

Key Knowledge

Wheels and Axles

Mechanisms are the parts that make something work.




- Mechanisms are all around us! Most objects that help us in our lives are made up of different mechanisms.
- Wheels and Axles are mechanisms that help things to move.
- Wheels are circular objects that roll on the ground, helping vehicles and other objects to easily move.
- Axles are rods that help wheels to rotate. The wheel can either rotate freely on the axle, or be attached to (and turn with) the axle.

Vocabulary

Word	Definition
mechanism	a system of parts working together
wheel	a circular object that revolves
axle	a rod passing through the centre of a wheel
axle holder	holds the axle allowing it to rotate
friction	a force which slows objects down
dowel	a peg used to hold parts together
chassis	the base of a wheeled vehicle
properties	the characteristics of a material
suitability	how suitable something is for a task



Example Mechanisms

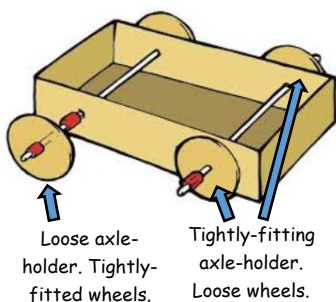
	Ferris Wheel	-A <u>Ferris Wheel</u> is one example of a wheel and axle mechanism in action. Normally, Ferris Wheels are <u>fixed to the axle</u> . Force is applied to the axle which makes it spin. This makes the giant wheel spin too!
	Roller Skates	- <u>Roller skates</u> are another example of wheel and axle mechanisms. Obviously, there are four wheels here instead of one, and the wheels are much smaller. Often, the <u>wheels rotate free from the axle</u> , but sometimes they are fixed.
	Toy Car	<u>Toy cars</u> (and real cars) use wheel and axle mechanisms to move. On toy cars, the <u>wheel is normally fixed to the axle</u> , meaning both the wheel and axle spin. This makes it really important that there is not too much <u>friction</u> on the axle, or the wheel will not move!

Making & Evaluating

Making

-Wheels could be made from wood, card, MDF, plastic, cotton reels, or foam-covered reels.

-Axles could be made from dowels or paper sticks.



Free Axles - Fixed Wheels

-The axles move with the wheels.
 Loose-fitting axle-holder, tightly fixed wheels.

Fixed Axles - Free Wheels

-The axles will remain fixed to the chassis. The wheels move alone. Tight-fitting axle-holder, loose-fitting wheels.

Evaluating

-How well does your mechanism work?

Does it move smoothly?

-Does it meet its purpose?

-Who would use your mechanism? What would they like about it?

-How did you prevent any unwanted friction?

-How did this affect the mechanism?

-What else could you do to improve your mechanism?

