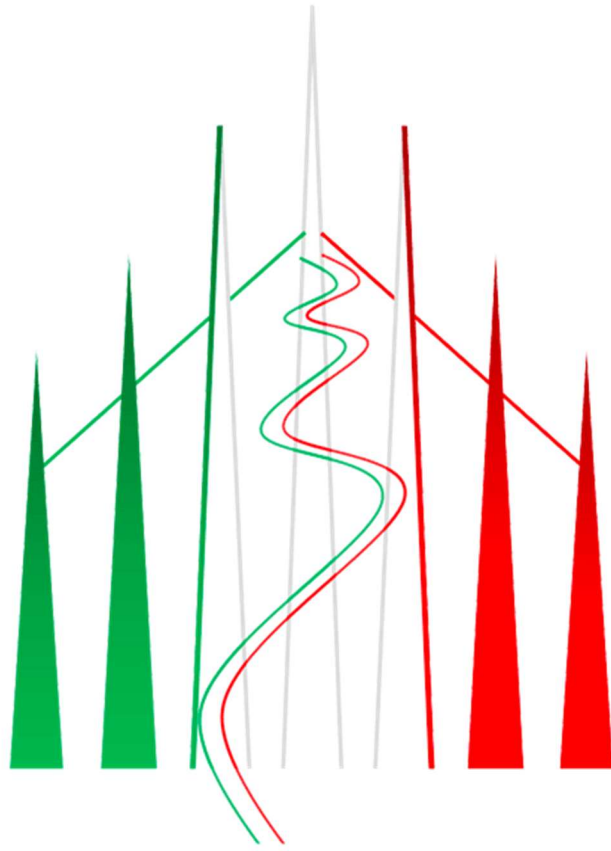
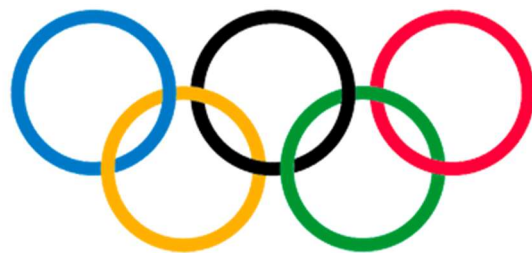


Winter Olympics 2026



MILANO CORTINA 2026



STEM Resource Pack

Welcome

Welcome to your Winter Olympics STEM resource pack.

The Winter Olympics are a global celebration of sport, skill, and human performance, and they provide a fantastic real-world context for exploring science, technology, engineering, and maths. From the graceful spins of figure skaters to the speed of downhill skiers and the precision of bobsleigh teams, Winter Olympic events are packed with STEM in action.

This pack focuses on the science behind winter sports, exploring ideas such as forces, motion, friction, pressure, materials, insulation, and balance. The activities are designed to be low-cost, hands-on, and easy to run, making them suitable for classrooms, clubs, or home learning.

Inside, you'll find links to short experiment videos demonstrating and explaining practical investigations using everyday materials, design and research tasks, and suggested homework activities. Each section highlights how the STEM concepts being explored link directly to specific Winter Olympic sports, helping pupils see how science underpins real-world performance.

You'll also find an inclusion spotlight featuring Inclusive Skating, a charity working to make ice skating accessible to people of all ages and abilities. Their work provides a powerful example of how STEM and thoughtful design can help remove barriers and make sport more inclusive.

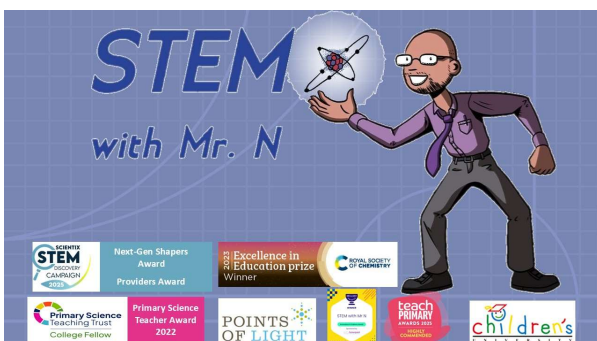
Pick and choose the activities that work best for your setting, adapt them for different ages, and ,most importantly, have fun exploring the science of the Winter Olympics.

Thanks,

Stuart

STEM with Mr N

<https://www.youtube.com/@STEMwithMrN>



The Science of Spins: Angular Momentum

Winter Olympic link: Figure skating spins and aerial skiing rotations rely on angular momentum to control speed and balance.

Video: Why Do Figure Skaters Spin Faster? (Angular Momentum Explained) -

<https://youtu.be/XSZgCriLKLU>

Figure skaters can spin faster simply by pulling their arms in. This video explores angular momentum using everyday demonstrations such as spinning on a chair, homemade spinning tops, and real footage of elite skaters.

Key STEM ideas:

- Angular momentum
- Rotational inertia
- Conservation of angular momentum

Classroom activity: Spin on a swivel chair holding two books, then pull them in to feel the increase in rotation speed.

