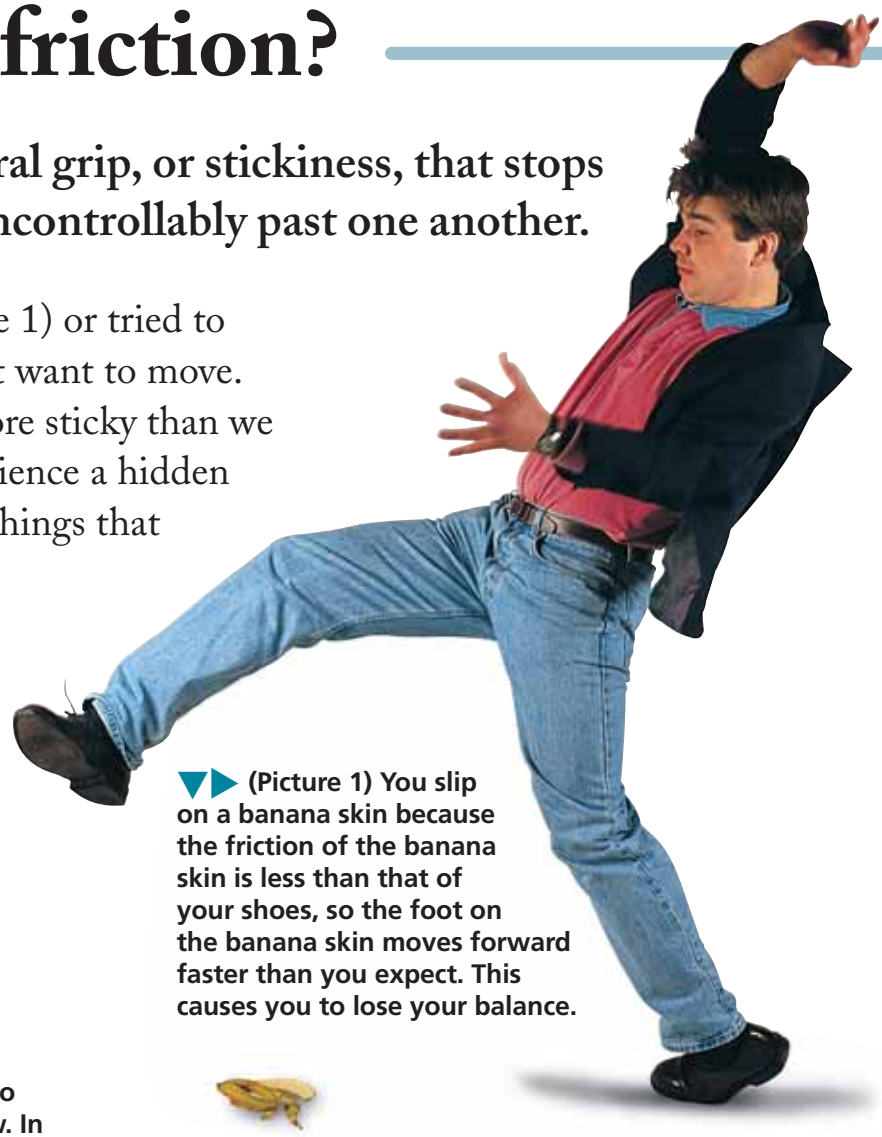
What is friction?

Friction is a natural grip, or stickiness, that stops things slipping uncontrollably past one another.

We have all slipped on a floor (Picture 1) or tried to pull open a drawer that simply doesn't want to move. Things are either more slippery or more sticky than we expect. In everything we do, we experience a hidden natural 'stickiness' or '**GRIP**' between things that touch. It is called **FRICTION**.

