

Force & Motion Graphing Bundle - Middle School

THREE Graphing Activities

NO PREP - Just
download and Go!



6th, 7th, 8th Grade



Students use Real
World Data to create
different graphs and
answer Force and
Motion questions.

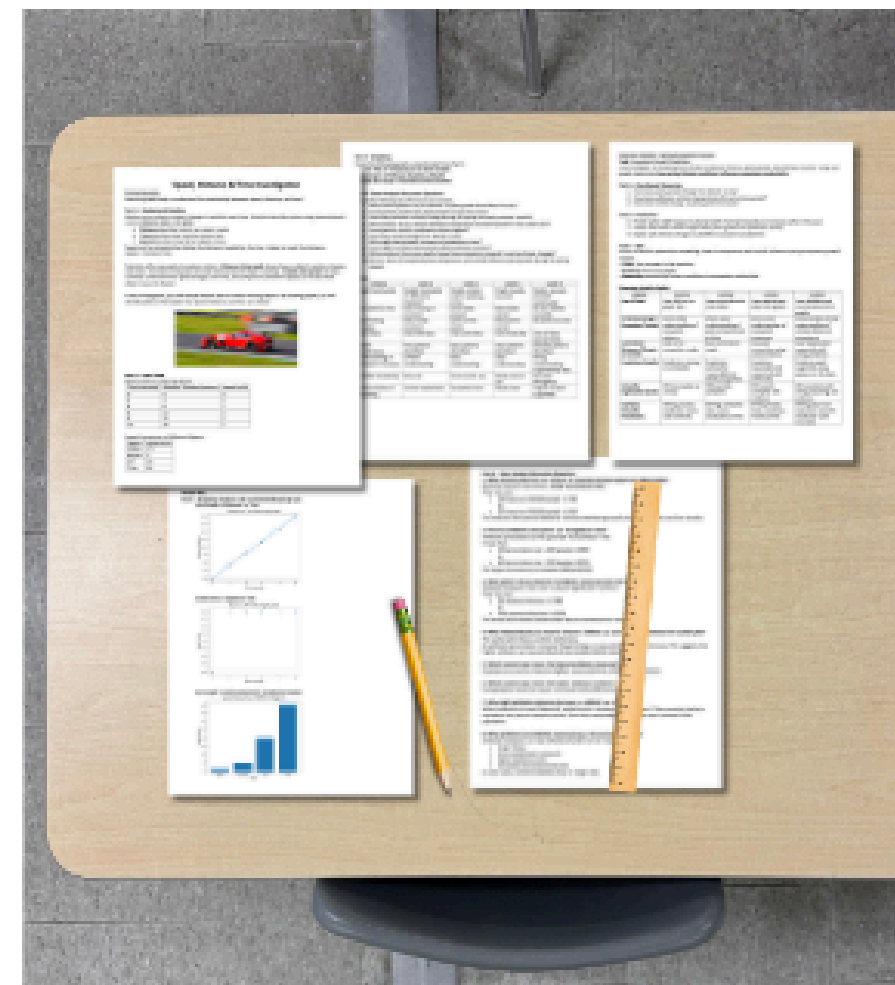
SCROLL
to take a look inside!



HOW THESE ACTIVITIES HELP YOU

- **Saves Prep Time** - Everything is pre-made, ready to go, and FULLY EDITABLE.
- **Provides Built-In Assessments** - The rubric let you quickly check for understanding.
- **Encourages evidence-based reasoning** by having students use graphs to explain how and why trends and changes occur