Why Skis Don't Sink: Pressure and Stability

Winter Olympic link: Downhill skiing, cross-country skiing, and snowboarding depend on wide skis or boards to stay stable.

Video: Why Don't Skis Sink in Snow? - https://youtu.be/z_UfRkiRtYU

Using an action figure, cardboard skis, and flour, this activity demonstrates why skis are long and wide. It introduces the idea that pressure depends on surface area.

Key STEM ideas:

- Pressure = Force ÷ Area
- Stability and balance
- Equipment design

Classroom activity: Compare how deeply an object sinks when standing on long skis, short skis, and no skis.

Ice & Snow Science

Winter Olympic link: Ice and snow conditions affect figure skating, curling, speed skating, skiing, and snowboarding.

Videos: Incredible Ice! Part 1 – <https://youtu.be/CaoRIqjyP4M>

Incredible Ice! Part 2 – <https://youtu.be/PfLxhDGvvUA>

ICE: 10 Things You Should Know – <https://youtu.be/u6kwrV754MQ>

SNOW: 10 Things You Should Know – <https://youtu.be/MXQAApLHJE>

These videos explore the properties of ice and snow, including melting, freezing, density, and texture.

Classroom activity: Investigate how salt affects melting ice or compare different snow or ice conditions using ice cubes.

Forces in Motion: Turning and Friction

Winter Olympic link: Bobsleigh, luge, skeleton, speed skating, and alpine skiing all rely on centripetal force and friction.

Videos: Centripetal Force – <https://youtu.be/8xiduuU2j8s>

Bottle Centrifuge – <https://youtu.be/2FiTz7tyowg>

Fun with Friction – <https://youtu.be/tUV8SzhKbtc>

These activities help pupils understand how athletes stay on curved tracks and control speed.

Key STEM ideas:

- Centripetal force
- Friction
- Circular motion

Classroom activity: Slide objects over different surfaces and compare which travel fastest and slowest.

Staying Warm in the Cold: Insulation

Winter Olympic link: Athletes in outdoor events rely on insulation to maintain body temperature.

Video: How Polar Animals Stay Warm - <https://youtu.be/pXC5pJqm-rU>

This investigation uses a blubber-style insulation model to show how animals — and athletes — stay warm in cold environments.

Classroom activity:

Wrap ice in different insulating materials and measure how long it takes to melt.

Inclusion Spotlight: Inclusive Skating

Inclusive Skating is a charity that works to make ice skating accessible to people of all ages and abilities, including those with disabilities and additional needs.

Through adaptive equipment, specialist coaching, and inclusive programmes, Inclusive Skating shows how the same STEM principles explored in this pack — balance, stability, forces, and materials — can be used to remove barriers and enable more people to enjoy winter sports.

This provides a powerful real-world example of how science and engineering can be used not only to improve performance, but to make sport more inclusive.

For more information, visit: <https://www.inclusiveskating.org>

Suggested Research Tasks

1. The Science of a Winter Sport

Choose a Winter Olympic sport and explain three ways science helps athletes perform better.

Prompt ideas:

- What forces are involved?
- How does equipment design matter?
- How does ice or snow affect performance?

Good sports to suggest:

- Figure skating
- Bobsleigh
- Alpine skiing
- Speed skating
- Curling

2. Olympic Equipment Engineering

Investigate one piece of Winter Olympic equipment and explain how science and engineering shape its design.

Examples:

- Skis vs snowboards
- Speed skates vs figure skates
- Bobsleigh sleds
- Helmets and body suits

STEM focus:

- Materials
- Shape and surface area

- Friction and aerodynamics

3. Ice and Snow Specialists

Research the job of an Olympic ice technician or snow groomer.

Guiding questions:

- How do they control ice texture?
- Why does temperature matter?
- How can tiny changes affect race times?

This is a great hidden STEM careers link!

4. Spinning in Sport

Research where else spinning and angular momentum are used in sport or everyday life.

Examples:

- Diving
- Gymnastics
- Skateboarding
- Fairground rides

Suggested Homework Tasks

1. Design a Winter Olympic Athlete

Design an athlete for a Winter Olympic event.

Include:

- Clothing (insulation, flexibility)
- Equipment (skis, skates, helmet)
- Labels explaining the science choices

2. Build a Mini Ski or Skate

Design and test a “ski” or “skate” using cardboard, paper, or recycled materials.

Questions to answer:

- What shape worked best?
- What happened when you changed the size?
- How does this link to real skis?

3. Sports Science Reporter

Write a short report explaining the science behind a Winter Olympic moment.

Options:

- Why a skater spun so fast
- Why a skier stayed balanced
- Why a sled stayed on the track

This works really well as a literacy crossover.

4. Winter Olympics at Home

Try one of the experiments from this pack at home and explain what you found.

Encourage:

- Photos or drawings
- Predictions vs results
- Simple conclusions