

Motion and Matter

Investigation 1: Forces – Magnetism and Gravity

Key Concepts: Magnets attract or repel other magnets and some metals. Gravity pulls all objects toward Earth. Forces can act at a distance.

NGSS Alignment: 3-PS2-1 — Plan and conduct an investigation to provide evidence of the effects of balanced and unbalanced forces on the motion of an object.

NGSS Alignment: 3-PS2-2 — Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion

NGSS Alignment: 3-PS2-3 — Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other

I can observe and describe how magnets attract or repel each other.

I can explain that gravity is a pulling force that acts on all objects.

I can plan and conduct tests to explore how changing distance affects magnetic force.

I can record and interpret data to explain how forces cause motion.

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Investigation 2: Patterns of Motion

Key Concepts: Motion can be measured and predicted. Repeating patterns help explain how things move.

Variables such as push, pull, or slope affect motion.

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NGSS Alignment: 3-PS2-2 — Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion

I can measure and record how far or fast an object moves.

I can identify and describe patterns in how objects move (straight, circular, back and forth).

I can predict future motion based on observed patterns.

I can explain how changes in force or surface affect motion.

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Investigation 3: Engineering with Motion

Key Concepts: Engineers design and test solutions to problems involving motion. Successful designs meet criteria and constraints. Testing and revising improve designs.

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NGSS Alignment: 3-PS2-2 — Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

NGSS Alignment: 3-PS2-4 — Define a simple design problem that can be solved by applying scientific ideas about magnets

**I can define a problem that involves motion
(e.g., moving an object to a target).**

I can plan & build a design that meets the problem's goals.

I can test my design fairly and record results.

**I can explain why one design works better than another
using evidence.**

**I can improve my design based on test data and
feedback.**

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Investigation 4: Measuring Matter

Key Concepts: Matter has measurable properties such as mass and volume.

Matter can change form but is never lost (conservation). Mixing and dissolving are examples of physical changes.

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NGSS Alignment: 3-PS2-2 — Make observations and/or measurements of an object's motion to provide evidence that a pattern can be used to predict future motion.

NGSS Alignment: 3-PS2-3 — Ask questions to determine cause and effect relationships of electric or magnetic interactions between two objects not in contact with each other

NGSS Alignment: 3-PS2-4 — Define a simple design problem that can be solved by applying scientific ideas about magnets

I can use tools like a balance or graduated cylinder to measure matter accurately.

I can observe and describe changes in matter (melting, freezing, dissolving).

I can compare measurements before and after a change or mixture.

I can explain that matter is conserved even when it changes form.