



INTRO TO GEARS



THAMES & KOSMOS



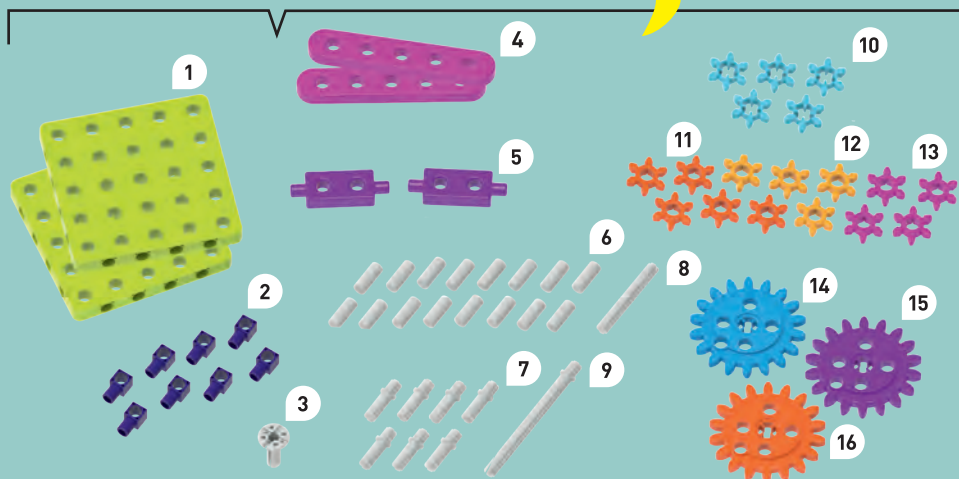
WARNING:
CHOKING HAZARD — Small parts. Not for children under 3 yrs.

KIT CONTENTS

Good to know!

If you are missing any parts,
please contact Thames &
Kosmos customer service
(see back cover).

What's inside your experiment kit:



Checklist:

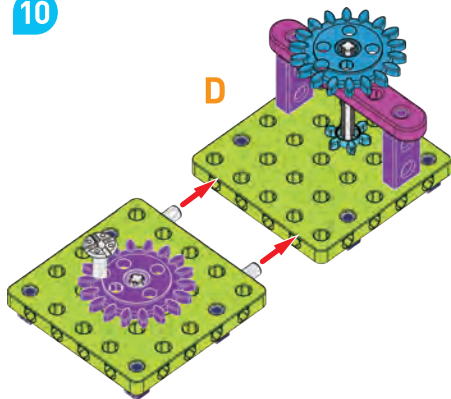
✓	No.	Description	Quantity	Part No.
<input type="radio"/>	1	25-hole base plate	2	7078-W10-A1G
<input type="radio"/>	2	Dowel block with side hole	8	7331-W10-M1P
<input type="radio"/>	3	Nail	1	8036-W10-T1S
<input type="radio"/>	4	5-hole rod	2	7330-W11-D1K
<input type="radio"/>	5	2-hole rod	2	7330-W11-H1P
<input type="radio"/>	6	Dowel, 4 cm	16	7268-W11-B1S
<input type="radio"/>	7	Short Axle	7	8060-W11-G1S
<input type="radio"/>	8	Medium axle	1	7268-W11-A1S
<input type="radio"/>	9	Long axle	1	8060-W11-H1S
<input type="radio"/>	10	Small gear	5	7331-W10-L2B1
<input type="radio"/>	11	Small gear with adapter, dark orange	5	7331-W85-L102
<input type="radio"/>	12	Small gear with adapter, light orange	4	7331-W85-L103
<input type="radio"/>	13	Small gear with adapter, magenta	4	7331-W85-L1K
<input type="radio"/>	14	Jumbo gear, blue	1	8060-W10-A2B2
<input type="radio"/>	15	Jumbo gear, purple	1	8060-W10-A2P1
<input type="radio"/>	16	Jumbo gear, orange	1	8060-W10-A2O



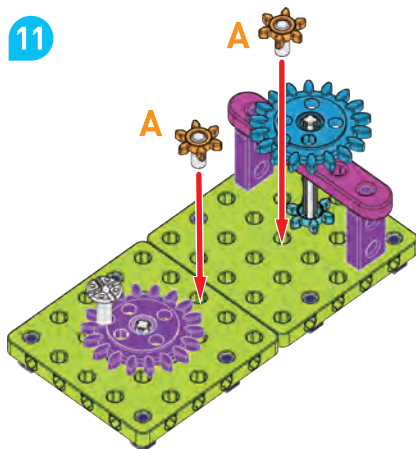
WARNING!

