

PD Leader Master
Practice Identifying One Main Learning Goal
Forces
(Answer Key)

Use Analysis Guide A (Identifying One Main Learning Goal) to assess the quality of the following candidate learning goals.

One Main Learning Goal	Strong Learning Goal? Yes/No	Reasons
1. What is friction?	No	This is a question rather than a complete sentence containing a science idea.
2. Run a car down a ramp over three different surfaces and measure how far each car travels.	No	This is an activity, not an important science idea worthy of 40 minutes or more of instruction.
3. Any change in the motion of an object— like speeding up, slowing down, or changing direction—is caused by a force acting on the object.	Yes	This is an important science idea worthy of 40 minutes of instruction. It's scientifically accurate, grade-level appropriate, and stated in a complete sentence.
4. Oil on a surface may reduce friction.	No	This is scientifically accurate, but it's so specific that it might not be considered a big idea worth 40 minutes of time. Oil-reducing friction may be a way to consider the big idea that reducing the size of the bumps on a surface will reduce friction.
5. Gravity	No	This isn't a complete sentence that contains a science idea.
6. The car went the farthest on the smooth tile surface and traveled the least distance on the carpet.	No	This is an observation that may require 40 minutes or more of class time for data collection, but it doesn't contain a science idea.
7. Forces have both a strength and direction that can be represented by arrows of different lengths pointing in the direction of the force.	Yes	This is a complete sentence containing an important science idea worthy of 40 minutes of instruction.
8. Any object that isn't in motion must not have any forces acting on it.	No	This isn't scientifically accurate. Objects not in motion have zero net force; in other words, all of the forces acting on an object add up to zero.
9. Describe the forces acting on an object moving in outer space.	No	This is an activity, not a statement of a science concept. An appropriate learning goal related to this activity might be the

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		following: Objects moving in space experience very little friction and no gravity, so they continue moving at a constant speed and direction.
10. Friction occurs when bumps on the surfaces of two touching objects push against each other in the opposite direction of an object's motion.	Yes	This is a complete sentence containing an important science idea worthy of 40 minutes of instruction. It's scientifically accurate and grade-level appropriate.