

Group Member Names:

Date:

Class:

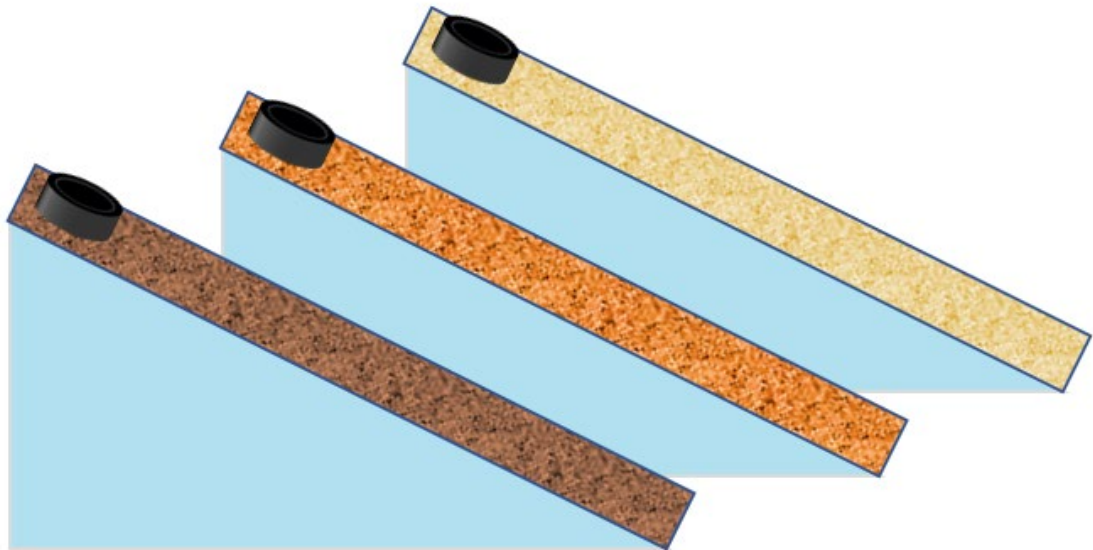
Investigating Friction Worksheet

In this investigation, we are going to examine how surface roughness affects friction. There will be three parts to this inquiry: We will investigate the effect of (1) surface roughness, (2) puck mass, and (3) solid additives by letting a puck slide down a slope.

Read the full set of instructions before attempting the experiments. Before every experiment, discuss the expected outcome.

Surface Roughness

1. Locate the slopes that are covered with different grit sandpaper.
2. Let the puck slide down each surface. Ensure that the pucks are not being pushed down.
3. Measure the time it takes for the puck to travel the distance of A to B.
4. Record your data in the corresponding table.
5. Repeat each measurement three times.



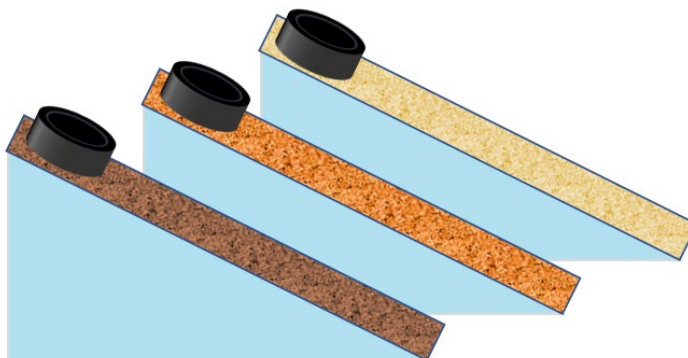
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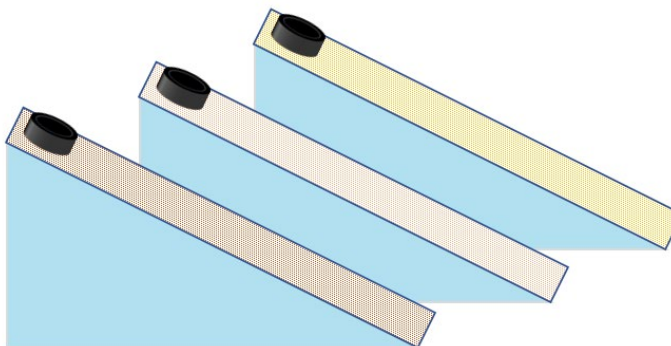
Mass

1. Repeat the previous experiment. This time, use the puck with the larger mass.



Solid Additives

1. Sprinkle your choice of solid additive on each ramp.
2. Repeat the experiment with three different solid additives.
3. Clean the surface when switching additives.



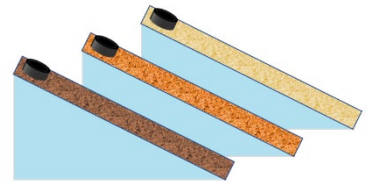
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Datasheet (surface roughness)

Puck mass (kg) =
Distance between A and B (m) =



	Time between A and B (s)	$average\ speed = \frac{distance}{time}$ m/s	
1			Sandpaper grit =
2			
3			
average			
1			Sandpaper grit =
2			
3			
average			
1			Sandpaper grit =
2			
3			
average			

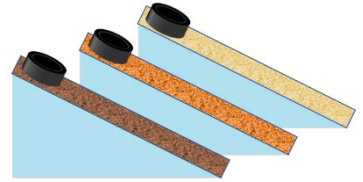
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Datasheet (Mass)

Puck mass (kg) =
Distance between A and B (m) =



	Time between A and B (s)	$average\ speed = \frac{distance}{time}$ m/s	
1			Sandpaper grit =
2			
3			
average			
1			Sandpaper grit =
2			
3			
average			
1			Sandpaper grit =
2			
3			
average			

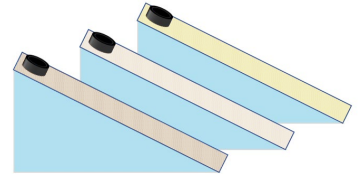
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Datasheet (Solid additives)

Puck mass (kg) =
Distance between A and B (m) =



	Time between A and B (s)	$average\ speed = \frac{distance}{time}$ m/s	
1			Solid additive =
2			
3			
average			
1			Solid additive =
2			
3			
average			
1			Solid additive =
2			
3			
average			

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Conclusions

Based on your data, answer the following questions:

1. If a surface has more friction, it takes _____ time for the puck to slide down a certain distance.
 - a) more
 - b) less
2. In your investigation, which grit sandpaper has more friction?
3. If you want a rougher surface, which grit sandpaper would you choose?
 - a) 80
 - b) 120
4. What is the effect of puck mass on the descent time?
5. How did the solid additives change friction?
6. Summarize three things you learned from this investigation.
7. Can you use this experimental setting to investigate another factor that alters friction? Describe how.