

## Thinking cap

I wonder why people slip more easily on a wet floor than a dry floor...



The wet floor is covered by a layer of water  
( water is a smooth surface so friction is less)



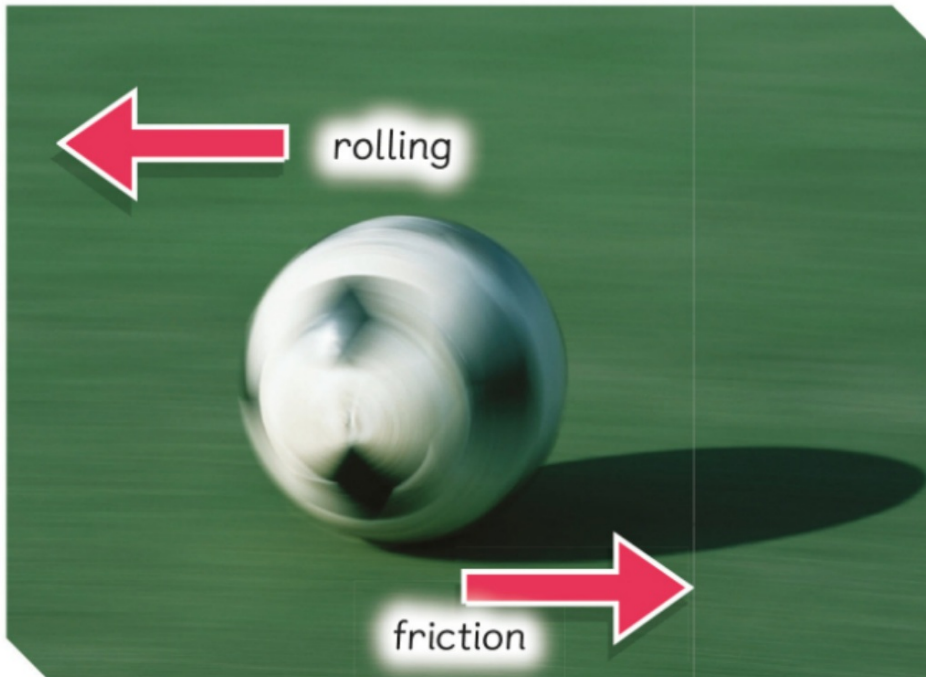
# Let's Learn

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## What Is Friction?

Friction is a force created when a surface moves against another surface. Friction acts in the opposite direction of motion. Friction slows down moving objects or stops them from moving.