- >> Not suitable for children under 3 years. Choking hazard — small parts may be swallowed or inhaled.
- >> Before starting, check the parts list to be sure that all of the correct pieces are included in the kit. Keep the packaging and instructions as they contain important information.
- >> Store the experiment material and assembled models out of the reach of small children.

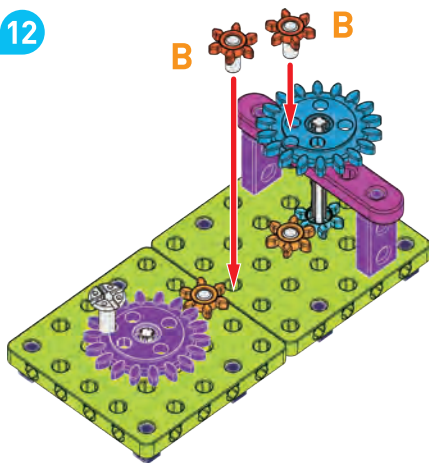
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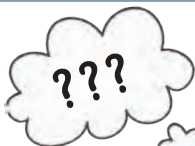
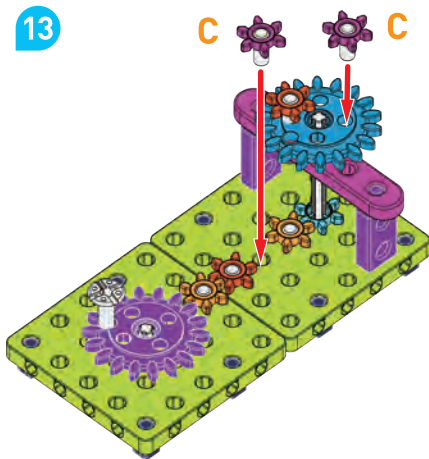
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12



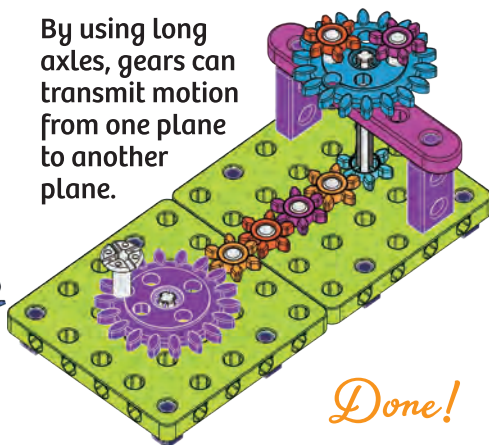
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Now that I know how gears work, I wonder what else I can build with gears ...



By using long axles, gears can transmit motion from one plane to another plane.



Done!

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Dear Parents and Supervising Adults!

Children want to explore, understand, and create new things. They want to try things and do them by themselves.

They want to learn! They can do all of this with Thames & Kosmos experiment kits. With every single experiment, they grow smarter and more knowledgeable.

Meet the Omega Family!

Ty and Karlie Omega are siblings. They live in a small city called Makersville. Ty and Karlie’s dad is a writer. He writes science fiction stories. Their mom is a mechanical engineer. She designs big machines used in factories.

They live in an awesome warehouse filled with tools, equipment, and building materials. There are always a number of projects going on in the warehouse.

Ty loves figuring out how things work. Karlie loves building things.

Now it’s time for Ty and Karlie to build their very own workbench where they can keep their own tools.

Ty can’t wait to figure out how all the tools work, and Karlie is excited to see all the fun models she can build!

Yay!
Let’s go!