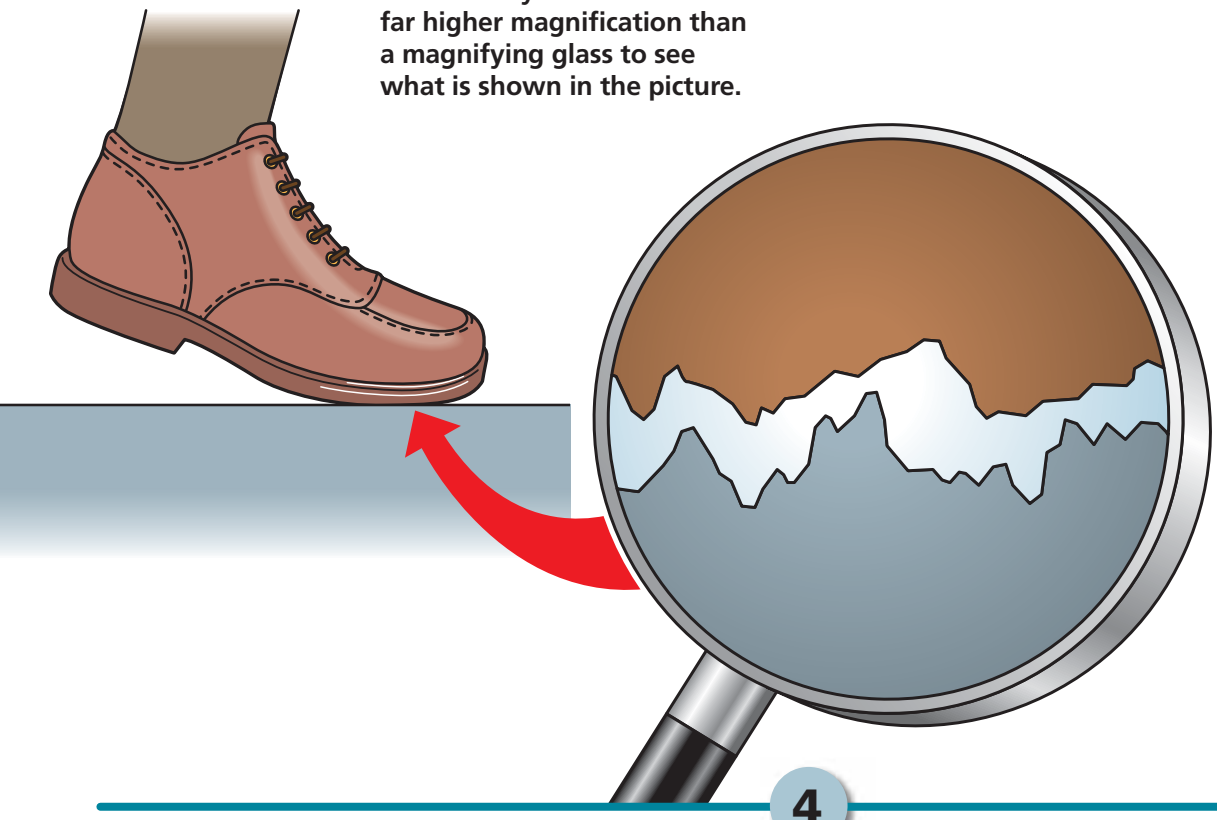
What causes friction?

If you were to be able to look very, very closely at the place where two objects touch, you would see that the surfaces are made of tiny bumps and troughs (Picture 2).



(Picture 1) You slip on a banana skin because the friction of the banana skin is less than that of your shoes, so the foot on the banana skin moves forward faster than you expect. This causes you to lose your balance.

NOTE In this book a magnifying glass is used to show a very close-up view. In most cases you would need a far higher magnification than a magnifying glass to see what is shown in the picture.



(Picture 2) When you look at surfaces very closely, you find they have bumps and troughs that interlock. This is what keeps most surfaces from gliding over each other easily.