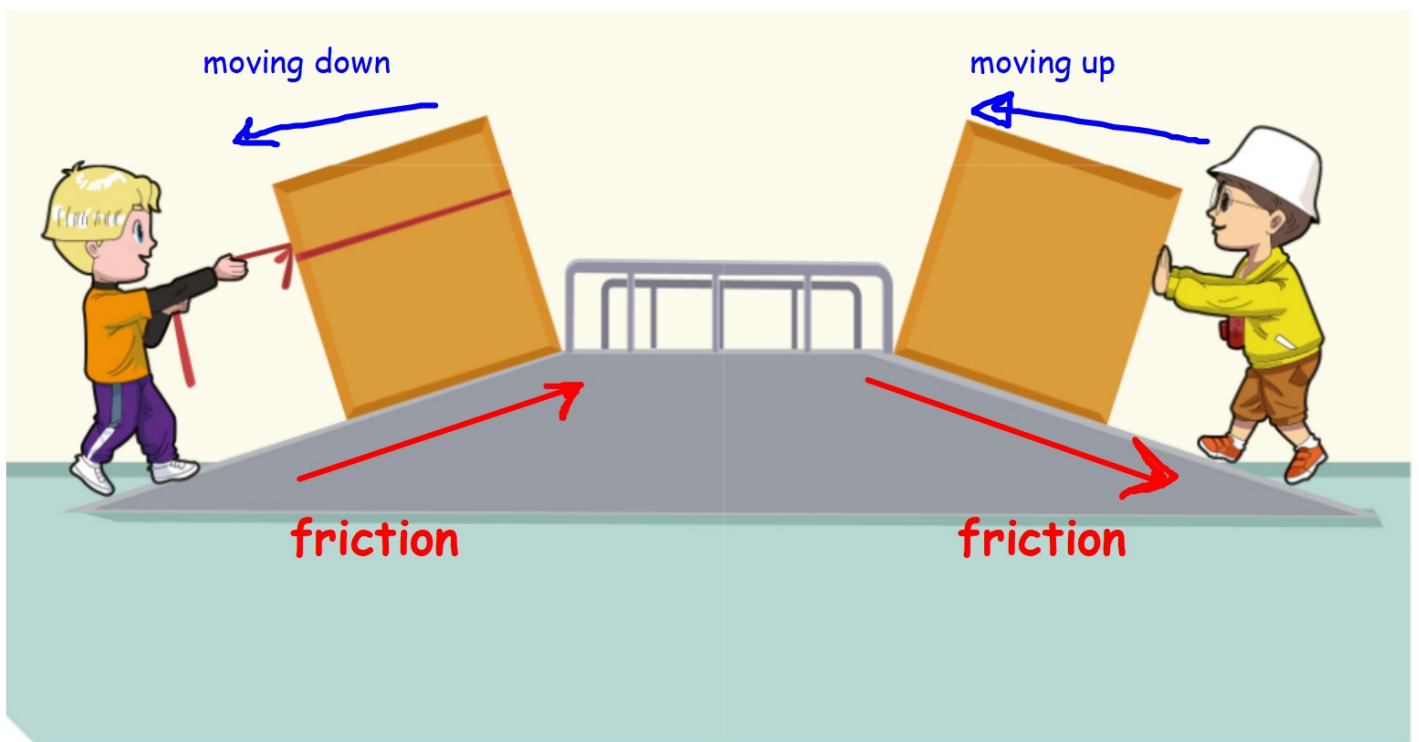




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Friction is created between the soles of our shoes and the ground when we walk. Friction is created between a ball and the ground when a ball rolls.

Friction acts in the opposite direction of movement. In the picture below, draw red arrows to show the direction of friction and blue arrows to show the direction in which each box is moving.



## How Do Surfaces Affect Friction?

Look back at the Let's Explore! Activity on page 91. The toy car travelled further when it moved over the plastic sheet. It travelled a shorter distance when it moved over the sandpaper. Friction slows down and stops the moving car.

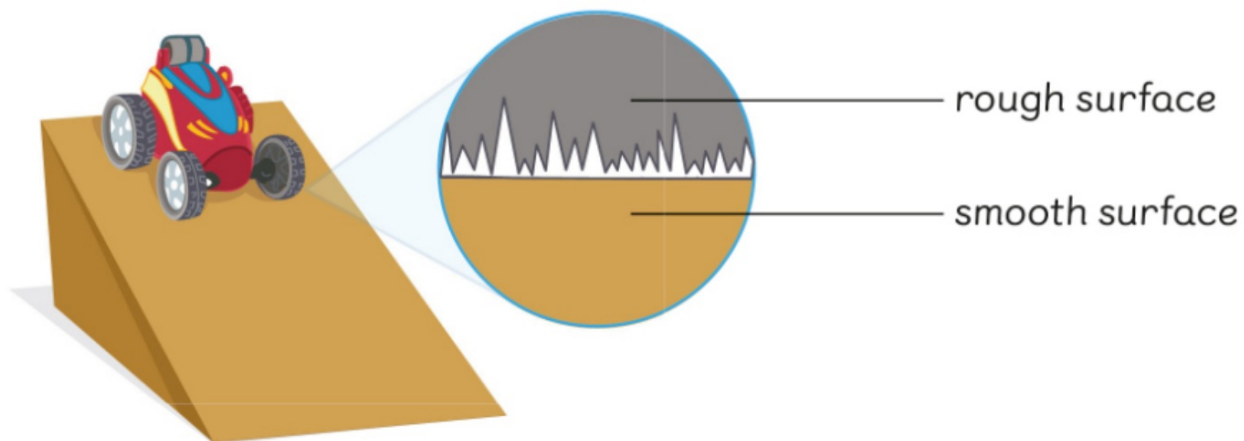
When you push a shopping trolley, does friction act away from you or towards you?

towards me



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There is less friction created when a rough surface moves against a smooth surface. Less force is needed to move against a smooth surface. Objects move easily over smooth surfaces.

