



Visit TechCard at techcard.co.uk & Instagram & YouTube

Tipping Wagon

Maker Pack: Skill Level ● ● ○ ○ ○

Upcycle a plastic tray and build a four wheeled tipping wagon!

Explore mechanisms like levers and wheels and axles.

See how to make with TechCard on our website.

Raise and lower the back of the wagon.



Push down on the lever to tip the wagon.

The wagon rolls on its wheels and axles.

Assembly videos on YouTube!

Parts to make 1 model

Structural Parts

TechCard Strip	1
TechCard Girder	1
TechCard Beam	1

Mechanical Parts

25mm Disc	6
50mm Wheel	4
300mm Dowel Axle	2

Additional Materials

Upcycled tray about 170mm x 140mm x 60mm.
Thin card, paints, pipe cleaners, lolly sticks, upcycled bottle tops and packaging.

You will have parts left over towards other models.

Parts to make 10 models

Structural Parts

TechCard Strip	10
TechCard Girder	2
TechCard Beam	10

Mechanical Parts

25mm Disc	60
50mm Wheel	40
300mm Dowel Axle	20

Additional Materials

10 x Upcycled tray about 170mm x 140mm x 60mm.
Thin card, paints, pipe cleaners, lolly sticks, upcycled bottle tops and packaging.

Based on pupils sharing off-cuts between them.

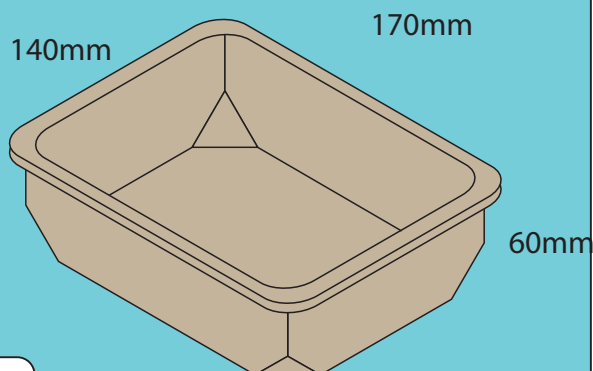
Make the Tipping Wagon



Before you start see
'Make with TechCard'
on our website.

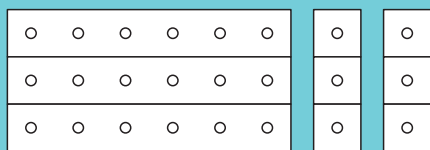
1 Choose your tray.

This is the size
of our tray.



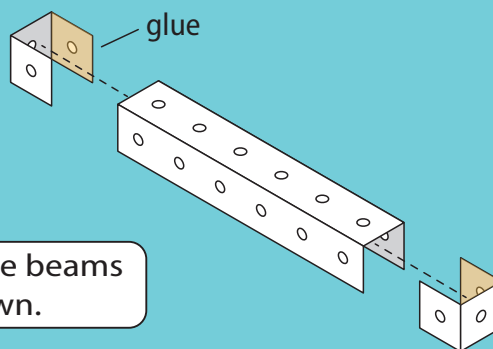
Use a plastic mushroom
tray or similar.

2 Make the chassis.



Cut one 150mm and
two 25mm beams.

Fold and glue the beams
together as shown.

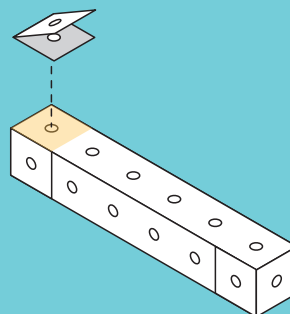


3 Make the hinge.



Cut a 25mm girder.

Fold and glue the girder to
the end of the beam as shown.

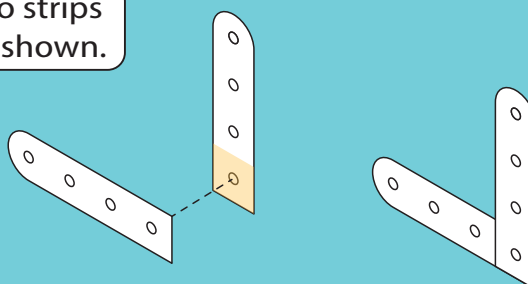


4 Make the lever.



Cut two 100mm strips
and shape the ends.

