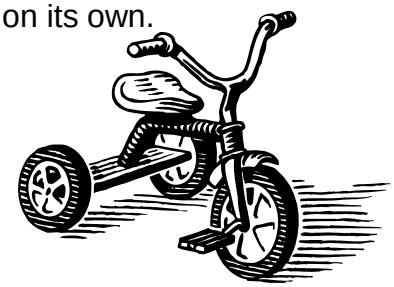
Name_____ Date_____

Round and Round – Wheels and Axles

Wheels have been around for the last five and a half thousand years. Today, we are so used to them that it is difficult to imagine life without them. But there are many parts of the world where people still use sleds or sleighs to transport things. In areas like Alaska where there is snow and ice on the ground for most of the year, a sled makes a good substitute for a cart and in rural Africa where most people cannot afford trucks or even wagons, wooden sleighs pulled by oxen are still widely used in the grasslands.

A wheel and axle is a simple machine, which consists of two parts: the wheel, which is shaped like a circle and the axle, which is smaller than the wheel and is usually shaped like a cylinder or a smaller circle. When the wheel and axle operate together as a simple machine the wheel must be fixed to the axle. Sometimes the wheel will have a handle on it. In some objects, the wheel turns on the axle but the axle doesn't move. This is **not** a wheel and axle machine.

Because the wheel is bigger than the axle – we say it has a larger **circumference** – it will move a lot further than the axle would on its own. Look at the tricycle in the picture. When you apply force to the pedals, the axle, which is fastened to the front wheel turns. With only a little force, you can make the tricycle move over a long distance.



All simple machines make our work much easer for us by letting us move things, or ourselves, without using too much effort. The wheel is part of a family of simple machines, which include levers and pulleys. Other wheel and axle devices are steering wheels, doorknobs, windmills and gears. All of these objects, and many others, work on the same principle as the wheel and axle.

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Round and Round – Wheels and Axles Questions

A: Make a list.

How many objects can you find, or think of, which use a wheel and axle? There are some in the reading to start you off. See how long a list you can make then compare yours with a friends. How many did you get?

B: Design your own machine.

The invention of the wheel all those thousands of years ago changed the way man lived and worked and, as we have seen, led to many other inventions based on the wheel and axle. Design and draw a machine, which has at least one wheel and axle in it. Label it and explain what it is meant to do and how it works.

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Round and Round – Wheels and Axles Answers

Activity A

The list could include:

Cars, trains, trucks, tricycles, wagons, wheelbarrows and roller skates as well as windmills, steering wheels, doorknobs, gears, fans, rotary dial telephones, eggbeaters, and faucets. Only items with a fixed wheel and axle should be included.

Activity B

This is limited only by the children's imagination but the use of the wheel and axle should be appropriate.