



challenge cards



Find more resources for Blueprint Snap at
sphero.cc/BPsnapresources

trusses & weighted trusses



1x Pitch
Truss



2x Pitch
Truss



3x Pitch
Truss



4x Pitch
Truss



5x Pitch
Truss



10x Pitch
Truss



1x Pitch
Weighted Truss



3x Pitch
Weighted Truss

connectors & hinges



Connector



Lock
Plate



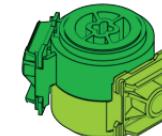
Bearing
Plate



Cardboard
Clamp



Turntable



Hinge

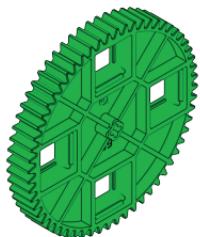


Linear
Motion Bracket

gears



20T Gear



60T Gear

shafts & shaft collar



2x Pitch
Capped Shaft



3x Pitch
Capped Shaft



4x Pitch
Capped Shaft



Shaft
Collar

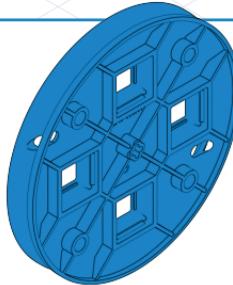
pulleys & tires



30mm
Pulley



45mm
Pulley



90mm
Pulley



100mm
Tire



5x Pitch
Shaft

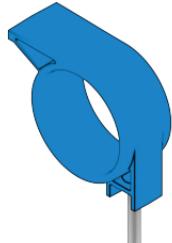


6x Pitch
Shaft



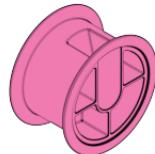
10x Pitch
Shaft

ring tool

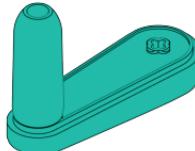


Ring Tool

spool, ropes, and rope anchor



Spool

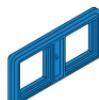


Hand Crank

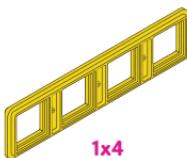


Rope Anchor

plates



1x2
Plate



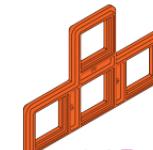
1x4
Plate



2x2 45°
Angle Plate



2x2 90°
Angle Plate



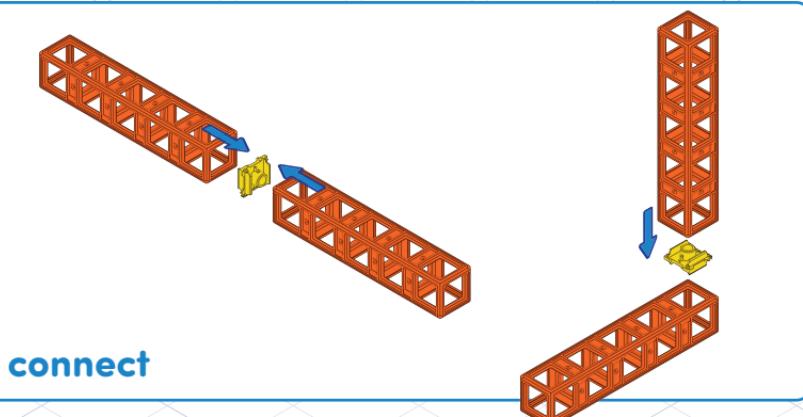
2x3 Tee
Plate



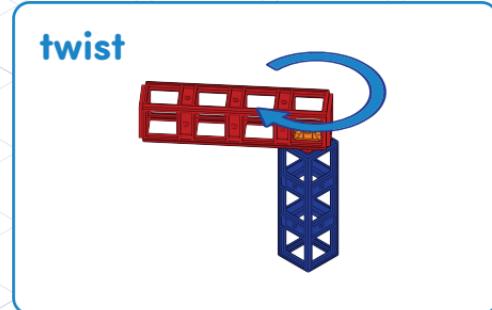
0.5m Rope



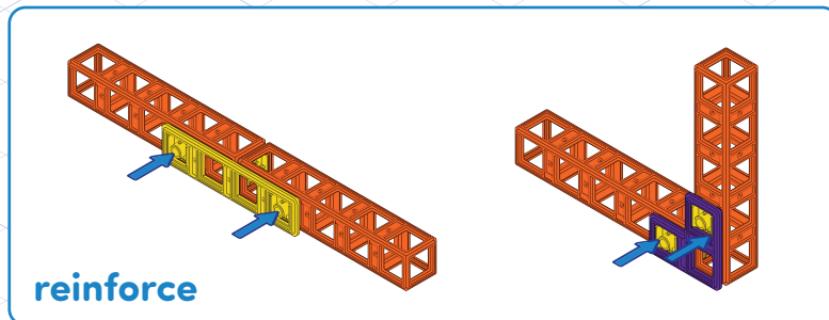
