2,08891106 8,35564423  
1,1903333 -0,5782794 -2,3131175  
1,2309633 0,6773541 2,70941639  
1,2702943 -0,3015575 -1,2062298  
1,3103363 0,05396613 0,21586451  
1,3501963 -0,1088295 -0,4353178  
1,3905953 0,24363978 0,97455913  
1,4302603 -0,1598367 -0,6393468  
1,4702953 0,26089674 1,04358697  
1,5102673 -0,2413872 -0,9655489  
1,5503573 0,50677001 2,02708006  
1,5903873 -0,2540627 -1,0162507  
1,6303783 -0,0394963 -0,157985  
1,6703083 -0,1321951 -0,5287802  
1,7103163 0,07504098 0,30016392  
1,7502903 0,20469713 0,81878853  
1,7902193 -0,4976452 -1,9905808  
1,8310763 -0,4791665 -1,916666  
1,8702683 0,83281934 3,33127737  
1,9107823 0,08848001 0,35392004  
1,9502813 0,1080277 0,43211082  
1,9902203 0,32488486 1,29953945  
2,0302613 0,32763377 1,31053507  
2,0703033 -0,0752319 -0,3009275  
2,1102873 0,35374823 1,41499293

**Velocity****Metadata Device****Metadata Time****Time (s) Velocity (mGyroscope y (rad/s)**

0,1109583 0,28227702 1,12910807  
0,1503243 0,03854178 0,15416712  
0,1905803 -0,0485065 -0,1940261  
0,2302473 -0,2946852 -1,1787409  
0,2703923 -0,0587385 -0,234954  
0,3102483 -0,6257742 -2,5030968  
0,3504993 0,38215348 1,52861392  
0,3902843 0,38016817 1,52067268  
0,4305593 -0,052019 -0,208076  
0,4702143 0,16071483 0,64285934  
0,5107563 0,25570437 1,02281749  
0,5503563 -0,0810351 -0,3241404  
0,5903013 -0,1989321 -0,7957283  
0,6309233 0,51242048 2,0496819  
0,6705653 -0,6911368 -2,7645471  
0,7103973 0,27479392 1,09917569  
0,7513773 -0,4881768 -1,9527072  
0,7903093 0,32809192 1,31236768  
0,8311183 -0,8327048 -3,3308191  
0,8703963 0,733401 2,933604  
0,9103563 0,29861766 1,19447064  
0,9503043 0,39040017 1,56160068  
0,9902523 -2,8253472 -11,301389  
1,0307323 -0,7467255 -2,986902  
1,0703533 4,3184166 17,2736664  
1,1102693 -0,6245524 -2,4982097  
1,1503623 2,08891106 8,35564423  
1,1903333 -0,5782794 -2,3131175  
1,2309633 0,6773541 2,70941639  
1,2702943 -0,3015575 -1,2062298  
1,3103363 0,05396613 0,21586451  
1,3501963 -0,1088295 -0,4353178  
1,3905953 0,24363978 0,97455913  
1,4302603 -0,1598367 -0,6393468  
1,4702953 0,26089674 1,04358697  
1,5102673 -0,2413872 -0,9655489  
1,5503573 0,50677001 2,02708006  
1,5903873 -0,2540627 -1,0162507  
1,6303783 -0,0394963 -0,157985  
1,6703083 -0,1321951 -0,5287802  
1,7103163 0,07504098 0,30016392  
1,7502903 0,20469713 0,81878853  
1,7902193 -0,4976452 -1,9905808  
1,8310763 -0,4791665 -1,916666  
1,8702683 0,83281934 3,33127737  
1,9107823 0,08848001 0,35392004  
1,9502813 0,1080277 0,43211082  
1,9902203 0,32488486 1,29953945  
2,0302613 0,32763377 1,31053507  
2,0703033 -0,0752319 -0,3009275  
2,1102873 0,35374823 1,41499293

