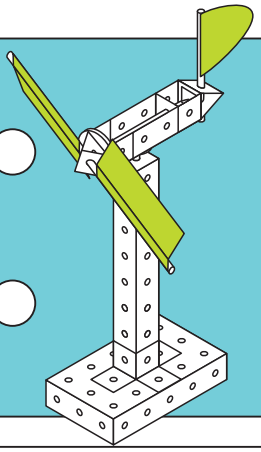
Visit TechCard at techcard.co.uk & Instagram & YouTube

Windmill

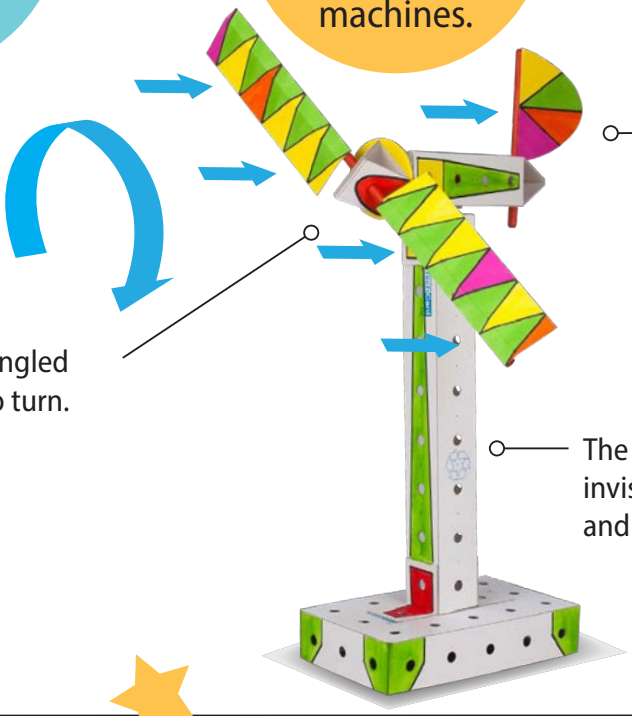


Power-it Kit Skill Level ●●●○○

Build a windmill that steers itself into the oncoming wind!

Explore how moving air can be used to power machines.

See how to make with TechCard on our website.



The rudder keeps the sails facing the oncoming air.

Moving air hits the angled sails causing them to turn.

The windmill shows that air, though invisible, is a substance, takes up space and can be used to transmit force.

Assembly videos on YouTube!

Parts to make **1** model

Structural Parts		Mechanical Parts	
TechCard Girder	1	25mm Disc	1
TechCard Beam	2	40mm Wheel	1
TechCard Base	1	300mm Dowel Axle	3

Additional Materials
A5 Size Thin Card x 1

You will have parts left over towards other models.

Parts to make **10** models

Structural Parts		Mechanical Parts	
TechCard Girder	8	25mm Disc	10
TechCard Beam	20	40mm Wheel	10
TechCard Base	10	300mm Dowel Axle	25

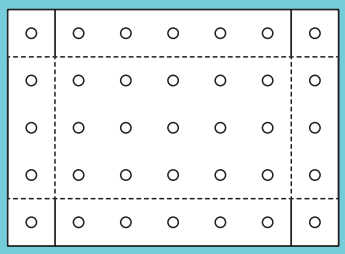
Additional Materials
A5 Size Thin Card x 10

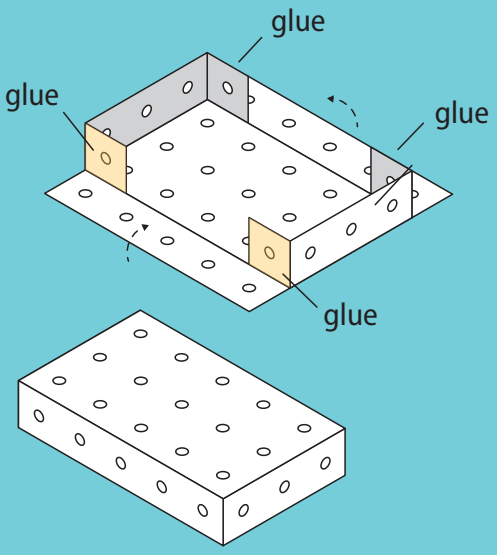
Based on pupils sharing off-cuts between them.