1m Rope



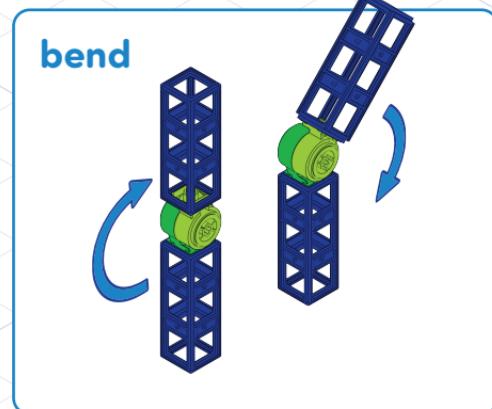
connect



twist

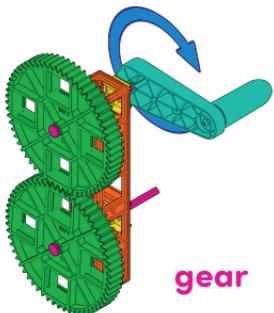


reinforce

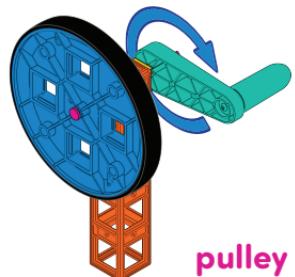


bend

create motion



gear

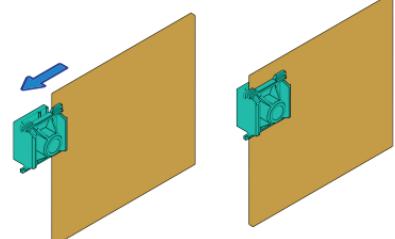


pulley

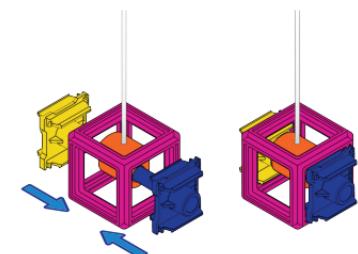
wind rope



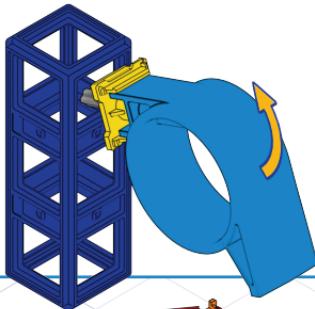
craft



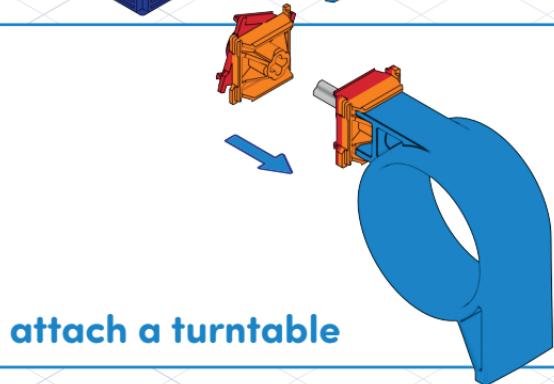
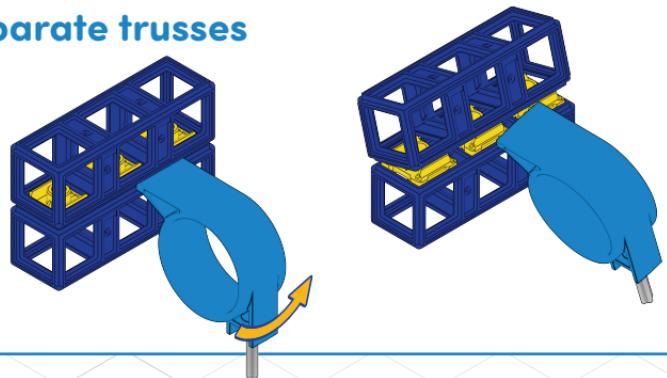
attach rope



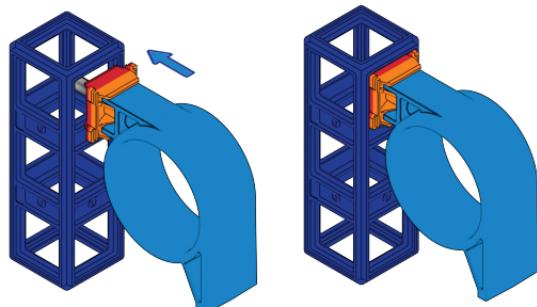
remove connector



separate trusses



attach a turntable



parts

5

Connector



3

2x Pitch
Truss

3

3x Pitch
Truss**learn**

Connectors are your friends. They attach Snap parts to one another so you can create large builds. Let's explore!

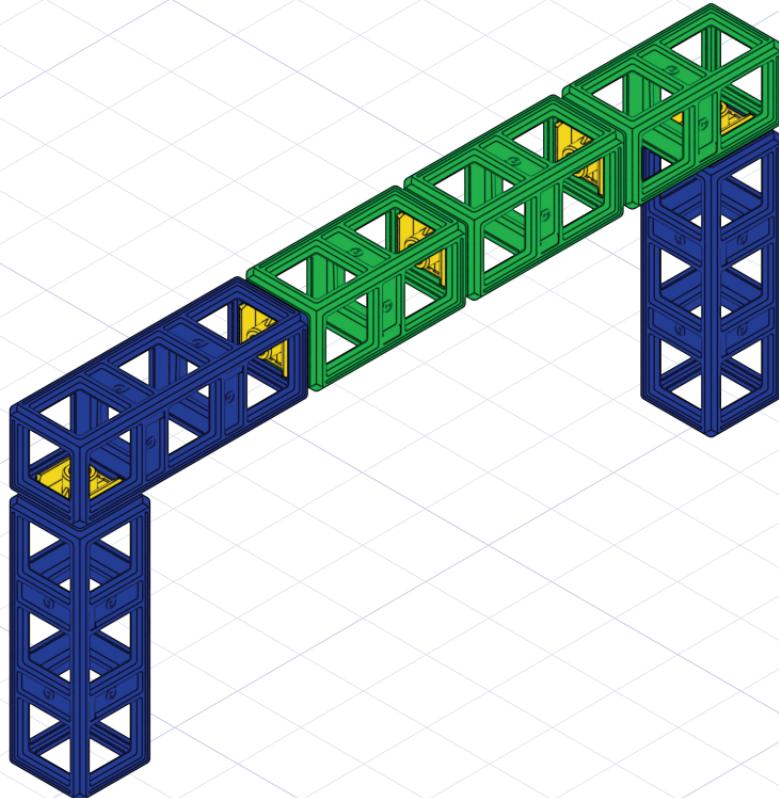
build

Build a small bridge.

**explore**

⊕ This bridge is not very sturdy. Add or replace Snap parts to make it stronger.

⊕ Try placing a small object on the bridge to see how strong it is. What could make it stronger?



parts

9

Connector

3



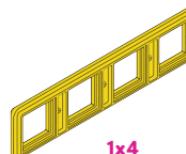
2x Pitch Truss

3



3x Pitch Truss

1



1x4 Plate

learn

When a plate is connected over a joint between trusses, it will reinforce your build.

build

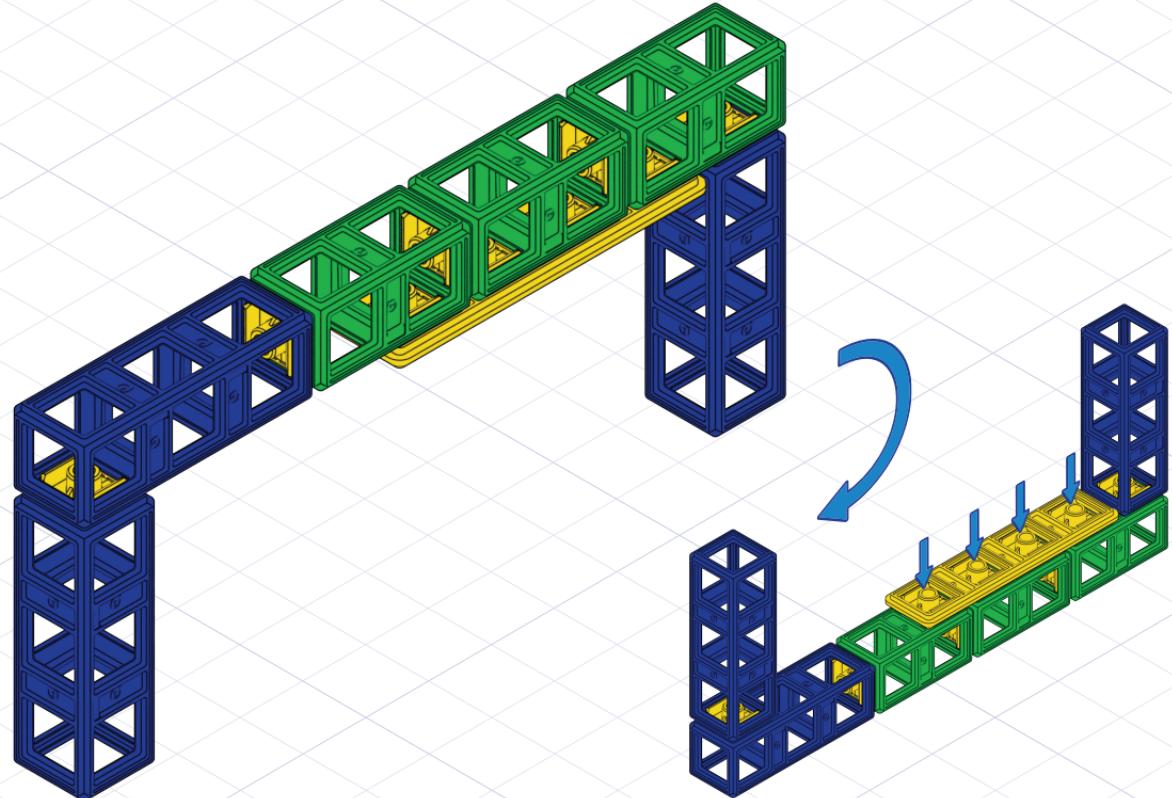
Build the bridge you saw in Challenge #1, this time with a 1x4 Plate to reinforce it.



