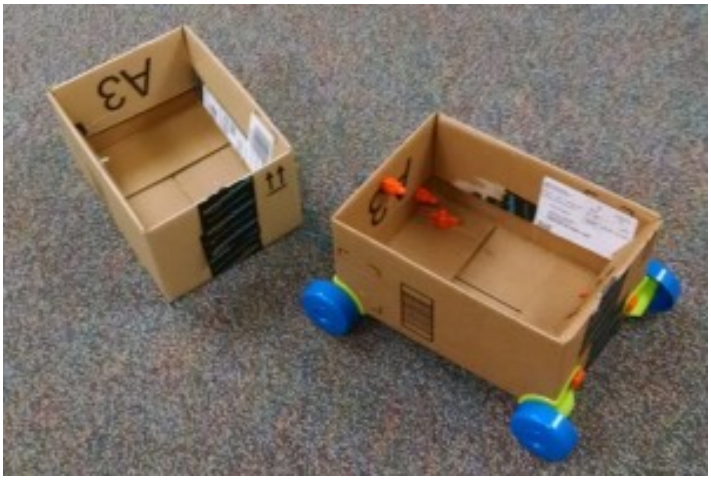
Design and make a car
to enter into…

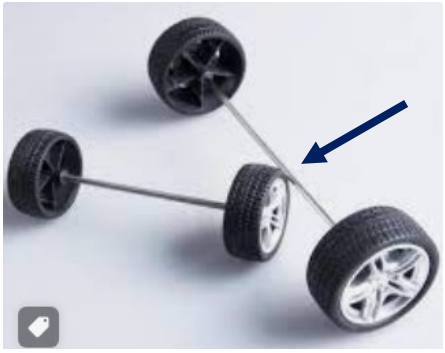
The Great Wheel and Axle Race

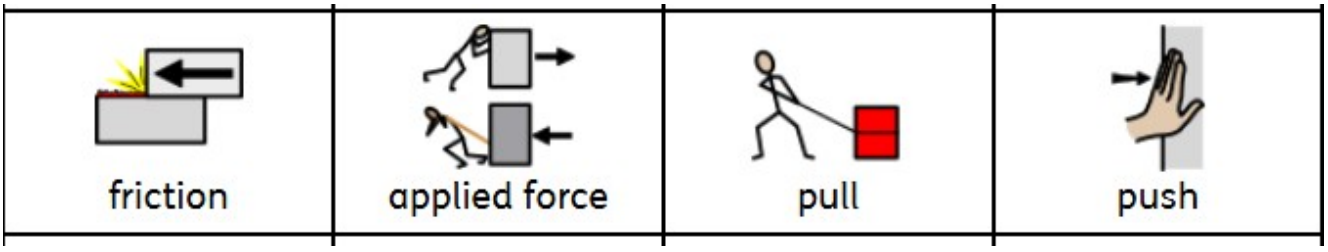


Aspect of D&T: Mechanisms

Focus: Wheels and axles

Key Vocabulary

axle 	The wheels are attached to a special rod called an axle.
chassis	The frame or base on which a vehicle is built.
fixed axle	The axle is fixed to the vehicles chassis; it does not rotate (move). The wheels rotate around the axle.
free axle	The axle moves freely inside an axle holder. The axle and the wheels move at the same time.



<u>Exploration:</u> Explore and evaluate a range of wheeled products such as toy cars

Who do you think the vehicle has been designed and made for?

an adult	a teenager	a child	a toddler

What makes you think that?

it is big	it is safe to use	it is small	it is plastic

What do you like about the product?

colour / design	has lights	has buttons to press	has music / sounds	moves

How does the product move?

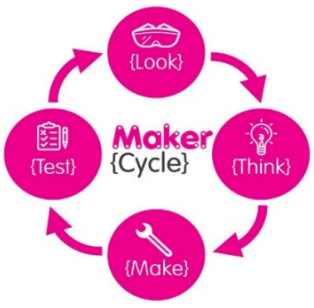
push it	pull it	applied force

How do you think the wheels move?

round and round	up and down	side to side	wheels freely move on a fixed axle	axle freely moves within an axel holder

How many wheels does the car have?	4 wheels	3 wheels	2 wheels
Why do you think it has this number of wheels?	stable	unstable	prevent drag

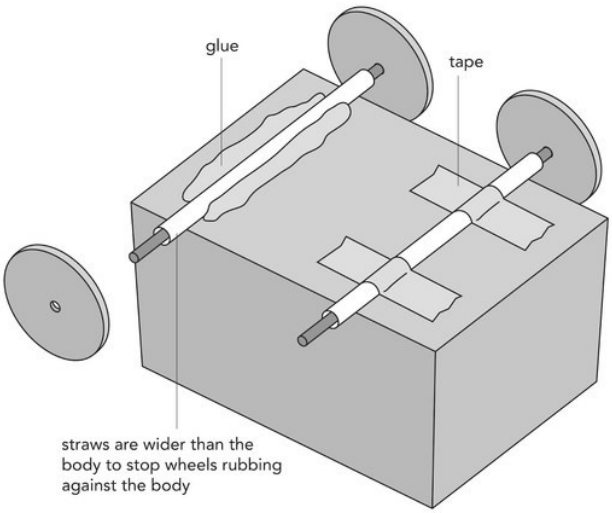
Exploration



Tick		

Task: Using construction kits with wheels and axles, make a product that moves.

Skill builder



Task: Use the tools and materials to explore fixed axles and free axles

tape	straws	wheels	box	glue stick

Which axle do you prefer?

fixed axle - the axle is attached to the chassis. The wheels rotate around the axle.	free axle - the axle moves freely within an axle holder. The wheels move at the same time.

How successful were you at carrying out the skill?

Tick		

Designing:

Your task is to design and make a car to enter into The Great Wheel and Axle Race.

Design criteria

1. It will fit on the ramp.
2. It will move.
3. It will be made from recycled materials.

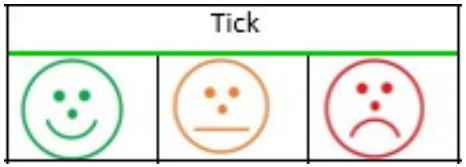
Designing - What resources and materials will I need? Please tick.

Straw	dowel or paper stick	wheels	lid	cardboard wheels	masking tape
peg	lolly stick	cardboard roll	glue	box	bottle

Draw a picture of your design here.

Things to consider:

push it	pull it	colour/ design	number of wheels	size



My prototype

Insert photo of the child with their product

Evaluating: my own thoughts about my product

After you have finished and tested your product, say how well you think it meets your design criteria

Design criteria	Tick		
	Fully meets	Partially meets	Does not meet at all
1			
2			
3			
4			

Assessment
(Mechanical, textiles, structural and electrical projects)

How well does the child demonstrate and apply knowledge and understanding of:

1.) designing and making principles
2.) technical skills

Please tick appropriate box / add comment

1	Basic – Limited ideas	Moderate	Outstanding – e.g. Good design brief with an attempt to justify how they have considered most of their users' needs. Imaginative, creative and innovative ideas.
Designing			
	Limited – The child needed lots of support to organise themselves	Adequate	Excellent –e.g. Correct tools, materials and equipment have been consistently used. Prototype shows a high level of finishing skills. Child has worked mostly on their own.
Making			
	Basic	Reasonable	Insightful – e.g. Excellent ongoing evaluation throughout the project
Evaluating			

2	Low precision	Moderate precision	High precision
Level of execution			
	Weak	Fragile	Stays together
Assembly			

Teacher comment