BIG GEAR WALL

1 x4

A x4

2 x3

B x3

3 x4

C x4

4

A **B** **C**

5

A **B** **C**

Short axle

6

Short axle x2

D

7

Short axle

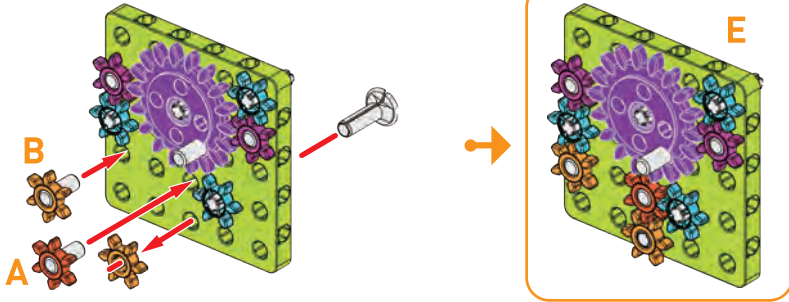
C **C**

8

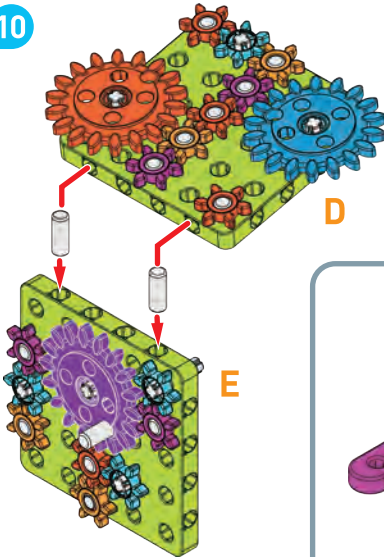
Short axle x3

C **C** **C**

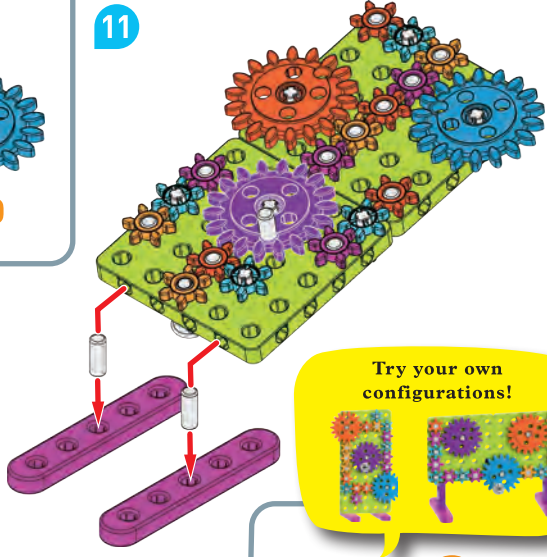
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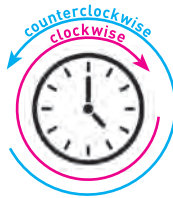
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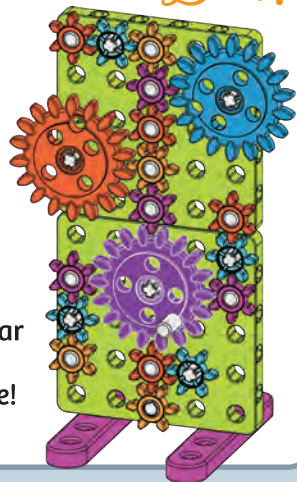
Try your own
configurations!

Done!

Gears are wheels with **teeth** that engage with each other to transmit **motion**. In other words, gears make things move!



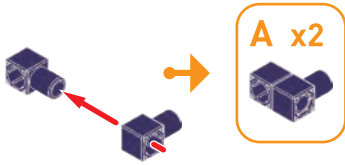
Look closely!
When you
turn one gear
clockwise the gear
next to it turns
counterclockwise!
And vice-versa!