Flip

explore

- + Put the 1x4 Plate in a few different places. Where does it work the best?
- + Try adding other plates to your bridge and test how strong it is.



parts2 

Turntable



2

Hinge

2

2x Pitch
Truss

2

3x Pitch
Truss

1

5x Pitch
Truss**learn**

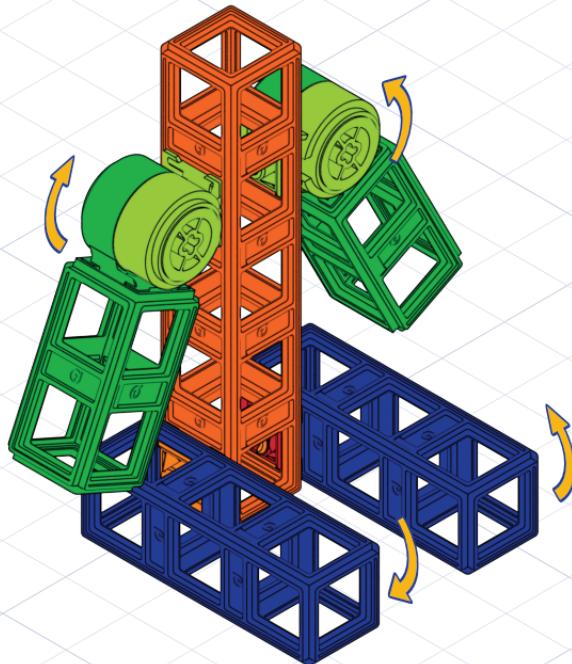
Turntables let parts rotate, and Hinges help you change the angle between pieces. Together, they can help you build arms and legs for an adorable stick figure.

build

Build a stick figure. 

explore

- + Add some Snap parts to your stick figure to make it a bit more interesting.
- + What makes Turntables and Hinges better for this build than Connectors?



parts

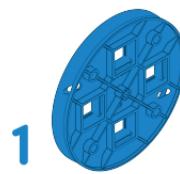
Connector

3x Pitch
Capped ShaftShaft
Collar

20T Gear



60T Gear

90mm
Pulley10x Pitch
Truss**learn**

Shafts help gears and wheels spin. Capped shafts and shaft collars help keep the gears and wheels from spinning away.

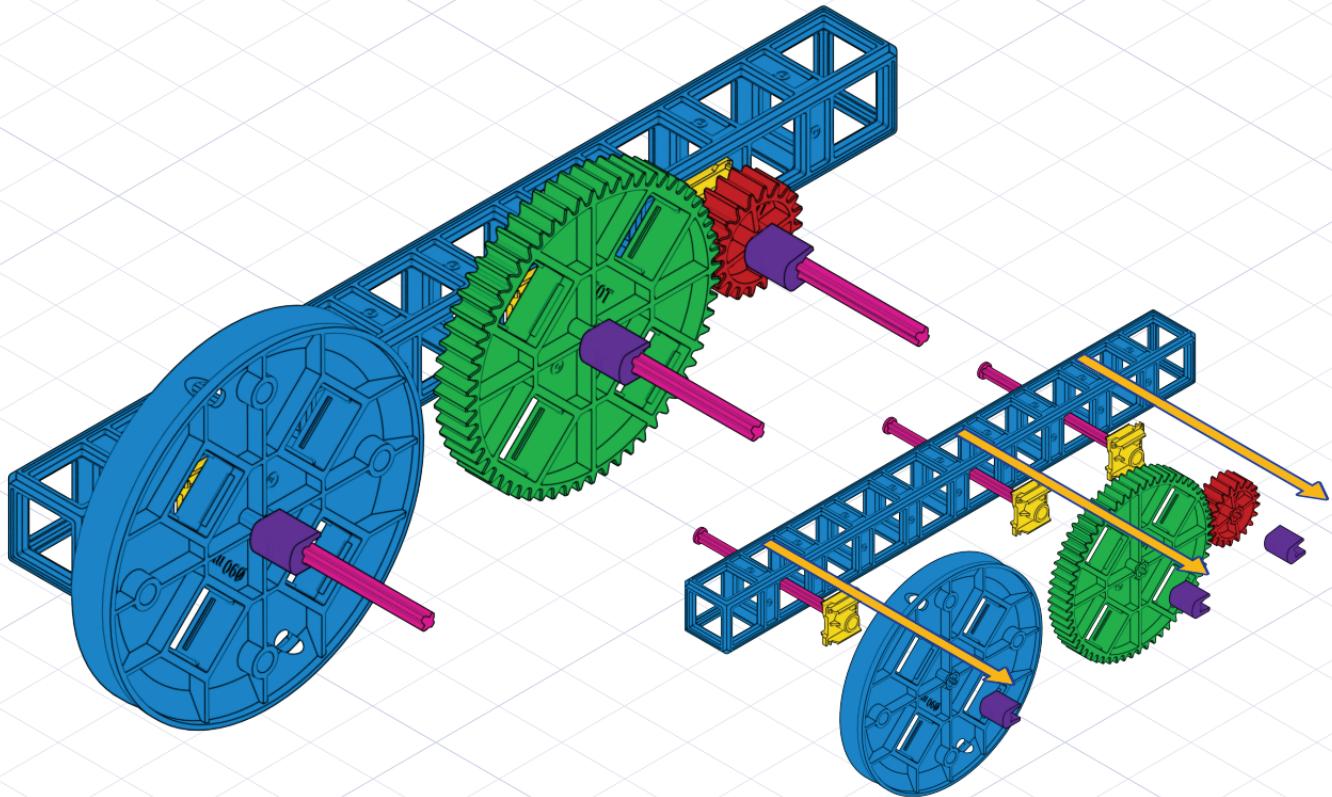
build

Build a gear and pulley system. 
Flip

explore

+ What else might you build with gears and pulleys?

+ Try removing some of the shaft collars or using metal shafts. What happens?



parts

2

Lock
Plate

2

Bearing
Plate

1

3x Pitch
Capped Shaft

1

5x Pitch
Truss

1

10x Pitch
Truss**learn**

You have met Turntables. Lock Plates and Bearing Plates are just a Turntable separated into two parts! They either let shafts spin freely or hold on to them tight.

