1

Forces and Motion Review

Newton's second law

2

- $F_{net} = m\ a$
- Draw free-body diagrams for:
  - a box being pushed at constant velocity on a concrete floor
  - A bucket being lowered with an increasing velocity

Newton's first law

3

- "An object at rest stays at rest and an object stays in motion at constant velocity unless acted upon by an unbalanced force"
- Examples?

Newton's third law

4

- For every action there is an equal and opposite reaction
- Examples?

Newton's third law

5

- Force of tractor on trailer and trailer on tractor
  - Constant v
  - Accelerating
  - Braking

Motion review

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- A car, initially traveling at a constant velocity, accelerates at a rate of 1.50 m/s^2 for a period of 20.0 s. If the car travels 250. meters during this time period, what was the velocity of the car when it started to accelerate?

Forces review

7

- A 7.5 kg box is pushed with a force of 25 N.
- Draw a free body diagram.
- If the coefficient of friction between the box and the surface is 0.25, what is the acceleration of the box?

Motion and forces

8

- A car of mass 1500 kg is traveling at 31 m/s. The driver applies the brakes to bring the car to rest over a distance of 160 m. Calculate the braking force of the car.

Motion and forces

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- Create your own problem that combines motion and forces. Create an answer key to solve your problem. Trade problems with another group, solve their problem, and check your answers against theirs.