Make the Windmill Build

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

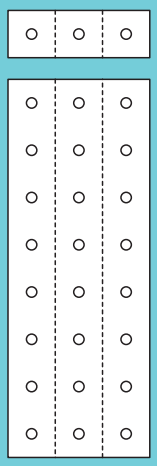
1 Make the base.



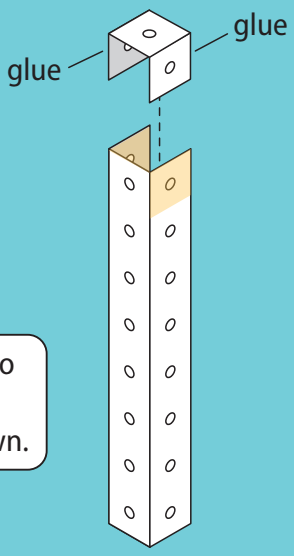


Fold and glue a TechCard base.

2 Make the tower.

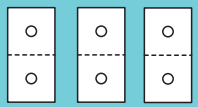


Cut a 25mm and a 200mm beam.

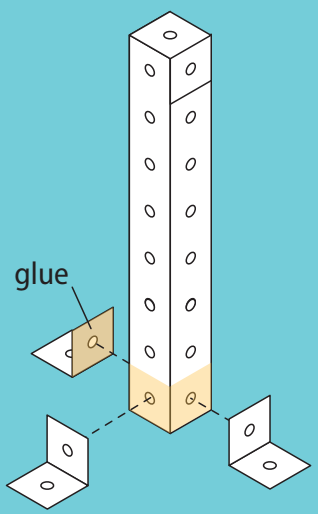


Fold the beams to shape and glue together as shown.

3 Fit the brackets.

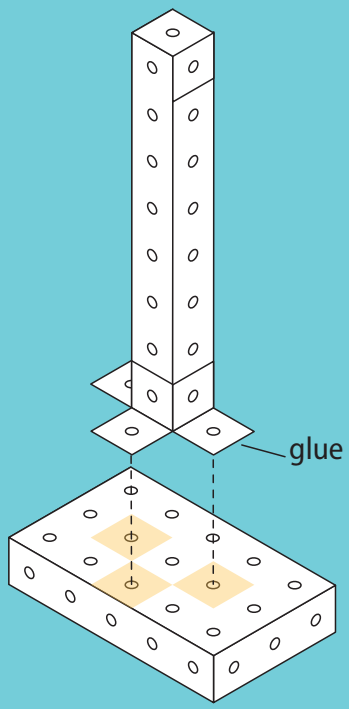


Cut a three 25mm girders.



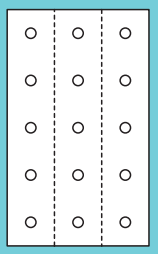
Fold the girders and glue to the base of the beam.

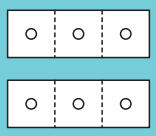
4 Fit the tower.



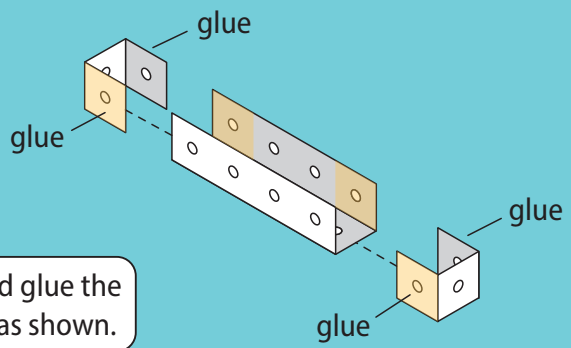
Glue the tower to the base as shown.

5 Make the top section.



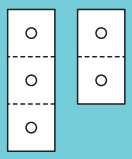


Cut a 125mm and two 25mm beams.

