Year 5 Science: Weight, friction, and air and water resistance

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Why is it harder to push a full supermarket trolley than an empty one?

2. A toy car is rolled onto ice, lino and carpet. On which surface will friction stop it soonest?

3. Group A's three results were 40 cm, 42 cm and 41 cm. Group B's were 20 cm, 55 cm and 38 cm. Which group controlled its variables better?

4. What force slows down a swimmer moving through the pool?

5. Why do mountain bike tyres have big knobbly treads?

Fix the mistake

6. Correct this statement: "A rolling ball stops because it runs out of force."

7. Correct this statement: "Mass and weight are the same thing."

8. Correct this statement: "Smooth surfaces have no friction at all."

9. Correct this statement: "Air does not push on anything, because you cannot see it."

Answer key (for parents and tutors)

1. Why is it harder to push a full supermarket trolley than an empty one?
   The full trolley has more mass, so it needs a bigger force to change its speed.
2. A toy car is rolled onto ice, lino and carpet. On which surface will friction stop it soonest?
   Carpet, because its rough surface gives the most friction.
3. Group A's three results were 40 cm, 42 cm and 41 cm. Group B's were 20 cm, 55 cm and 38 cm. Which group controlled its variables better?
   Group A, because its results are close together; Group B's spread from 20 cm to 55 cm, so something was not kept the same.
4. What force slows down a swimmer moving through the pool?
   Water resistance, the push of the water against the swimmer.
5. Why do mountain bike tyres have big knobbly treads?
   The knobbly treads increase friction, so the tyres grip on mud and loose dirt.
6. Correct this statement: "A rolling ball stops because it runs out of force."
   It stops because friction and air resistance push against its motion; without them it would keep rolling.
7. Correct this statement: "Mass and weight are the same thing."
   Mass is how much matter there is, in kg; weight is the pull of gravity on that mass.
8. Correct this statement: "Smooth surfaces have no friction at all."
   Smooth surfaces still have tiny bumps, so there is some friction, just less than on rough surfaces.
9. Correct this statement: "Air does not push on anything, because you cannot see it."
   Air is a fluid, and it pushes against anything moving through it; that push is air resistance.