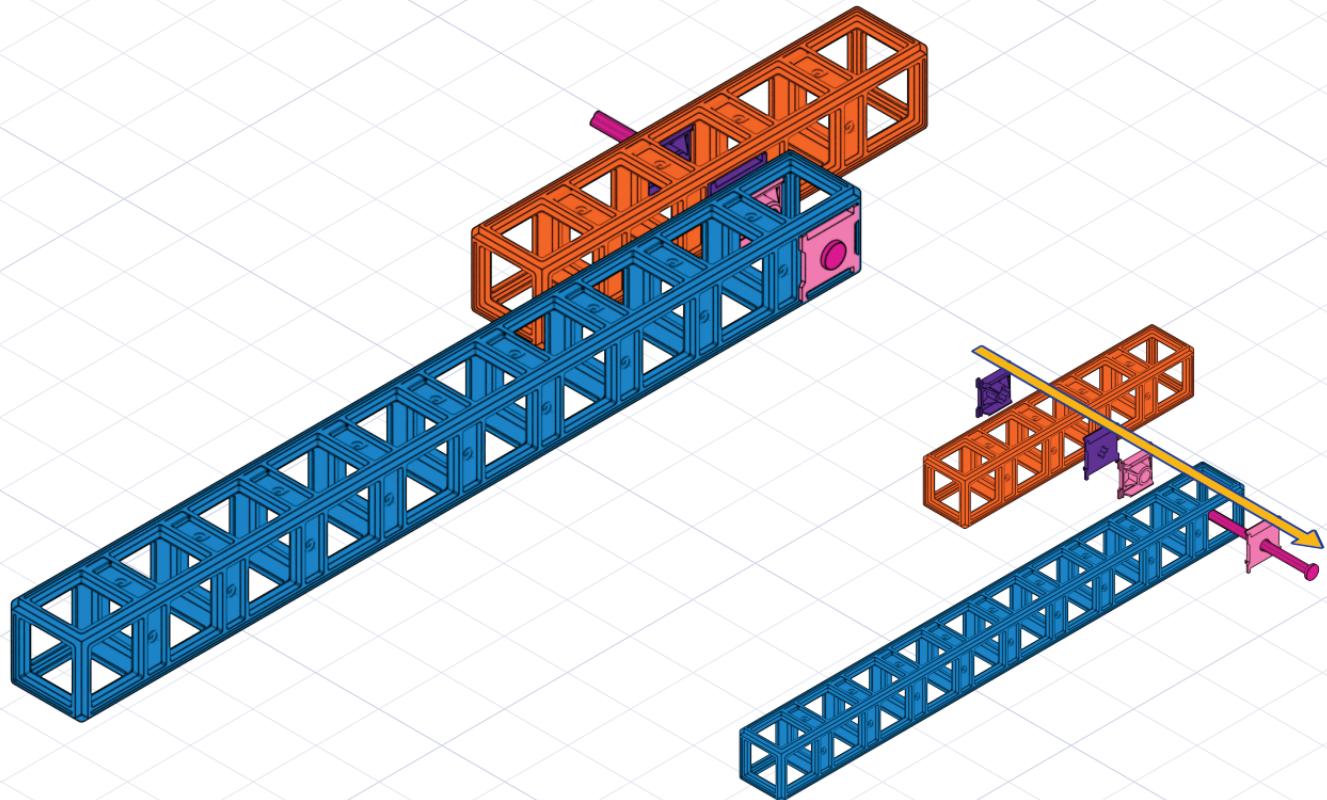
build

Build a spinner. 
Flip

explore

+ Why are the Lock Plates on the 5x Pitch Truss?

+ Replace the Lock Plates with Bearing Plates on the 5x Pitch Truss. What happens when you spin the shaft?



parts

1 Connector



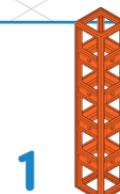
2 Lock Plate



1 Bearing Plate



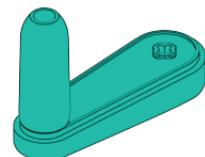
1 3x Pitch Capped Shaft



1 5x Pitch Truss



1 10x Pitch Truss



1 Hand Crank

learn

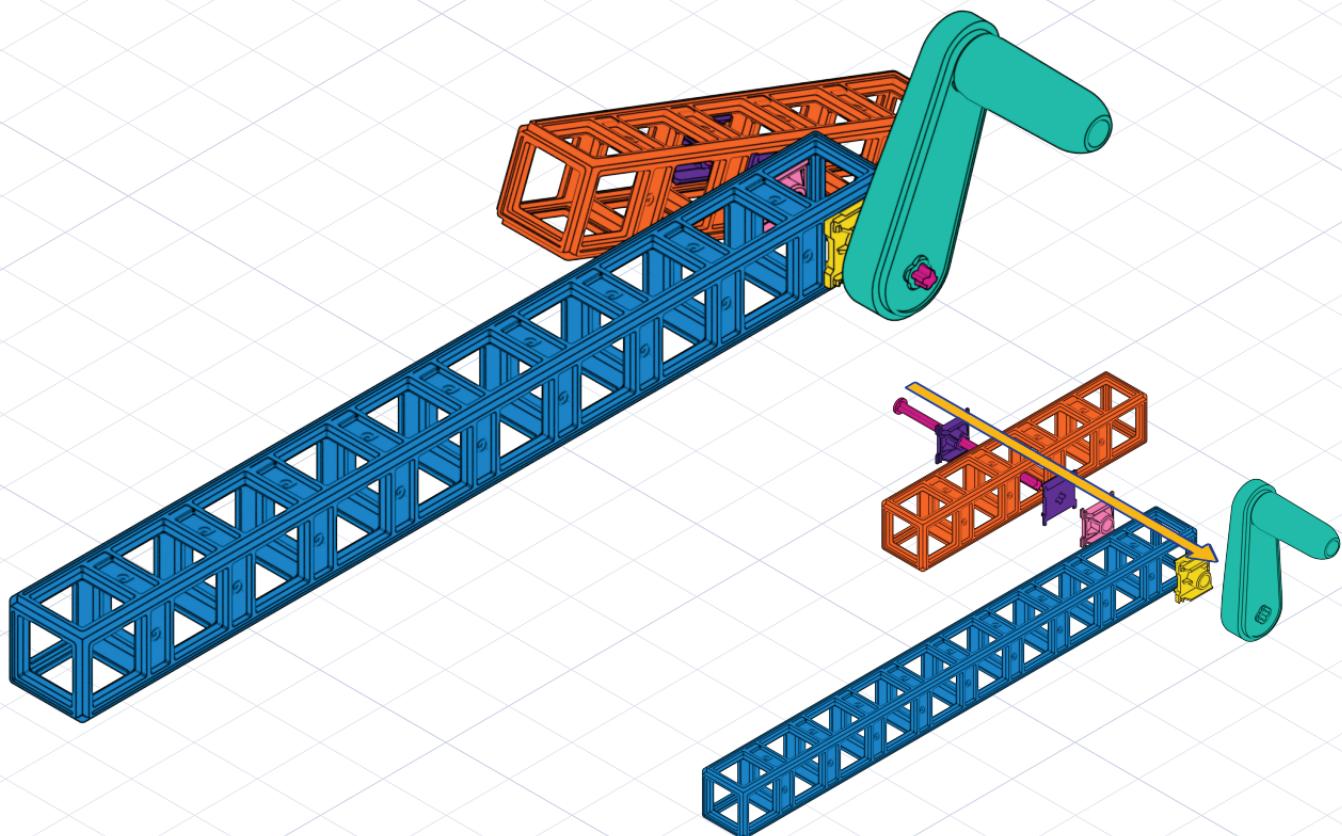
Shafts and Hand Cranks can help you create things that spin, like windmills and merry-go-rounds.

build

Build the spinner. Hold the 10x Pitch Truss at the bottom and spin using the Hand Crank.