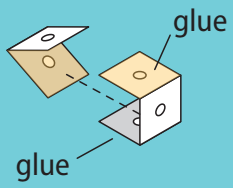


Fold and glue the beams as shown.

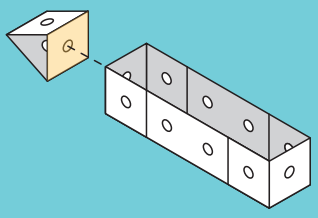
6 Fit the rear section.



Cut a 25mm beam and a 25mm girder.

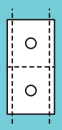


Fold and glue the girder and beam as shown.

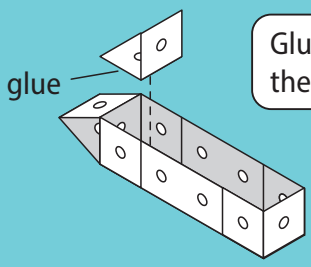


Glue the parts together as shown.

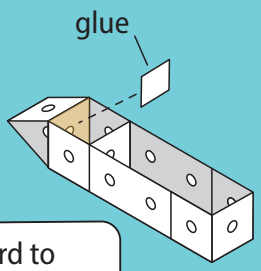
7 Fit the guide.



Cut a 25mm girder and trim as shown.



Glue the girder into the beam as shown.

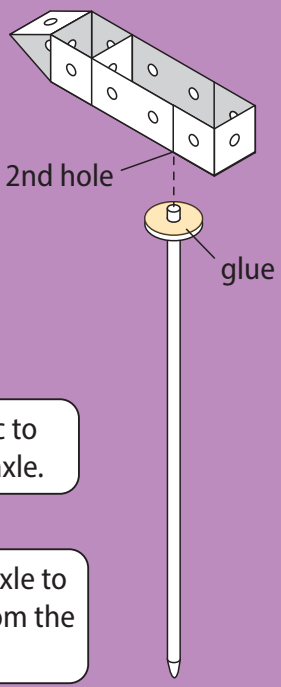


Glue a scrap of card to block the hole at the back.

8 Fit the long axle.

Cut a 240mm axle.

Make a dull point on the end of the axle.

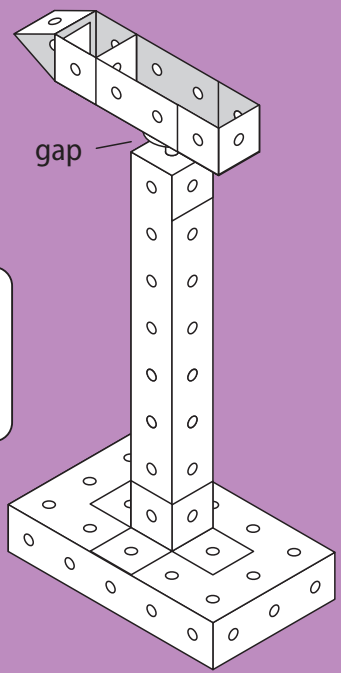


Fit a 25mm disc to the top of the axle.

Glue the disc and axle to the second hole from the front of the beam.

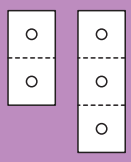
9 Check the assembly.

Fit the long axle into the tower.

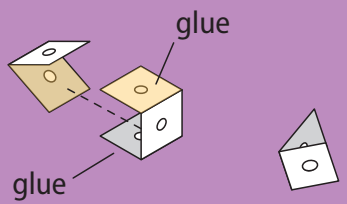


Check there is a gap between the top section and the tower so it moves easily.

10 Assemble the spinner.



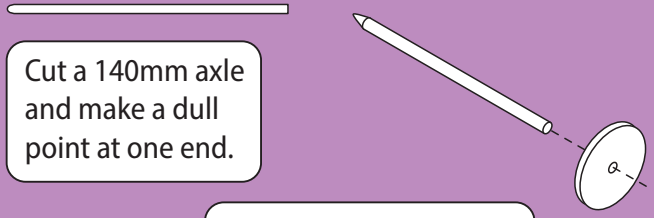
Cut a 25mm beam and a 25mm girder.