SPEED, DISTANCE & TIME INVESTIGATION

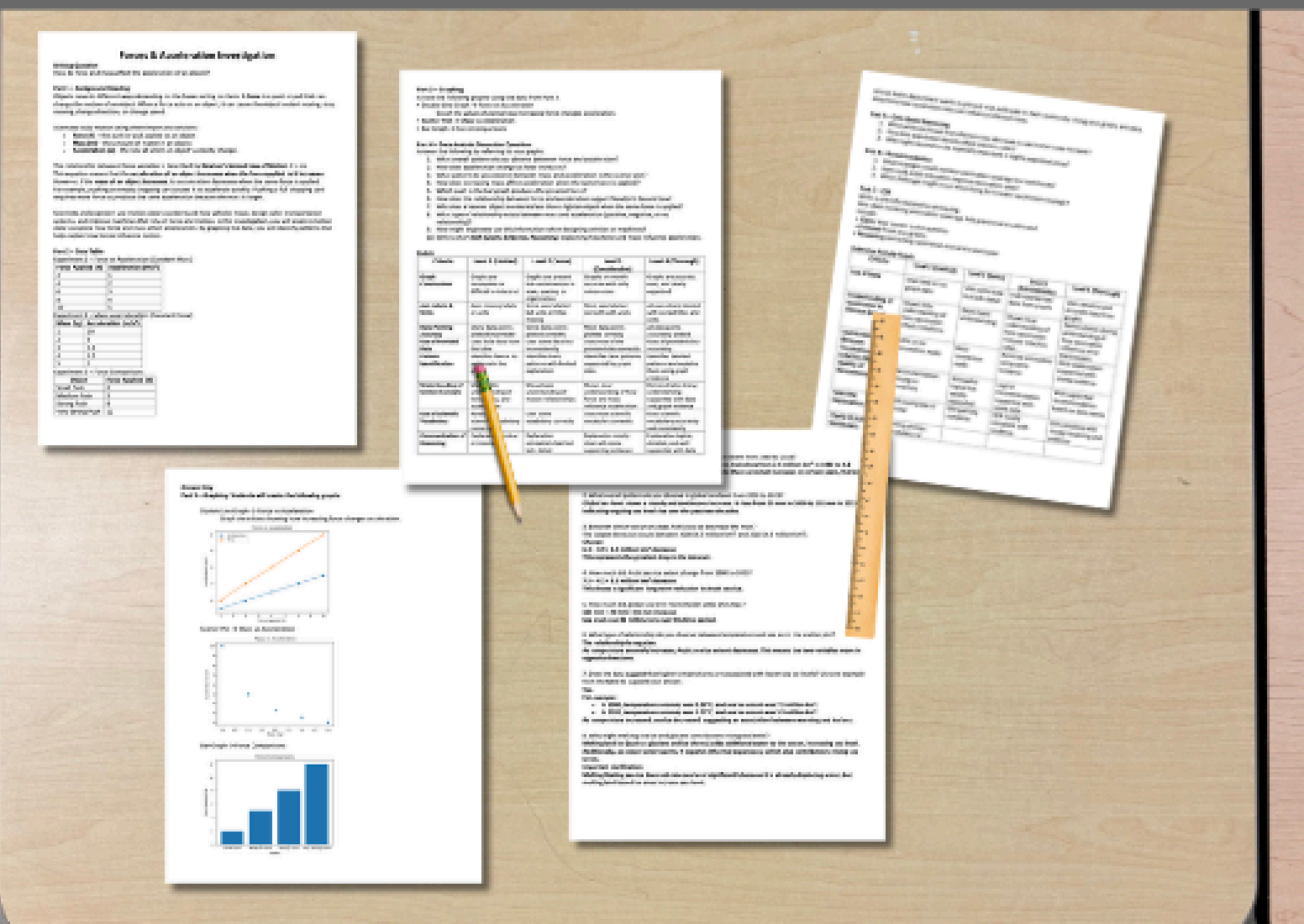


- Background Reading
- Data Tables
- Students Create Different Graph Types
- Extension Activity
- Full Marking Rubric

NO PREP or Materials

What Will Your Students Learn?