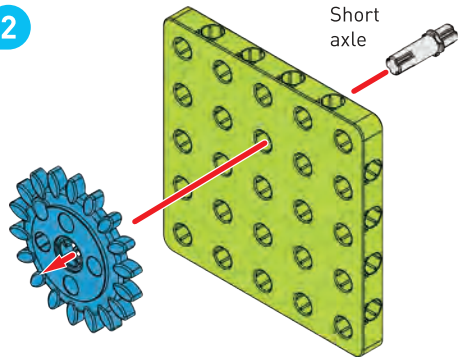
When you rotate
the large purple
gear, which
gears move
faster: the large
gears or the
small gears?

GEARS TURN A CORNER

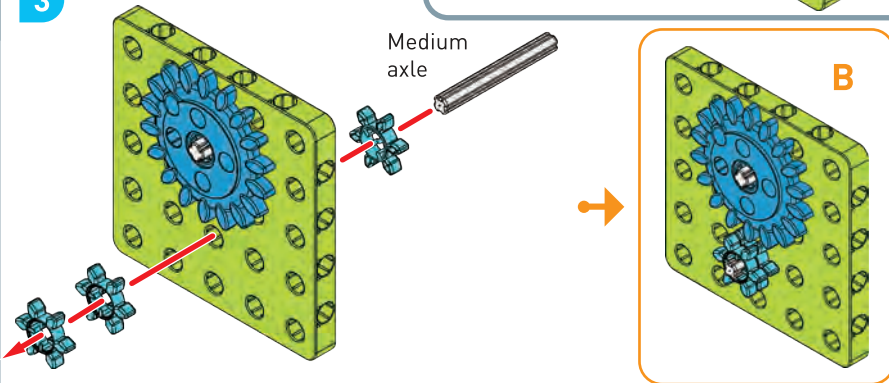
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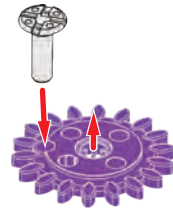
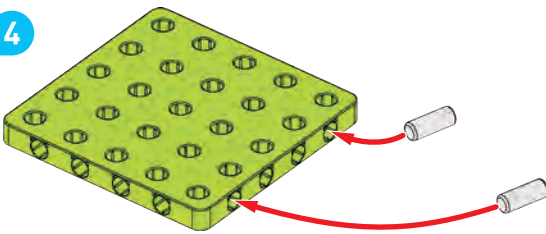
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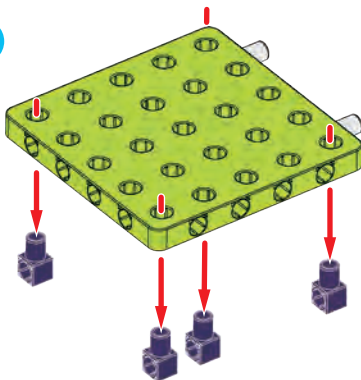
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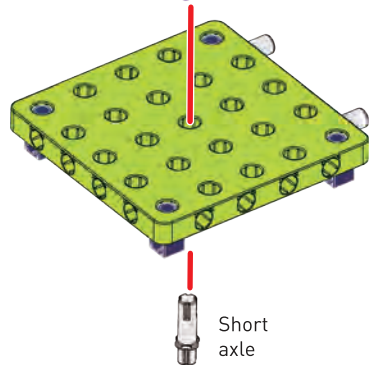
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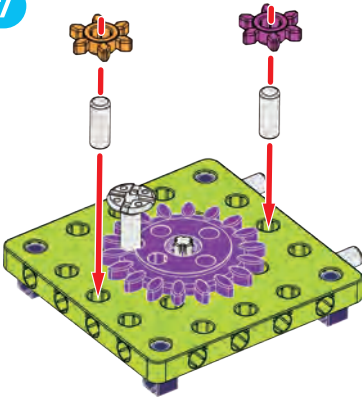
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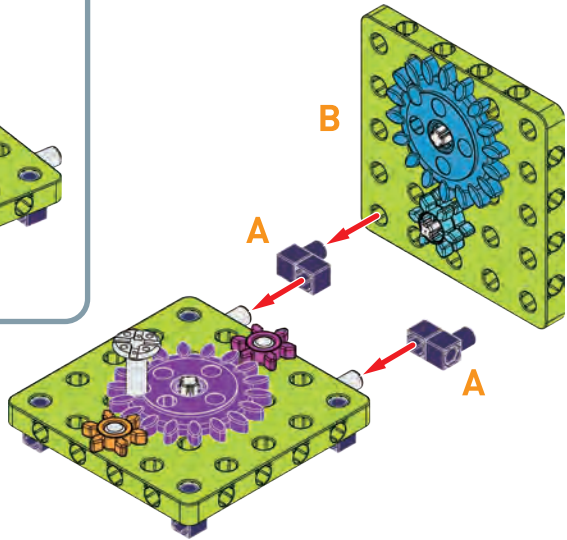
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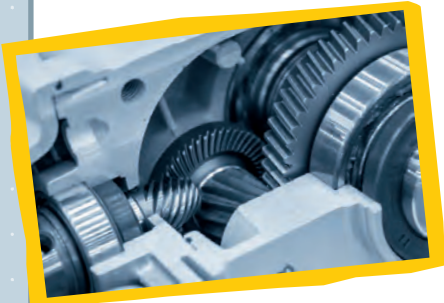
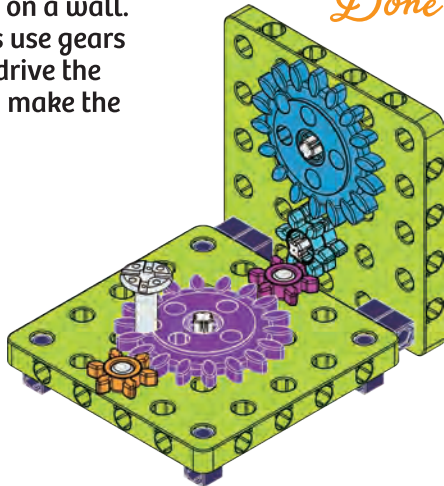