Fold and glue the girder and beam as shown.

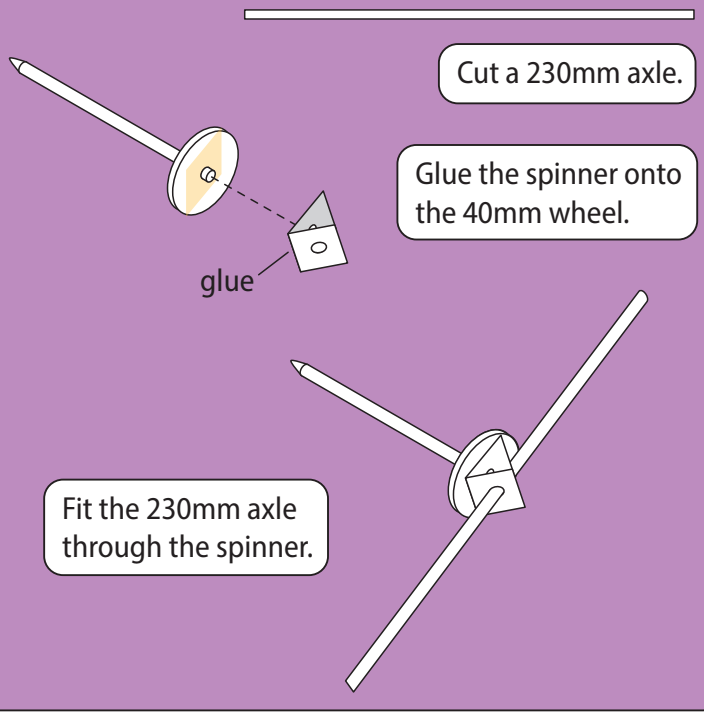
11 Assemble the top axle.

Cut a 140mm axle and make a dull point at one end.



Fit a 40mm wheel onto the end of the axle.

12 Fit the axle for the blades.

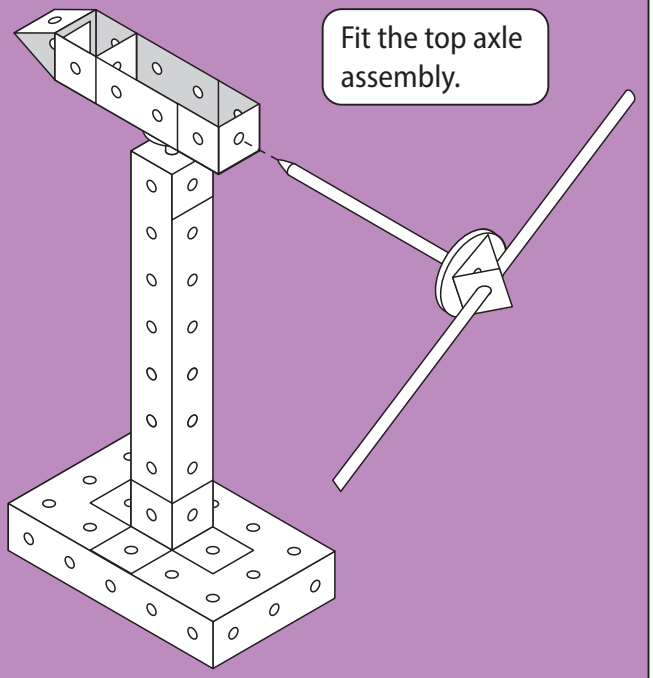


Cut a 230mm axle.

Glue the spinner onto the 40mm wheel.