FORCES & ACCELERATION INVESTIGATION

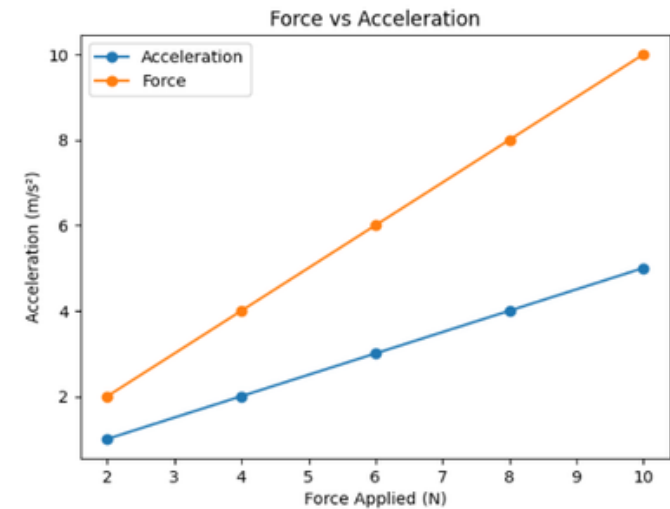
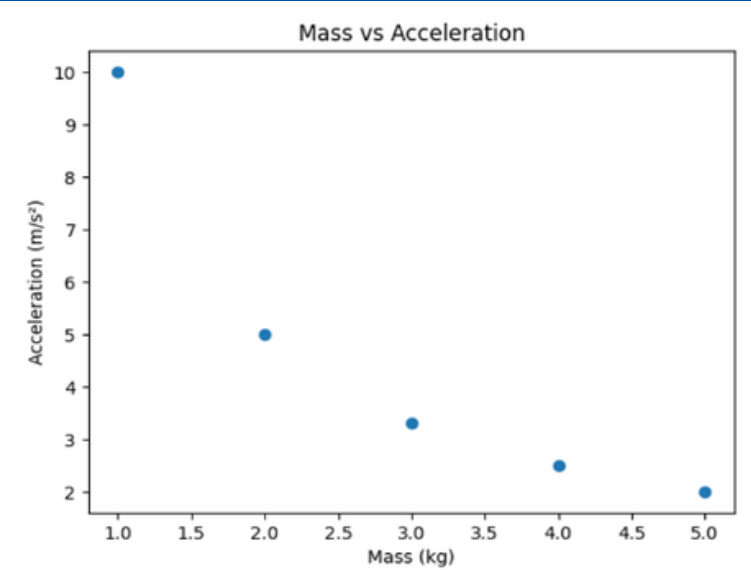
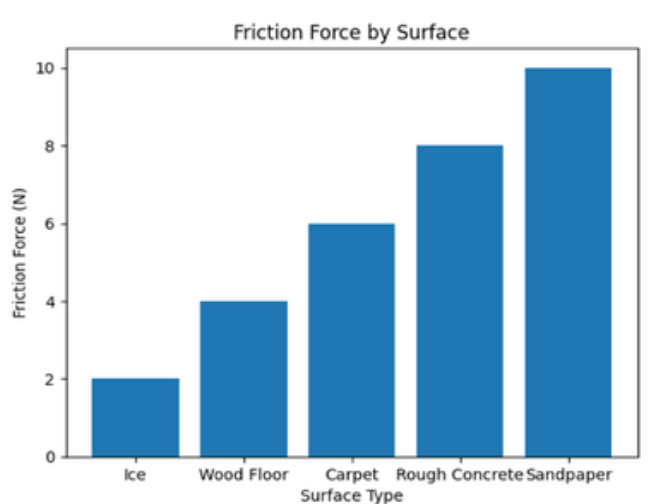


Students Use Their Graphs to Answer Questions and Draw a Conclusion

- ✓ Distance, speed, and time relationships
- ✓ Motion patterns and rates of change
- ✓ Force and acceleration relationships
- ✓ Newton's Second Law of Motion
- ✓ Mass and inertia
- ✓ Friction forces and surface roughness
- ✓ Static vs kinetic friction
- ✓ Motion and engineering design
- ✓ Graph interpretation and trend analysis

- **Three Forces & Motion science investigations** that use real-world style data for students to graph and analyze
- **Multiple graphing tasks** (line graphs, double line graphs, bar graphs, and scatter plots) with data tables and analysis questions
- **Complete teacher supports** including answer keys, discussion questions, extension activities, and grading rubrics

What You Get

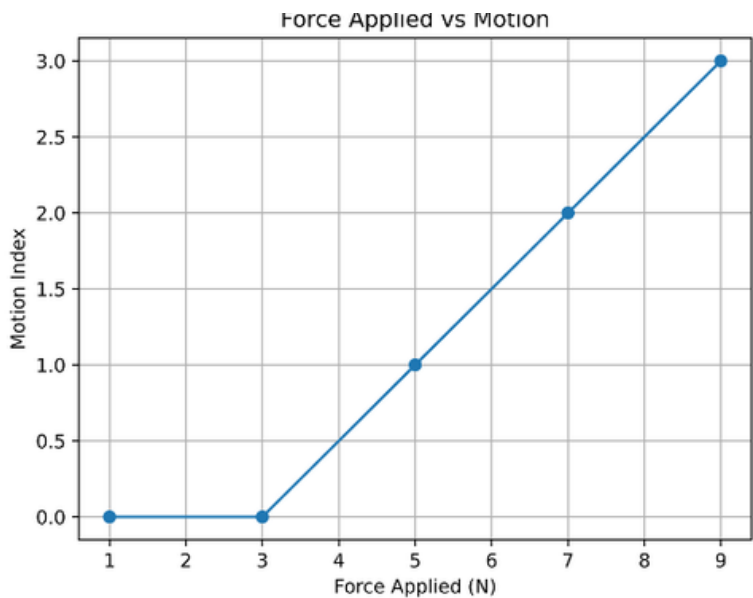


Experiment 1 – Force vs Acceleration (Constant Mass)

