

CHECK MATERIALS EVERY TIME YOU USE THEM.

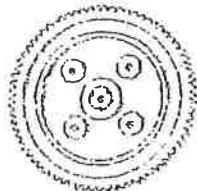
YOU ARE RESPONSIBLE FOR ALL OF THE PARTS.

IF YOU LOSE A PIECE YOUR TEAM WILL BE CHARGED FOR IT.

CHALLENGE 2

LABORATORY MATERIALS FOR
CLASSROOM AND STUDENT DESIGN

Your
NAME:



75 Teeth

2



45 Teeth

4



15 Teeth

3



15 Teeth
w/ drive
collar

1

Gear
Axle

4

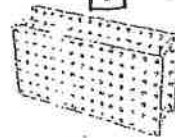
Wheel
Axle

2



Nylon
Bearing

20



Frame

1



Wing
Nut

2



Rubber
Collar

20



Drive
Collar

12



3Volt
Motor

1



Rubber
Wheel

4

A CRED IN MOTION
THE DESIGN EXPERIENCE

KEEP THIS LIST IN THE KIT BOX

we are missing:

TEAM NAME:

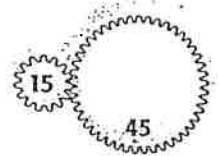
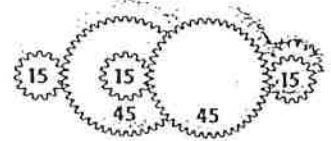


TEACHER TIP Students may build a compound gear train with some gear pairs that increase the gear ratio and other gear pairs that decrease the gear ratio. For example, the ratios of the gear pairs in this gear train are 3:1, 3:1, and 1:3.

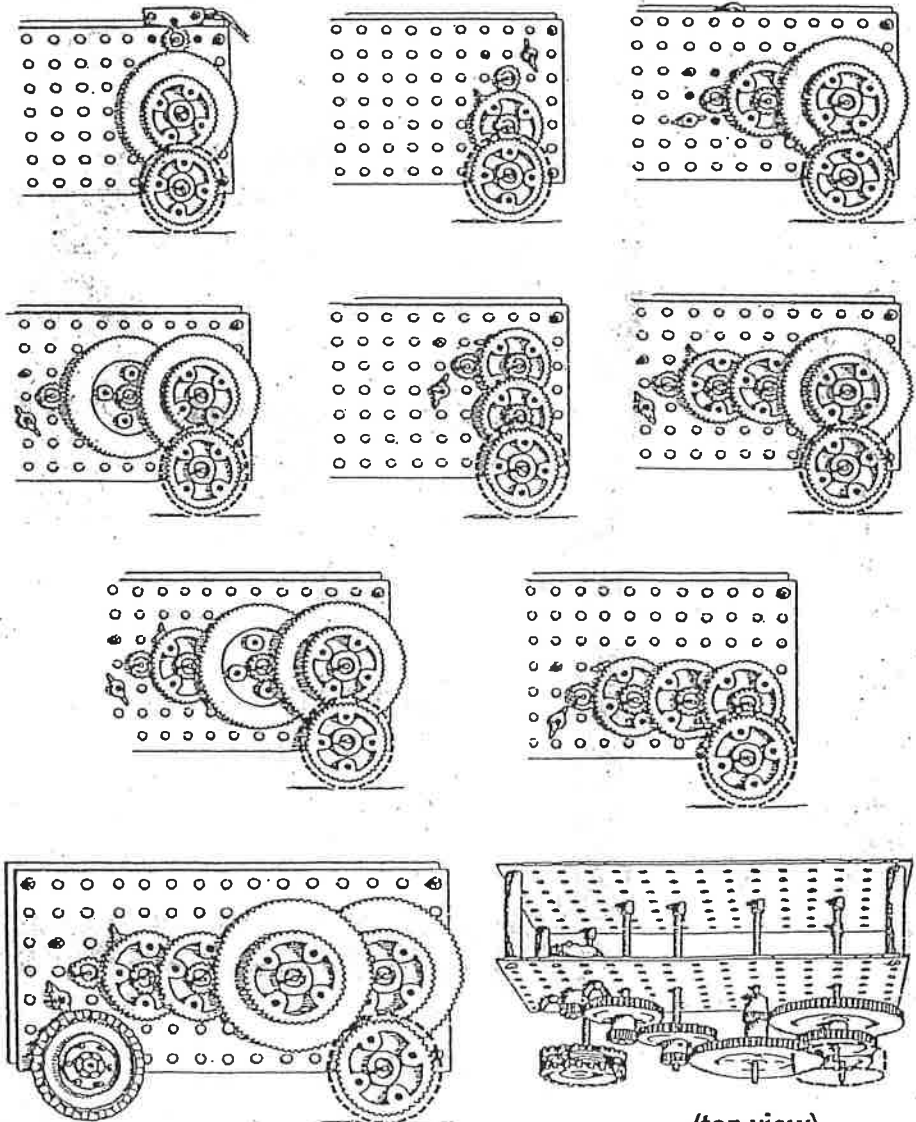
The first two gear pairs increase the gear ratio (3:1 and 3:1). The third gear pair decreases the gear ratio (1:3). The overall gear ratio for the above gear train is 3:1, the same as the gear ratio for the gear train below.

The first gear train uses extra gears, which introduce unnecessary friction. Its performance will be worse than that of the second gear train.

Help students watch for gear trains like this, and see if they can reduce the number of gears when possible.



Here are some of the compound gear trains that can be built using the gears in the kit:



(top view)

DESIGN LOG

Do you have:

- ☐ Picture
- ☐ Gear Ratio (Show your work!)
- ☐ How it worked
- ☐ How you can make it better?

Name _____ Design Team _____ Date _____

A rectangular frame containing a 7x15 grid of small circular stamps. Each stamp contains a stylized character, likely a variant of the Chinese character '王' (king). The stamps are arranged in 7 rows and 15 columns, with a small gap between the first and second columns. The entire grid is enclosed in a double-line rectangular border.

OBSERVATIONS AND DATA

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

DESIGN LOG

Do you have:

- ☐ Picture
- ☐ Gear Ratio (Show your work!)
- ☐ How it worked
- ☐ How you can make it better?

Name _____ Design Team _____ Date _____

A rectangular grid of 100 small circular stamps arranged in 10 rows and 10 columns, enclosed within a double-line border. Each stamp contains a small, stylized, repeating pattern, possibly a floral or geometric motif. The stamps are arranged in a precise grid, with equal spacing between them. The entire grid is contained within a rectangular frame defined by two parallel lines.

OBSERVATIONS AND DATA

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

Car Kit Project Data Log

[illegible]

Name: _____

Block: _____

Car Kit Rubric

	5	10	15	20	25
Design Log #1 Design from packet	Design log missing.	Little or no detail on your design log.	Design log only half way done.	Design log done, but is lacking detail.	Design log complete with appropriate detail.
Design Log #2 My Own Car Design	Design log missing.	Little or no detail on your design log.	Design log only half way done.	Design log done, but is lacking detail.	Design log complete with appropriate detail.
Data Log	Data log missing.	Little to no detail or missing cars completely.	Data log only half way done.	Data log mostly done, missing some detail.	Data log complete with appropriate detail.
Team Player How I worked with my group.	Mrs. Fettinger had to talk with me four times. ☹️	Had to be talked to three times.	Had to be talked to twice.	Had to be talked to only once.	Never had to be talked to about my attitude or working together! 😊

Total: _____ / 100