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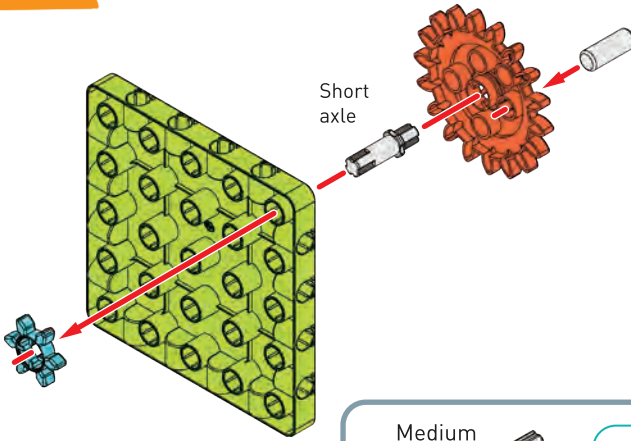
Gears can change the axis of rotation. This means, if you rotate a gear that is flat on the ground, it can rotate a gear that is on a wall. Car engines use gears like this to drive the wheels and make the car go!

Done!

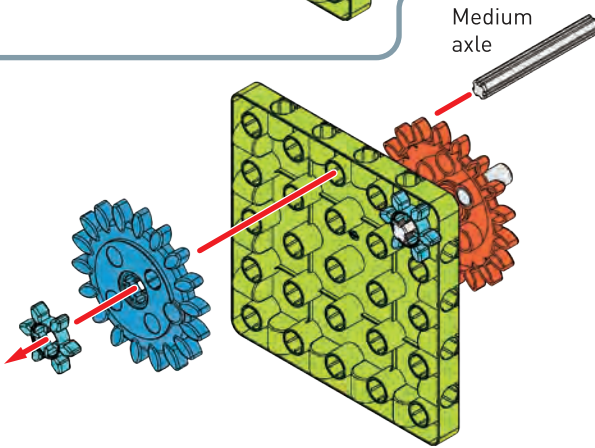


GEARBOX