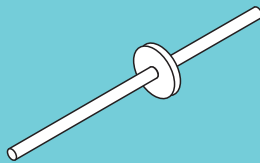
Glue the two strips
together as shown.



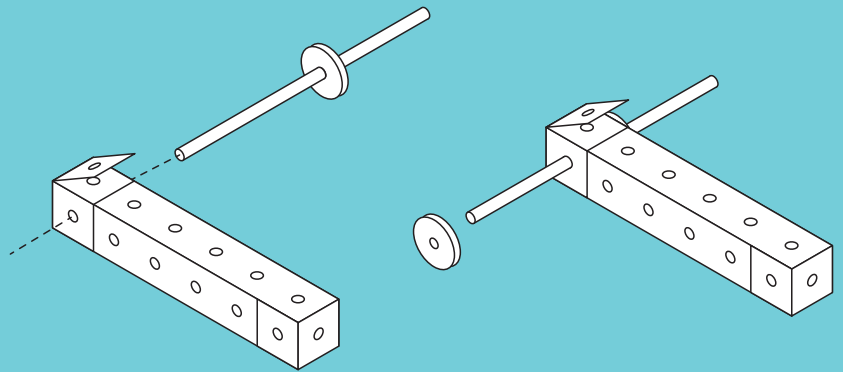
5 Fit the first axle.



Cut two axles about 25mm longer than the width of the tray.

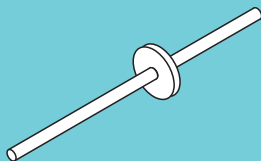


Fit a 25mm disc near the middle of an axle.



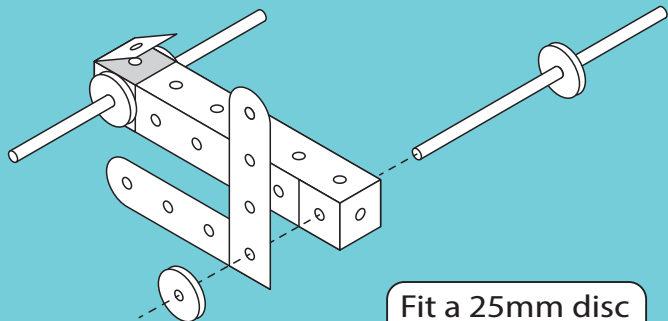
Pass the axle through the beam and fit a second 25mm disc.

6 Fit the second axle.



Fit a 25mm disc near the middle of the second axle.

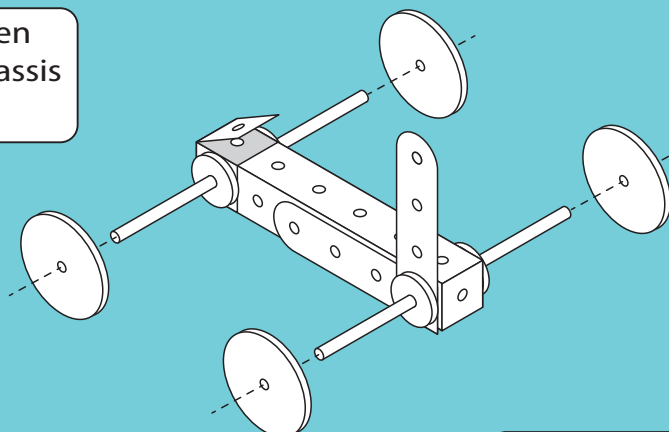
Pass the axle through the beam and the lever as shown.



Fit a 25mm disc as shown.

7 Fit the wheels.

Check there is a gap between the 25mm discs and the chassis so the axles turn easily.