**explore**

- + Try adding or using different parts that might spin.
- + What do you think you could do to make this spin faster?



challenge #7: spin faster!

parts



Connector



Lock Plate



Bearing Plate



2x Pitch Capped Shaft



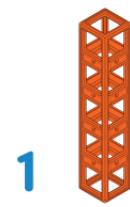
3x Pitch Capped Shaft



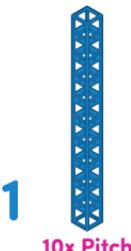
20T Gear



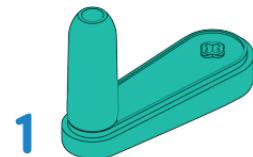
60T Gear



5x Pitch Truss



10x Pitch Truss



Hand Crank



Shaft Collar

learn

Gears are great! They can help make things spin faster.

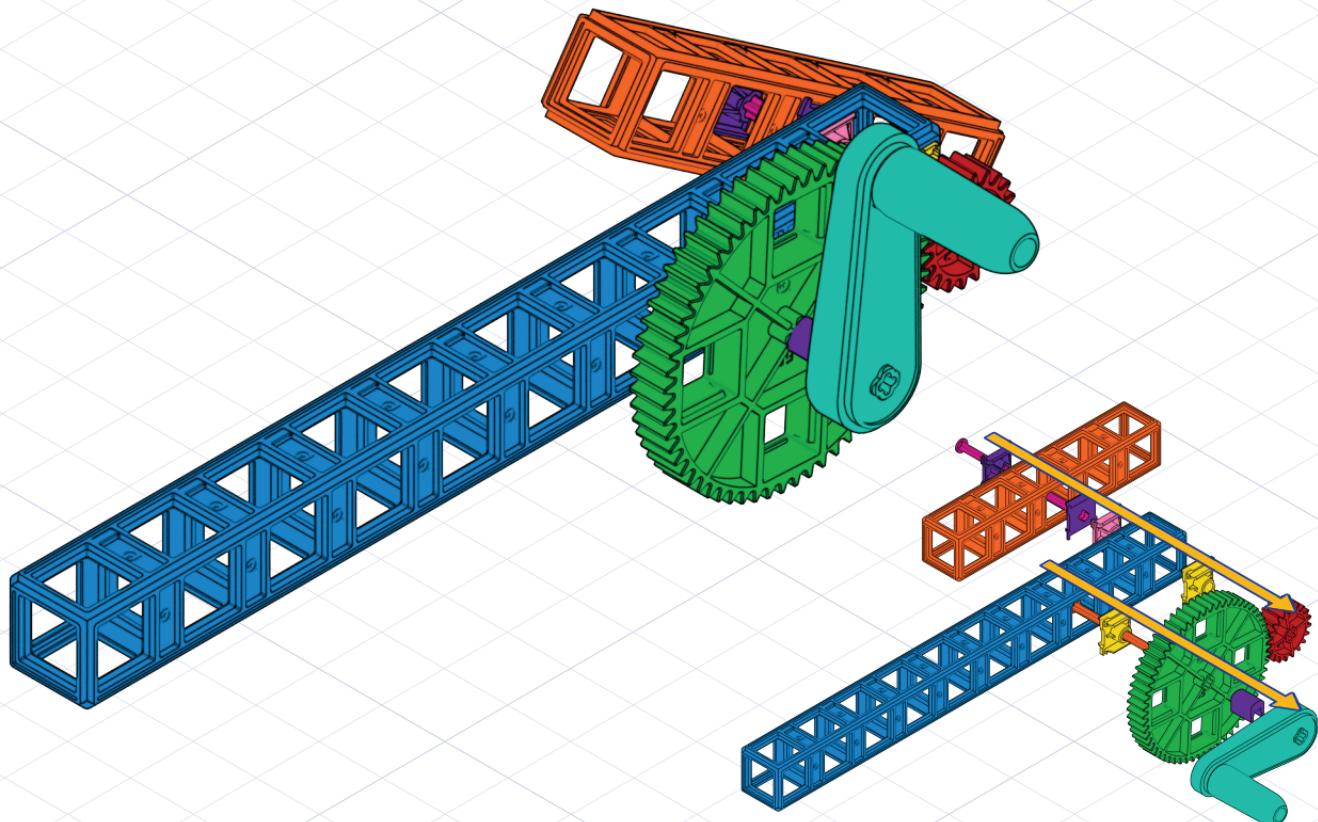
build

Build the same spinner from Challenge #6, this time adding gears.



explore

+ Switch the gears so the 60T Gear is connected to the 5x Pitch Truss and the 20T Gear is connected to the Hand Crank. Give it a spin. What happens?



parts

4

Bearing Plate

2



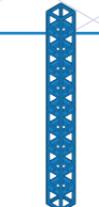
Shaft Collar

2



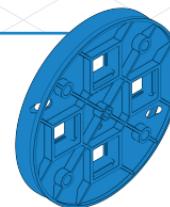
3x Pitch Capped Shaft

1



10x Pitch Truss

4



90mm Pulley

4



100mm Tire

learn

The 90mm Pulley and a 100mm Tire combine to make a wheel.

build

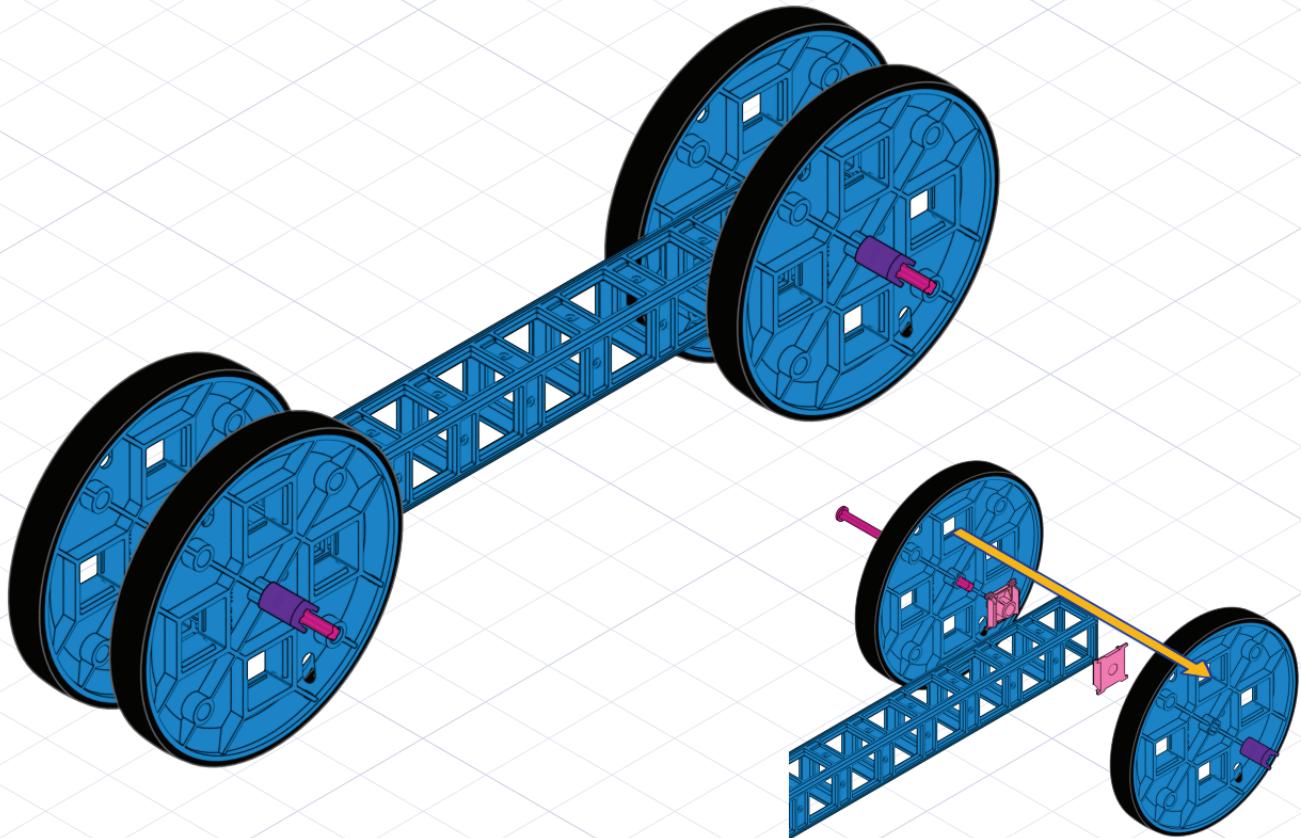
Stretch the tires over the pulleys to make four wheels. Then make a simple car.