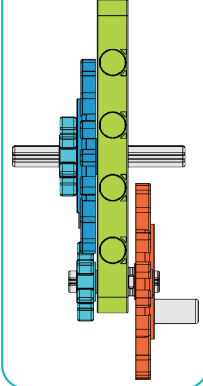
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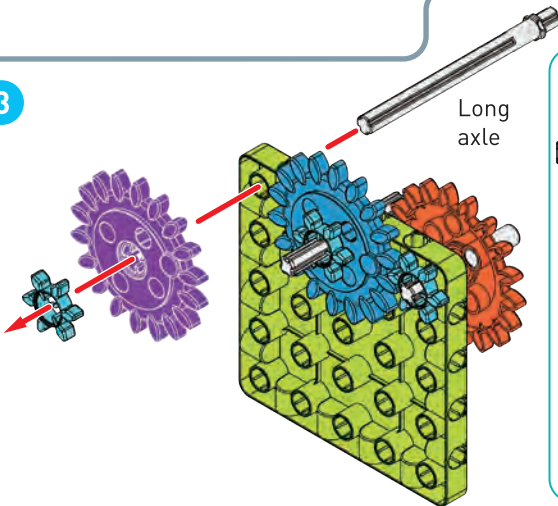
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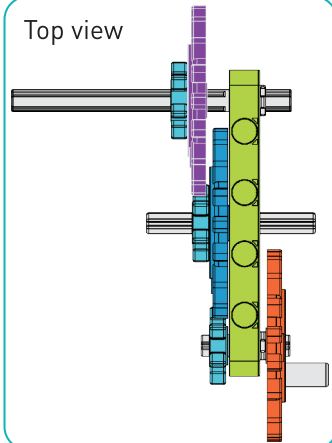
Top view



3

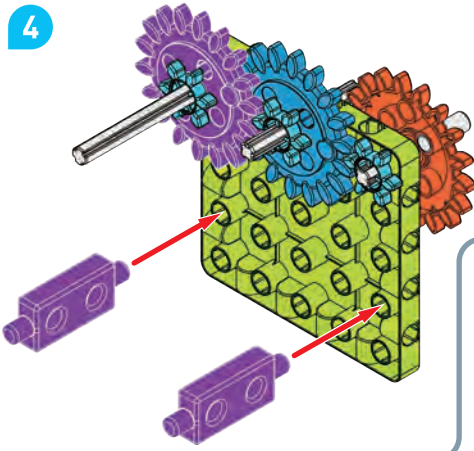


Top view

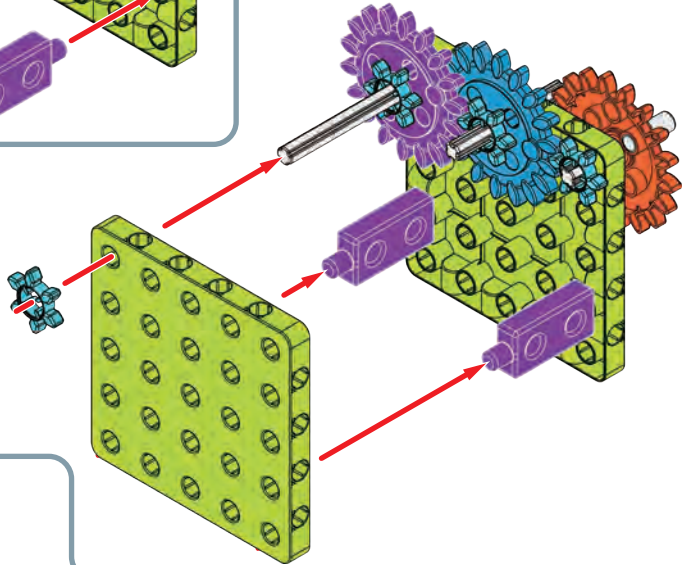




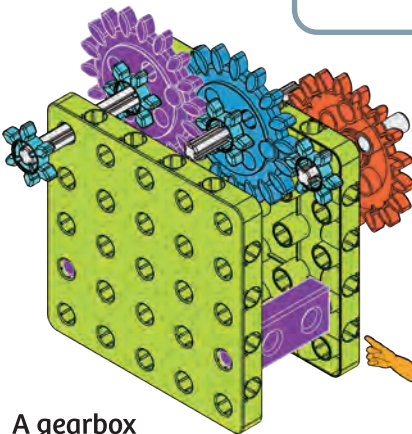
4



5



Done!