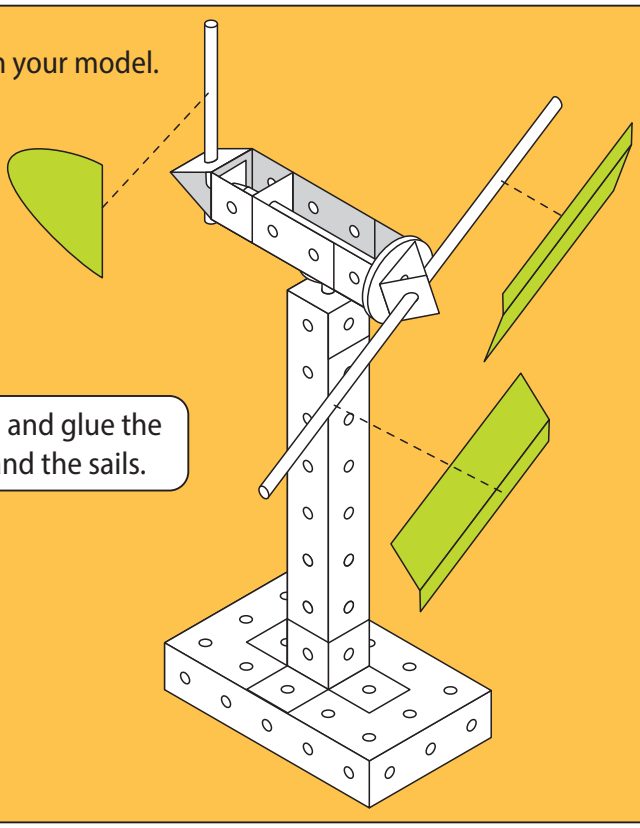
Fit the 230mm axle through the spinner.

13 Fit the axle assembly.

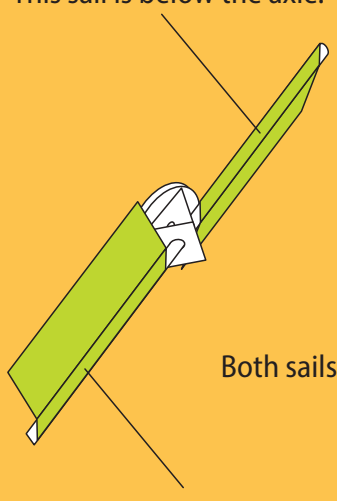


Fit the top axle assembly.

14 Finish your model.



Cut, fold and glue the rudder and the sails.



This sail is below the axle.

Both sails fold back.

This sail is above the axle.

15 Operate your Windmill!

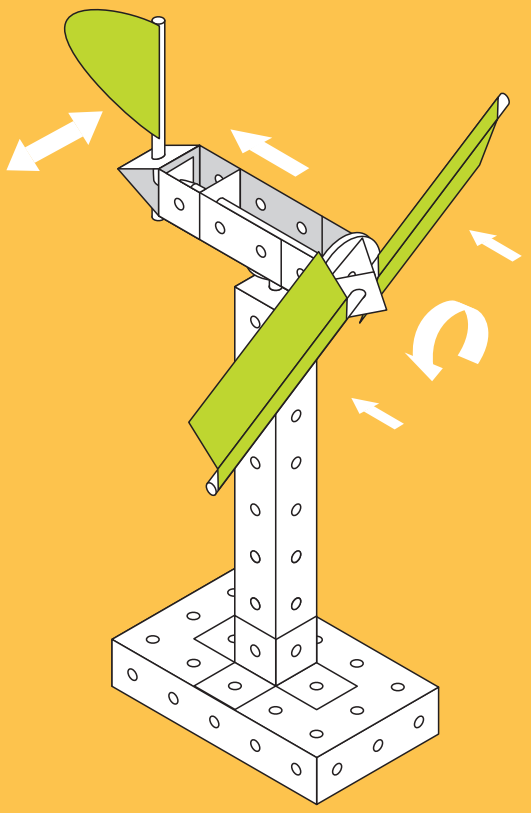
Take your windmill outside on a breezy day or use a hair drier or fan.

Moving air hitting the angled blades of the 'sails' is deflected causing the sails to move. The sails are connected to a central axle which converts this movement into a rotating force.

As air passes the sails it acts on the vertical rudder which constantly steers the top of the windmill into the wind.

Although air is invisible, it is a substance and can transmit force. You can see this force as wind moves the branches of a tree.

We harness the power of wind with turbines that turn generators to create electricity.



Card Panels

Print and cut along the solid lines and fold along the dotted lines of the panels.