

WHAT WE KNOW ABOUT GEARS

BUILD KNOWLEDGE

SCIENCE

MATHEMATICS

TECHNOLOGY EDUCATION

SOCIAL STUDIES

LANGUAGE ARTS

INTRODUCTION

WHAT STUDENTS DO IN THIS ACTIVITY

This activity acquaints students with some of the machines that use gears. Students begin by sharing what they know about where gears are used and how they work. They discuss the observations they made about the bicycle in the last activity.

RATIONALE

As in the previous activity, Looking at Gears in Bicycles, students build their knowledge about gears by looking at the familiar and bringing to their explorations information they already know.

Students will engage in the following:

- share what they know about where and how gears are used
- list where gears are found

TIME

1–2 class sessions

MATERIALS

- large easel pad for recording ideas from the class discussion

PREPARATION FOR THE ACTIVITY

Set up a large easel pad to record ideas that students generate in class discussion.

You can bring in examples of gear-driven machines or toys that have visible gears, such as an egg beater, a salad spinner, or a hand drill.



MAKING CONNECTIONS

This activity should be done after the Looking at Gears in Bicycles activity.

CLASSROOM ACTIVITY

ACTIVITY DESCRIPTION

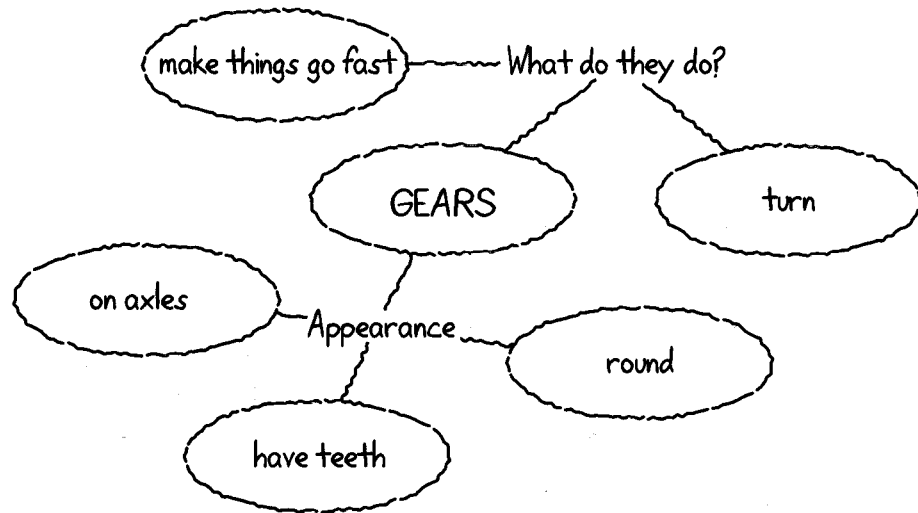
Brainstorm with students what they already know about gears. Record on the chart the locations and machines that students mention.

You may want to use an "idea web" format something like this:



TEACHER TIP

Brainstorming involves contributions from all group members. Encourage all students to contribute any ideas they have about gears.



Some issues to consider are

- What do gears look like?
- What are they used for?
- On what kinds of machines have you seen gears?
- What kinds of machines do you think might use gears that are not visible?

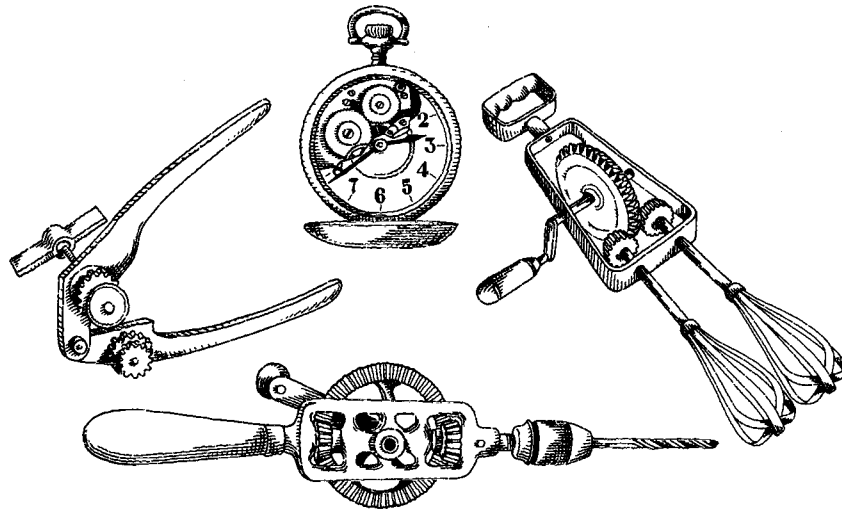
Many students may know about gears in a rather abstract way. They might know that cars use gears, but may not have thought about how or why. Encourage them to share their ideas about machines that use gears. Encourage students to refer to their discussion of how gears are used in bicycles.

If students have trouble thinking of machines that use gears, you can mention that gears are used in many kinds of machinery, but are often hidden from view.



TEACHER TIP

Students may suggest machines that do not use gears. Some of their suggestions, such as a radio or a microwave oven may, in fact use gears in part of their mechanism. A radio may use gears in its tuning mechanism; a microwave oven may have gears in its turntable mechanism.



You can point out additional examples of gear locations from book illustrations. If you have brought in gear-driven machines or toys, you can demonstrate them for the class.

Now that students have some ideas about the kinds of machines that use gears, ask students to suggest ideas about how gears are used.

- Where in machines are gears used?
- What do you think the gears do?
- What are some reasons gears are used in machines?

Record students' ideas on the board. These recorded ideas will serve as a reference point for their changing ideas about the functions of gears.

HOMEWORK IDEAS

Gear Scavenger Hunt: Ask students to bring to class examples of machines they can find at home that use gears. These will be added to the class list. This activity can continue for the duration of the unit. Students can share their observations with the class at the beginning of the next class session.

Ask students to find out about the earliest machines to use gears. Have students write a short research paper about how gears were used in these early machines.