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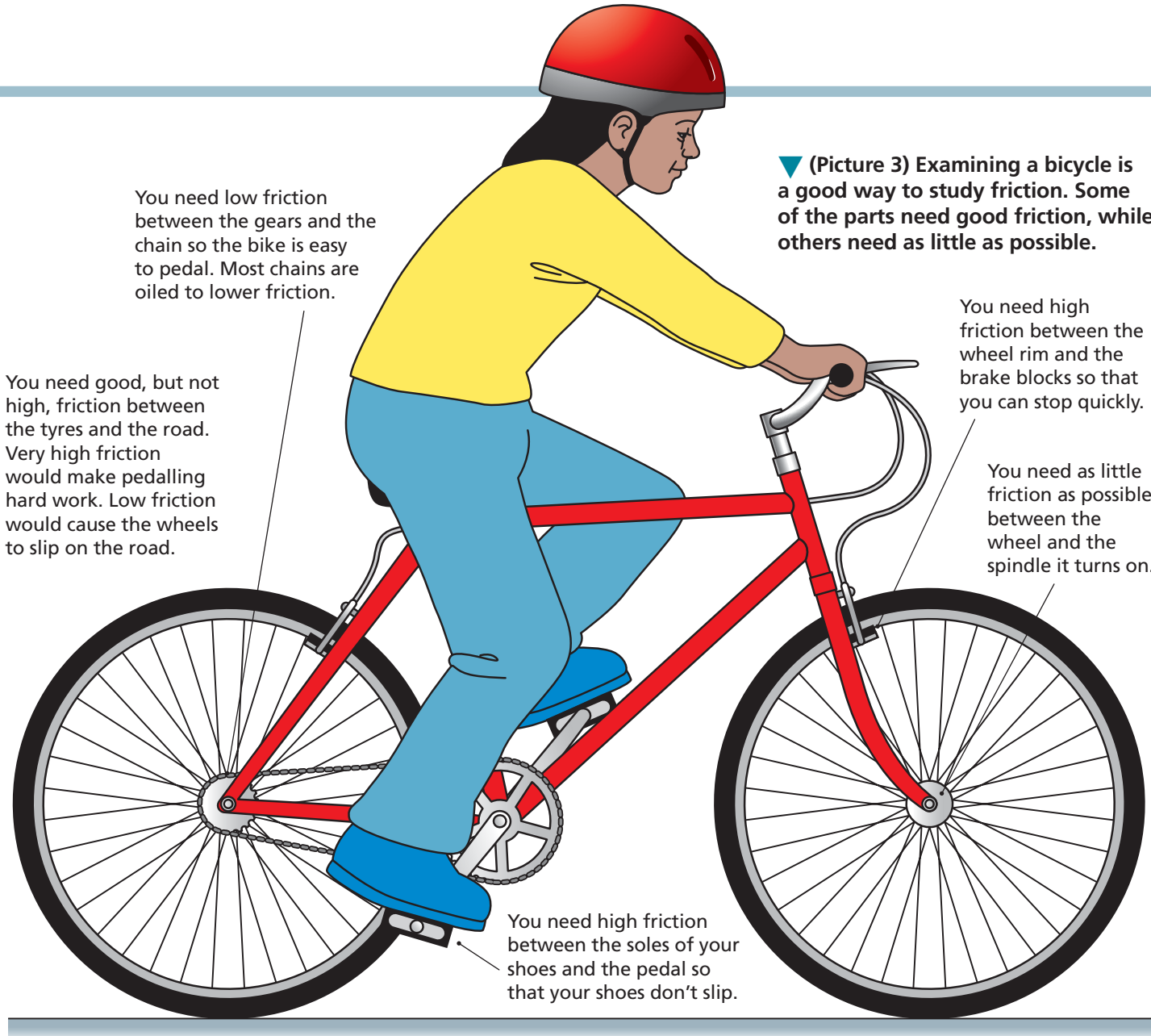

▼ (Picture 3) Examining a bicycle is a good way to study friction. Some of the parts need good friction, while others need as little as possible.

You can get a better idea of what surfaces are like by looking at a sheet of sandpaper. This has easy-to-see bumps and troughs all over it. If you place one sheet of sandpaper on top of another and try to push one past the other you hear a gritty tearing sound. This is what it is like when any two objects rub against one another.

Can anything be frictionless?

Nothing in this world is frictionless. If it were, it would be impossible to handle because we could never get a grip on it. So friction is an important part of our world.

We need natural stickiness, but we also need to control it so that we can get a good grip when we want it, and less of a grip when we want things to move easily (Picture 3).

Summary

- **Friction is natural grip.**
- **Friction is caused by rough surfaces.**
- **Nothing in our world is frictionless.**