Flip

explore

+ Add other parts to your car to make it more exciting.



parts**10**

Connector

**4**

Linear Motion Bracket

4

3x Pitch Truss

3

5x Pitch Truss

1

10x Pitch Truss

learn

Linear Motion Brackets help you slide. The rails fit into the groove on a truss so the part slides back and forth.

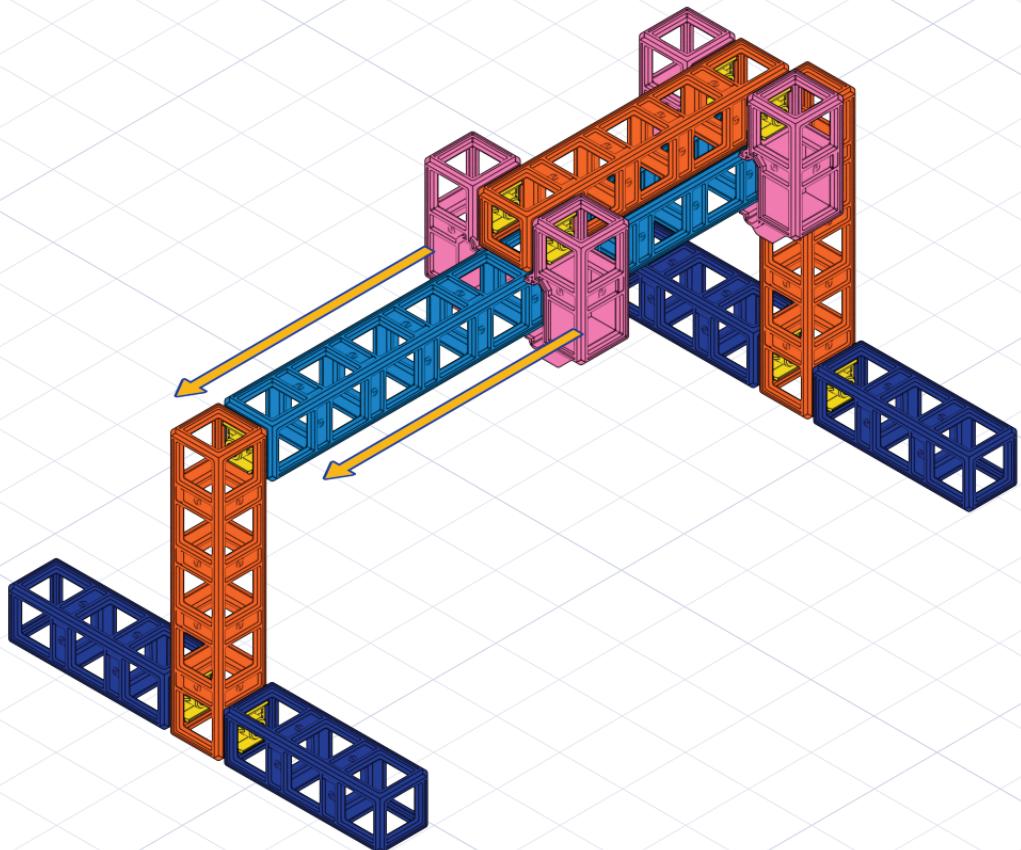
build

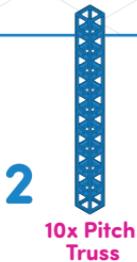
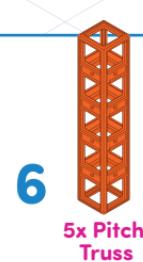
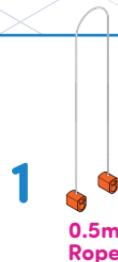
Build a small model of a monorail.

**explore**

- + Add something to the top of the monorail—maybe your stick figure from Challenge #3!

- + Make a longer monorail track.



parts**learn**

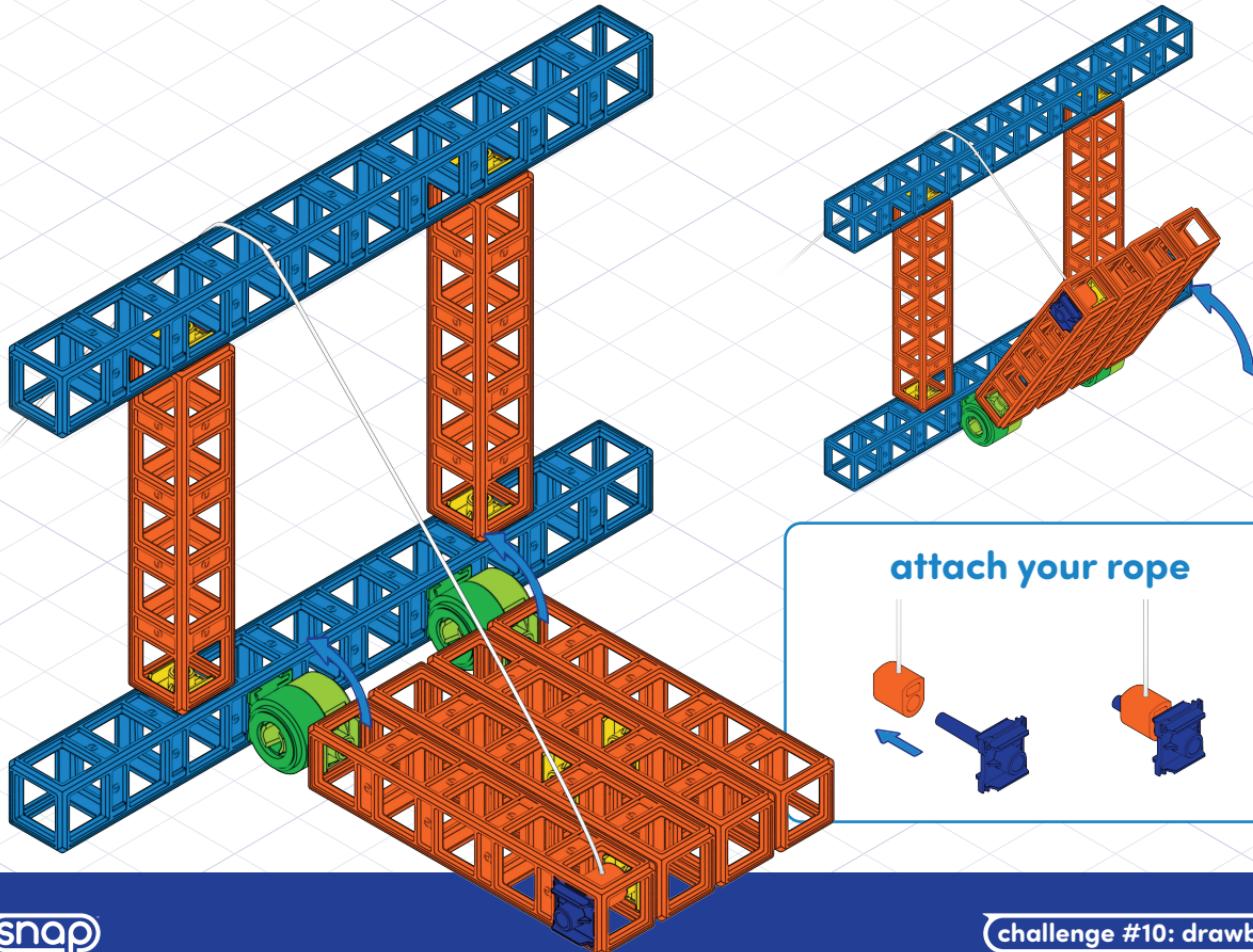
The Rope Anchor will help you attach rope to Snap parts.