Force Applied (N)	Acceleration (m/s²)
2	1
4	2
6	3
8	4
10	5

Experiment 2 – Mass vs Acceleration (Constant Force)

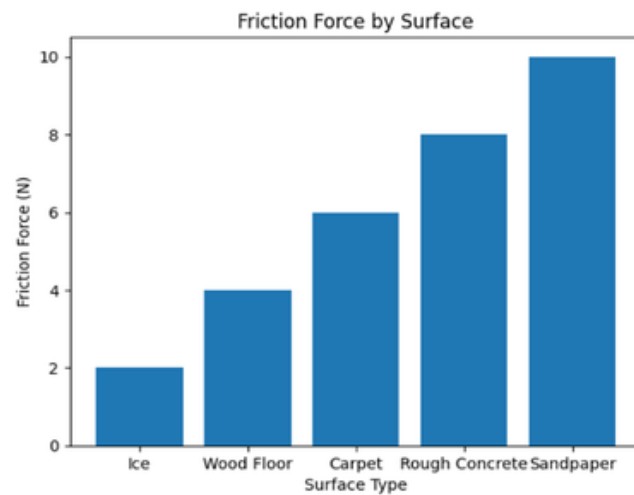
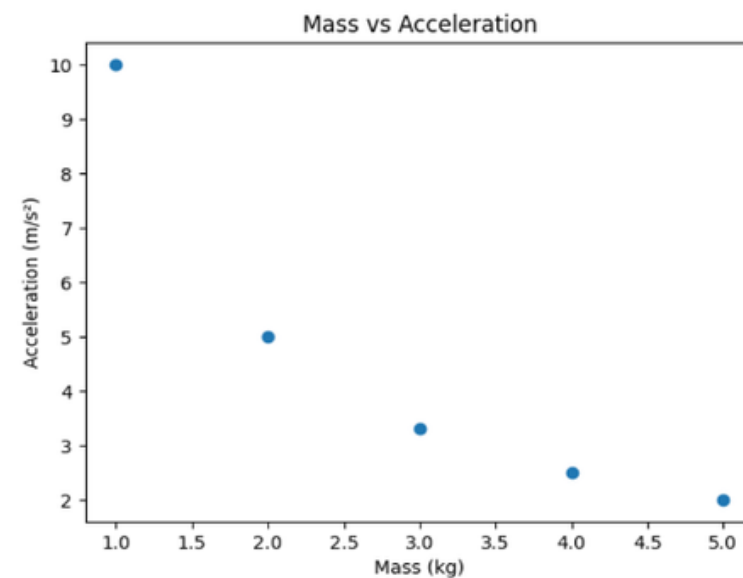
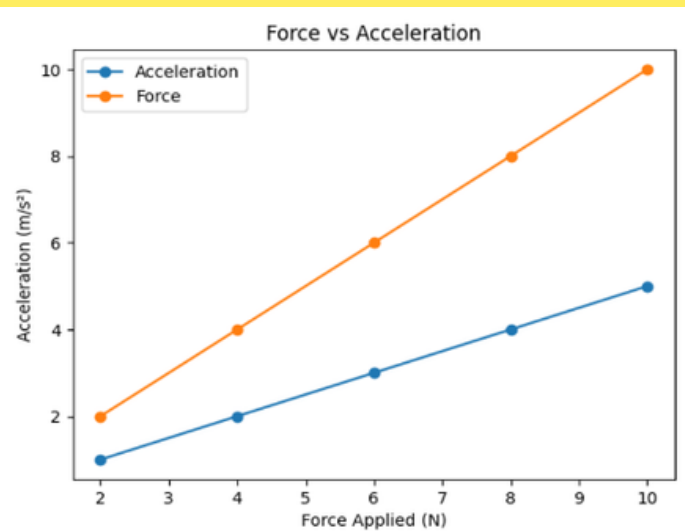
Mass (kg)	Acceleration (m/s²)
1	10
2	5
3	3.3
4	2.5
5	2



	2			Thorough)
Graph Construction	Graphs incomplete or unclear	Graphs contain scale errors	Graphs mostly accurate	Graphs accurate and well-constructed
Axis Labels & Units	Missing labels	Some labels	Most labels correct	All labels and units correct
Data Plotting Accuracy	Data incorrect	Some correct	Most correct	All accurate
Use of Provided Data	Uses little data	Uses some data	Uses most data	Uses all data appropriately
Pattern Identification	Few patterns identified	Basic patterns	Clear patterns	Detailed accurate patterns
Resource Trend Understanding	Limited understanding	Basic understanding	Clear understanding of trends	Strong understanding using data evidence
Connection to Depletion	Weak connection	Basic connection	Accurate connection	Clear explanation of how trends relate to depletion
Scientific Vocabulary	Rare use	Some correct use	Mostly correct use	Accurate throughout
Communication of Reasoning	Unclear	Somewhat clear	Mostly clear	Logical and well supported

What Will Your Students Learn?