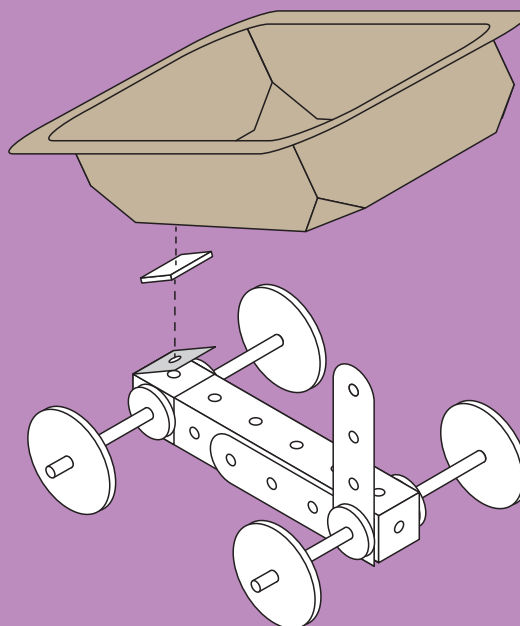


Fit four 50mm wheels to the ends of the axles.

8 Fit the tray.

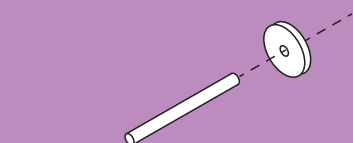
Position the tray so that it does not interfere with the lever.

Use double sided foam tape to fix the tray to the hinge.

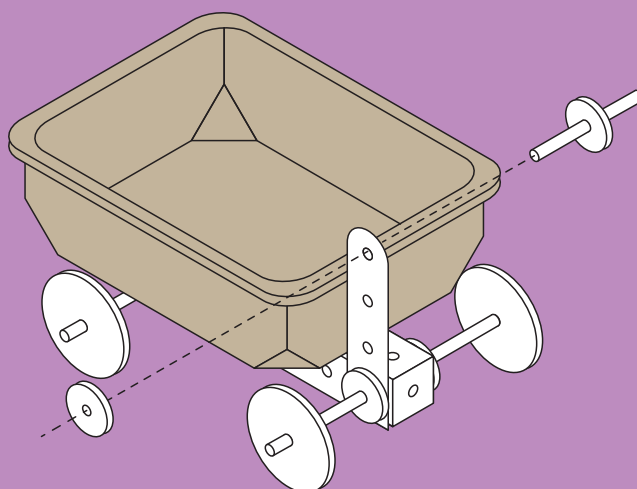


9 Fit the handle.

Cut a 50mm axle.



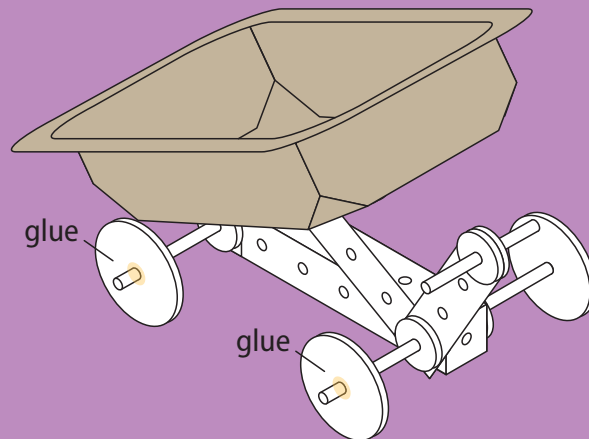
Fit a 25mm disc onto the middle of the axle.



Pass the axle through the top of the lever and fit a second 25mm disc.

10 Finish the model.

Check the lever mechanism works properly.

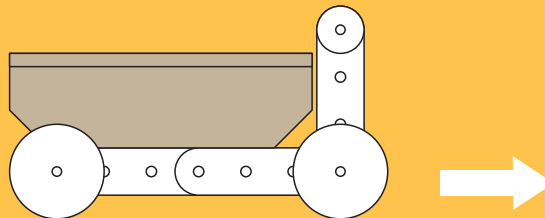


Check the wheels are straight and glue to the axles.

11 Operate your Tipping Wagon!

The wagon has wheels which roll as it moves forward.

The wheels make the wagon move easily by reducing contact with the ground.



The bucket of the wagon is operated by a lever.

As the handle of the lever is pushed down, the other end rises lifting the bucket.

The lever changes the direction of the force applied to it.