build

Build a drawbridge.
Flip

explore

+ This drawbridge can fall over pretty easily. Try to make it more sturdy.



attach your rope



challenge #10: drawbridge

parts



Connector

1



3x Pitch
Weighted Truss



1x Pitch
Truss

1



3x Pitch
Truss

2



5x Pitch
Truss

2



10x Pitch
Truss

1



0.5m
Rope

1



6x Pitch
Shaft

learn

The Spool makes pulling things with rope easy. Wind rope around the Spool to pull things in or lower them down.

build



Flip

Make a winch that can pull a weighted truss.

explore

+ Winches are used to help pull cars that get stuck. Could you make a winch on the front of a car you make out of Snap parts?

4



Bearing
Plate

1



Rope
Anchor

1

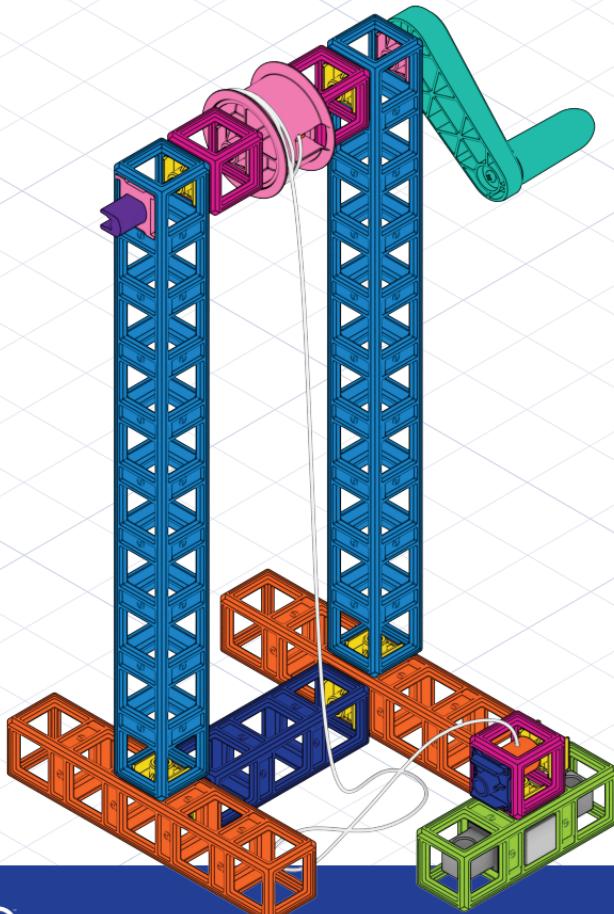


Shaft
Collar

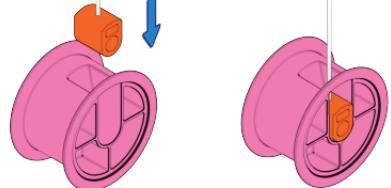
1



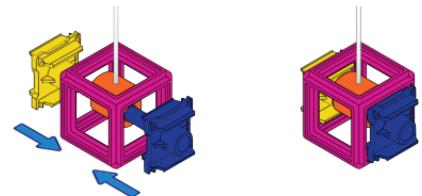
Hand
Crank



wind rope



attach rope



parts**4**Cardboard
Clamp

Cardboard



Any other Snap parts you want

learn

Cardboard Clamps help you attach cardboard to your builds. You might use them to make solar panels, a castle wall, or a parade float.

build

Use the Cardboard Clamps to build something amazing.

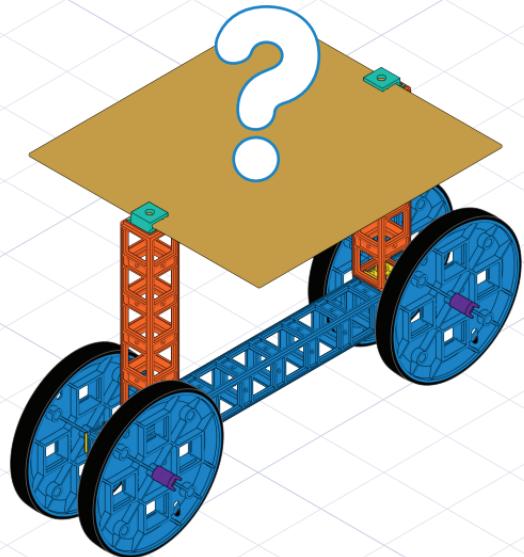
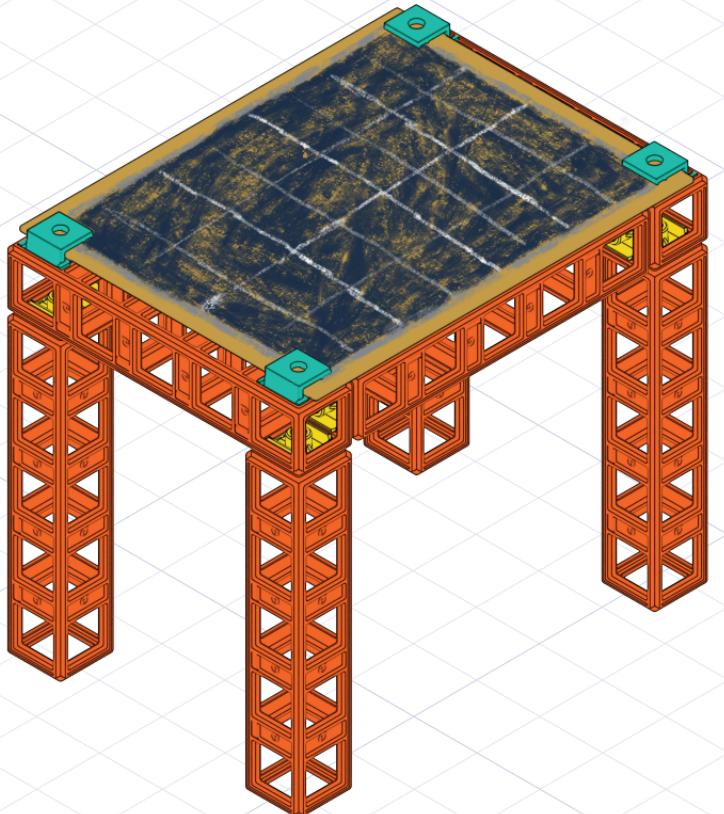


Flip

explore

⊕ Play around with how cardboard works with trusses. Do you want your trusses to be seen? Do you want the cardboard to hide the trusses?