- ✓ Helps students build **graphing and data analysis skills** using real-world style motion and force datasets
- ✓ Supports **NGSS Science & Engineering Practices** through analyzing patterns and relationships in speed, distance, time, force, mass, acceleration, and friction
- ✓ Connects physical science concepts (such as **Newton's Laws, motion, force, acceleration, and friction**) to real-world style motion data and scientific investigations
- ✓ Encourages **evidence-based reasoning** by having students use graphs to explain how forces influence motion and how surface conditions affect friction and movement



Experiment 1 – Friction Force by Surface

Surface Type	Friction Force (N)
Ice	2
Wood Floor	4
Carpet	6
Rough Concrete	8
Sandpaper	10

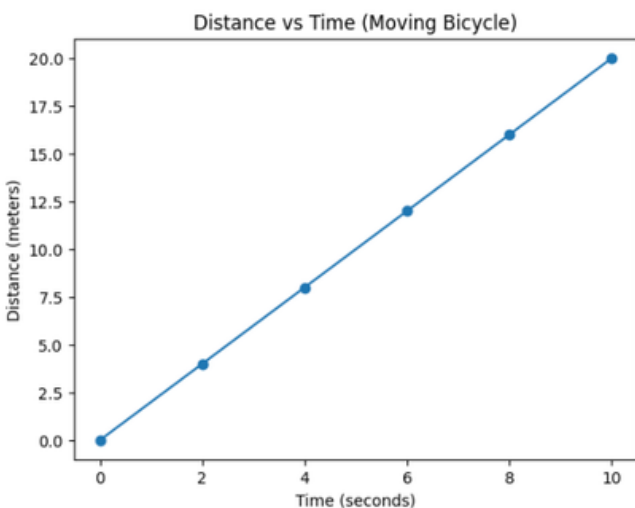
Experiment 2 – Force Applied vs Motion

Force Applied (N)	Object Motion	Motion Index
1	No movement	0
3	No movement	0
5	Begins moving	1
7	Moves steadily	2
9	Moves faster	3

(For graphing purposes, motion can be represented numerically – motion index)

Experiment 3 – Surface Roughness vs Friction

Surface Roughness Index	Friction Force (N)
1 (Very Smooth)	2
2	4
3	6
4	8
5 (Very Rough)	10



Your Activities

- Include a background reading for student understanding
- DIGITAL and PRINT ready
- FULLY EDITABLE
- Extension activities for early finishers
- Complete Answer Key



FRICITION & SURFACE INVESTIGATION

Students Create Different Types of Graphs Based on Real World Data

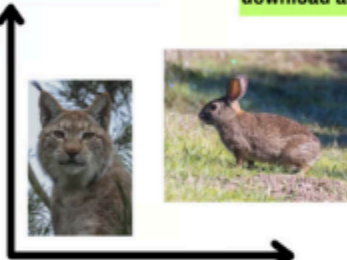
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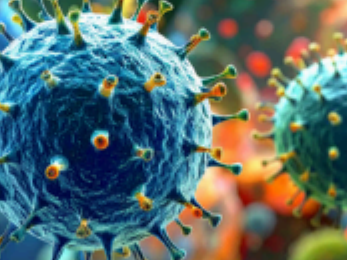


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Disease Spread & Public Health Data Bundle Middle School

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Space Data Investigation Bundle: Planet Motion, Moon Phases, and Stars - Middle School

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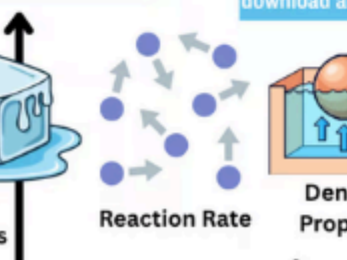


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Matter & Chemical Change Data Graphing Bundle Middle School

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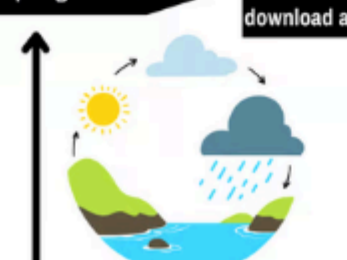


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Physical Science



Life Science

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in this resource!**

I am a real person and if
you have any questions,
suggestions, or concerns,
please reach out.



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Connect!*

