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| Unit name – **1-D Newton’s Laws and Forces** |
| I CAN draw a graph of force vs. acceleration  I CAN generate mathematical models from this graph  I CAN describe the effect of balanced and unbalanced forces.  I CAN draw force diagrams and free-body diagrams to reflect real situations.  I CAN relate each of Newton’s Laws of Motion to new situations.  I CAN define the unit vocabulary terms operationally. |
| Graphs/Shapes  Force vs. acceleration graph (mass slope)  “mirror image” graphs (N3) – computer generated |
| Diagrams  Free body diagrams (one object only)  Force diagrams (multiple objects) |
| Equations  Fnet = ma  Fnet = ΣF = F1 + F2 + F3 + …  Ff = μFn |
| Key Terms  **Net force Newtons inertia weight normal force friction tension applied force**  **Field forces mass coefficient of friction static friction kinetic friction** |
| Lab Big Ideas  An object with no net force on it will move with a constant velocity.  An Atwood machine allows us to predict the acceleration of objects.  All forces exist in pairs, which leads to Newton’s Third Law.  The ratio of friction to normal force can be expressed as a coefficient of friction. |