⊕ If you build a castle, add your drawbridge from Challenge #10.



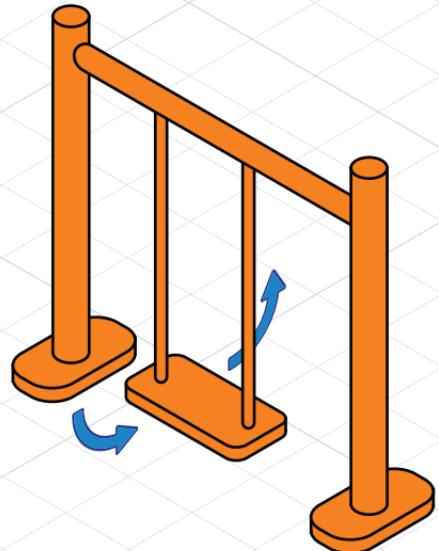
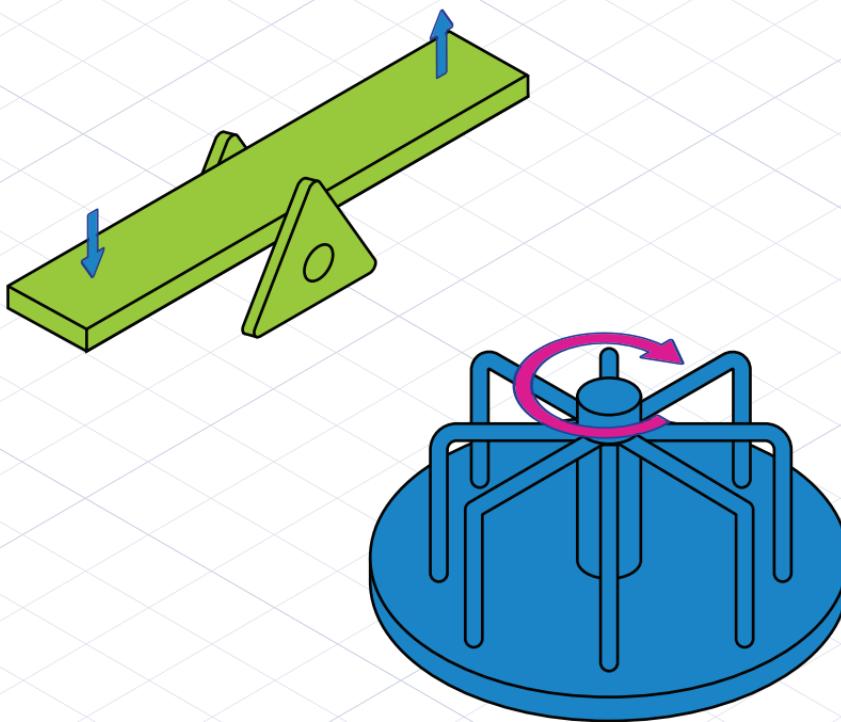
parts

Your Choice!

build & explore

Think about the different things you see at playgrounds and parks. Use Snap parts to build at least one thing you might see there. A few examples might be:

- swing
- merry-go-round
- seesaw 
Flip



parts

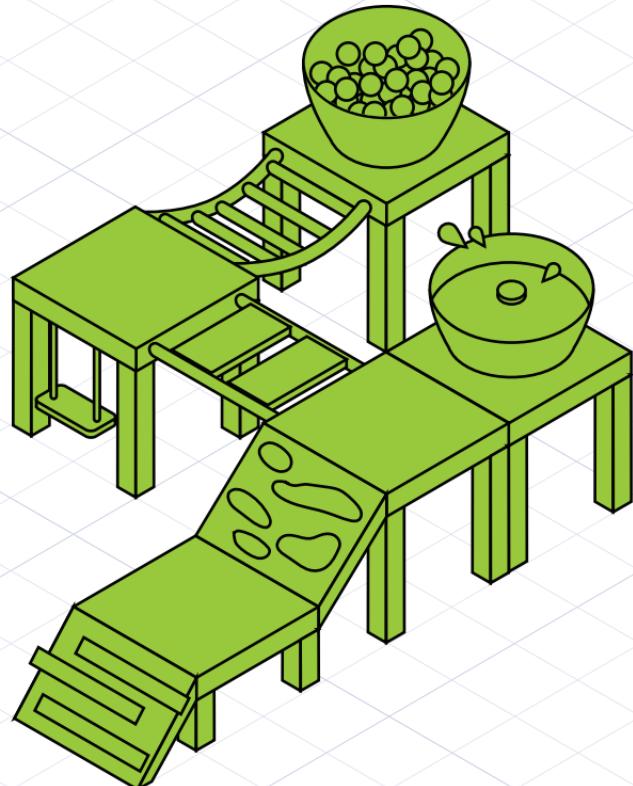
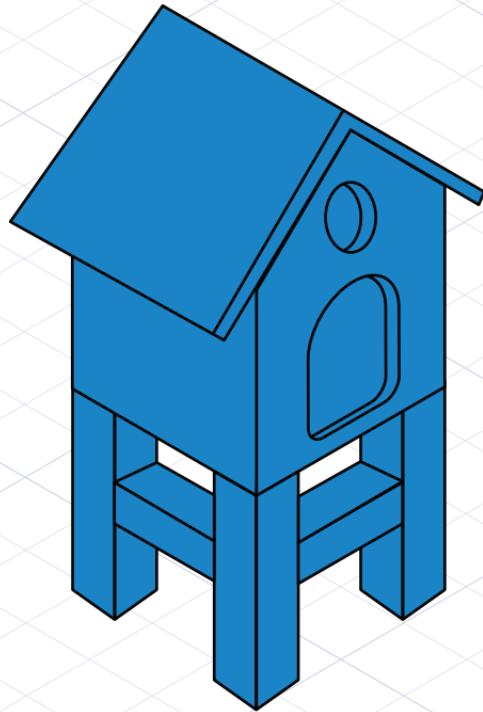
Your Choice!

build & explore

Choose an animal (real or imaginary!). Build a structure that helps it in its habitat. A few examples might be:

- a safe place to rest
- a way to get food or water
- something to help it move around





parts**Your Choice!****build & explore**

Think about all the different things that use wheels. Use Snap parts to build at least one thing with wheels. A few examples might be:

- car
- motorcycle
- tricycle
- tractor



Flip