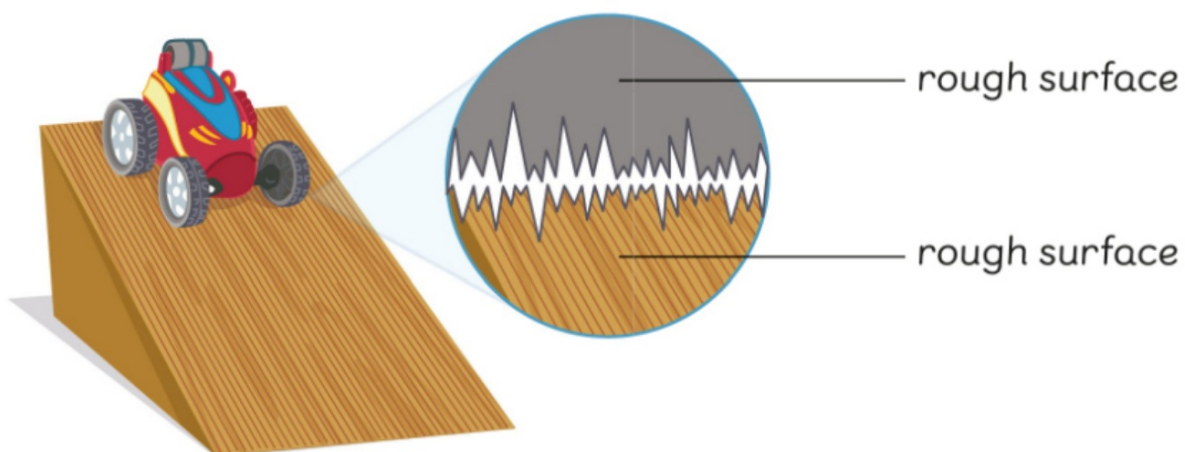


This diagram shows a rough surface moving against a smooth surface.



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There is more friction created when a rough surface moves against another rough surface. More force is needed to move against a rough surface. Objects do not move easily move over rough surfaces.

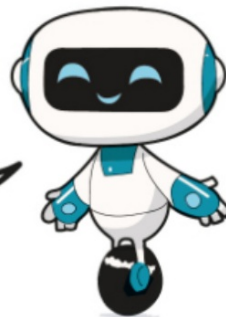


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This diagram shows a rough surface moving against a rough surface.

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Will a marble roll  
more easily on the  
floor or grass? Why?



on the floor because the floor is a smooth  
surface compared to grass



## When Is Friction Helpful?

Imagine what would happen if there was no friction. Would we be able to walk?

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Sometimes friction is helpful to us. It helps us to hold things like pencils and cups. It helps us to walk without slipping. It helps cars to move without skidding.



Why do cars sometimes skid when the road is wet?



Wet road is a smooth surface compared to dry road so the friction between the road and the car tyres becomes less.

why are grooves important?



Car tyres and soles of shoes have grooves to increase friction. This prevents slipping.

↓  
higher friction

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Why are brakes important?



Cars and bicycles have brakes that use friction to  
help slow down and stop the vehicles.



## Word Boost

grooves

## When Is Friction Not Helpful?

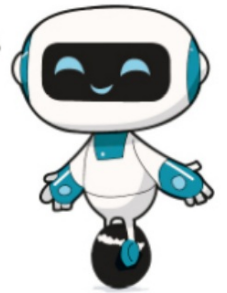
Sometimes friction is not helpful for us. Friction makes it harder to move things across the floor.



Friction between the skis and the snow makes skiing slower.



Can you think of other situations where friction is not helpful?



Soles of shoes get worn out because of friction.



## Word Boost

soles

undersides of footwear such as shoes



Look at the stickers at the back of the book. Paste the stickers to show which roads Ron, Eddy and Ralph are talking about.