A gearbox contains a **gear train**, which is a series of gears linked together.

By stacking different-sized gears on the same axis, a gearbox can change the **speed** and **torque** — or rotational power — of motion.



Gearboxes are used in many mechanical devices to slow down electric motors, which spin very fast, while creating more output power.

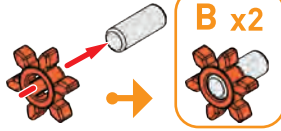
Experiment by building different gearboxes. How fast — or how slow — can you make the gears go?

SPINNING WHEEL

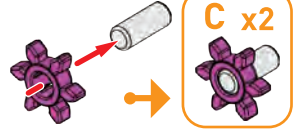
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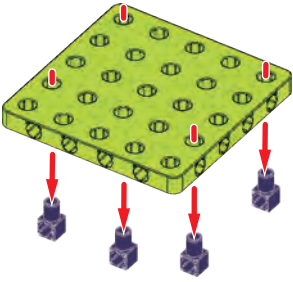
2 x2



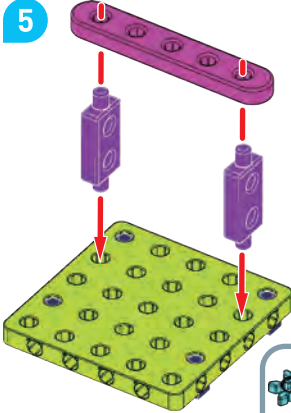
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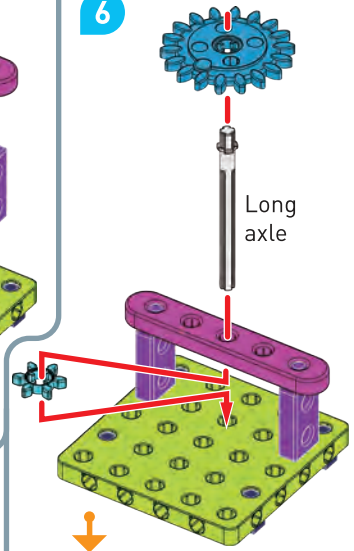
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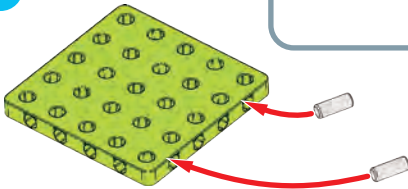
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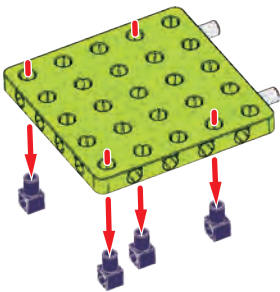
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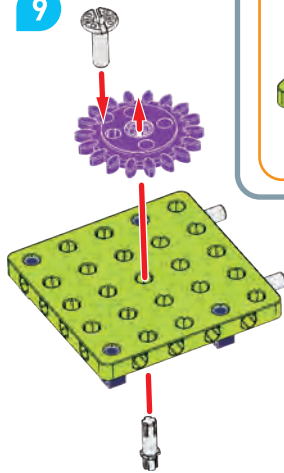
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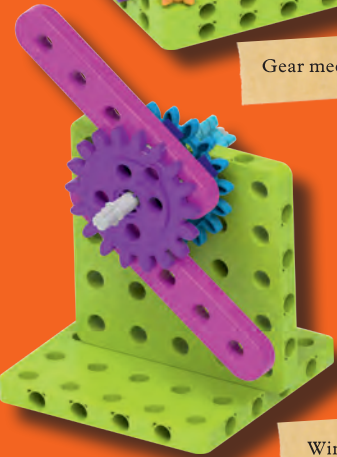
9



Endless possibilities for open-ended creative play



Gear mechanism



Windmill

What else will YOU build?!



Tour bus

Fishing rod



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