**Velocity****Metadata Device****Metadata Time****Time (s) Velocity (mGyroscope y (rad/s)**

0,108345990,154344270,55122954  
0,148373990,-0,5151152 -1,839697  
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0,228340990,-0,0543273 -0,1940261  
0,268410990,317347551,13338411  
0,308447990,-0,5110102 -1,8250363  
0,348404990,13484545 0,4815909  
0,388733990,-0,6598169 -2,3564889  
0,428843990,694837872,48156381  
0,468643990,-0,2056997 -0,7346418  
0,508368990,861775063,07776809  
0,548402990,-0,5019449 -1,7926605  
0,589155990 0,3281232 1,17186856  
0,628376990,-0,1249678 -0,4463134  
0,668426990,-0,0216582 -0,0773508  
0,708382990,485824171,73508632  
0,748743990 0,1876975 0,67034823  
0,788417990,134161280,47914743  
0,828852990,023154850,08269588  
0,868608990,1826795626,52427006  
0,908494990,558346091,99409318  
0,948361990,-1,1546422 -4,1237221  
0,989008990,-1,1479715 -4,0998983  
1,028472990,170080160,60742915  
1,068441990,335135941,19691408  
1,108821990,-1,1026454 -3,9380193  
1,148397990,-0,6654614 -2,3766477  
1,188447990,-0,3492042 -1,2471578  
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1,268394990,-0,2559861 -0,9142362  
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1,428846990,155883640,55672729  
1,468381990,01665524 0,059483  
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1,548342990,-0,4945901 -1,7663932  
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1,869170990,-0,0765628 -0,2734385  
1,908714990,742216522,65077329  
1,948583990,617013592,20361996  
1,988445990 -1,546329 -5,5226035  
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2,068420990,139805680,49930599  
2,108760990,-0,7273786 -2,5977807

**Velocity****Metadata Device****Metadata Time****Time (s) Velocity (mGyroscope y (rad/s)**

0,1057164	-0,3838402	-1,370858
0,1458314	-0,1743135	-0,622548
0,1858534	0,50763208	1,81297171
0,2257244	-1,0355113	-3,6982546
0,2657124	-0,1096595	-0,391641
0,3057254	0,43647848	1,55885172
0,3457134	-0,0236252	-0,0843758
0,3858674	-0,1365131	-0,4875468
0,4264014	0,45426687	1,62238169
0,4658294	-0,2545323	-0,9090438
0,5060934	-0,3670781	-1,3109932
0,5457174	-0,2983191	-1,0654254
0,5857304	-0,3773406	-1,347645
0,6257864	0,1386939	0,49533537
0,6661814	0,13886494	0,49594623
0,7060184	-0,0258488	-0,092317
0,7461294	-0,0078893	-0,0281762
0,7857244	0,48231781	1,72256362
0,8257474	0,09986731	0,35668895
0,8657184	0,35797008	1,27846456
0,9056784	0,0347002	0,12392928
0,9456604	-1,3353483	-4,7691011
0,9857124	-0,071346	-0,2548072
1,0256714	0,22712276	0,8111527
1,0656954	0,13835181	0,49411362
1,1057064	-1,6731569	-5,9755602
1,1457084	-0,2582952	-0,9224829
1,1857624	1,68525806	6,0187788
1,2257304	-0,1890231	-0,6750824
1,2657274	0,01109637	0,03962988
1,3057534	0,1241553	0,4434118
1,3458374	0,18778304	0,6706537
1,3857024	-0,5925118	-2,1161137
1,4260674	0,13475993	0,48128545
1,4659424	0,68996312	2,464154
1,5057114	0,39662563	1,41652012
1,5457744	0,07198741	0,2570979
1,5857254	0,26800186	0,95714951
1,6256934	-1,1817524	-4,2205443
1,6656884	0,12158967	0,43424883
1,7057754	0,24200344	0,86429799
1,7456674	0,11748466	0,41958806
1,7857324	0,27775127	0,99196881
1,8257404	-0,993948	-3,5498142
1,8656974	0,33299791	1,18927824
1,9056784	0,96243344	3,4372623
1,9456704	0,33727397	1,20454991
1,9858404	-0,3462109	-1,2364676
2,0259184	-0,60534	-2,1619284
2,0657264	0,34804962	1,24303436
2,1058134	0,18008613	0,64316475