

Bobsleigh **Marble Run** Challenge

☒ **Materials**

- ☐ Marbles
- ☐ Cardboard tubes
- ☐ Tape/glue
- ☐ Large sheet of cardboard
- ☐ Bubble wrap/velcro/felt - optional
- ☐ Stopwatch



☒ **Instructions**

Design a marble run with a slope at the beginning.

Cut the cardboard tubes in half to create an open track or leave them whole to make a tunnel.

Attach the tubes to the large cardboard sheet with tape or glue. Mark a start and finish line.

Test the marble run. Record how long a marble takes to travel from the start to the finish.

Add a rough material to slow the marble down inside one of the tubes and record how long the marble takes to complete the course.

Add a rough material to the inside of a second tube and record how long the marble takes to complete the course.

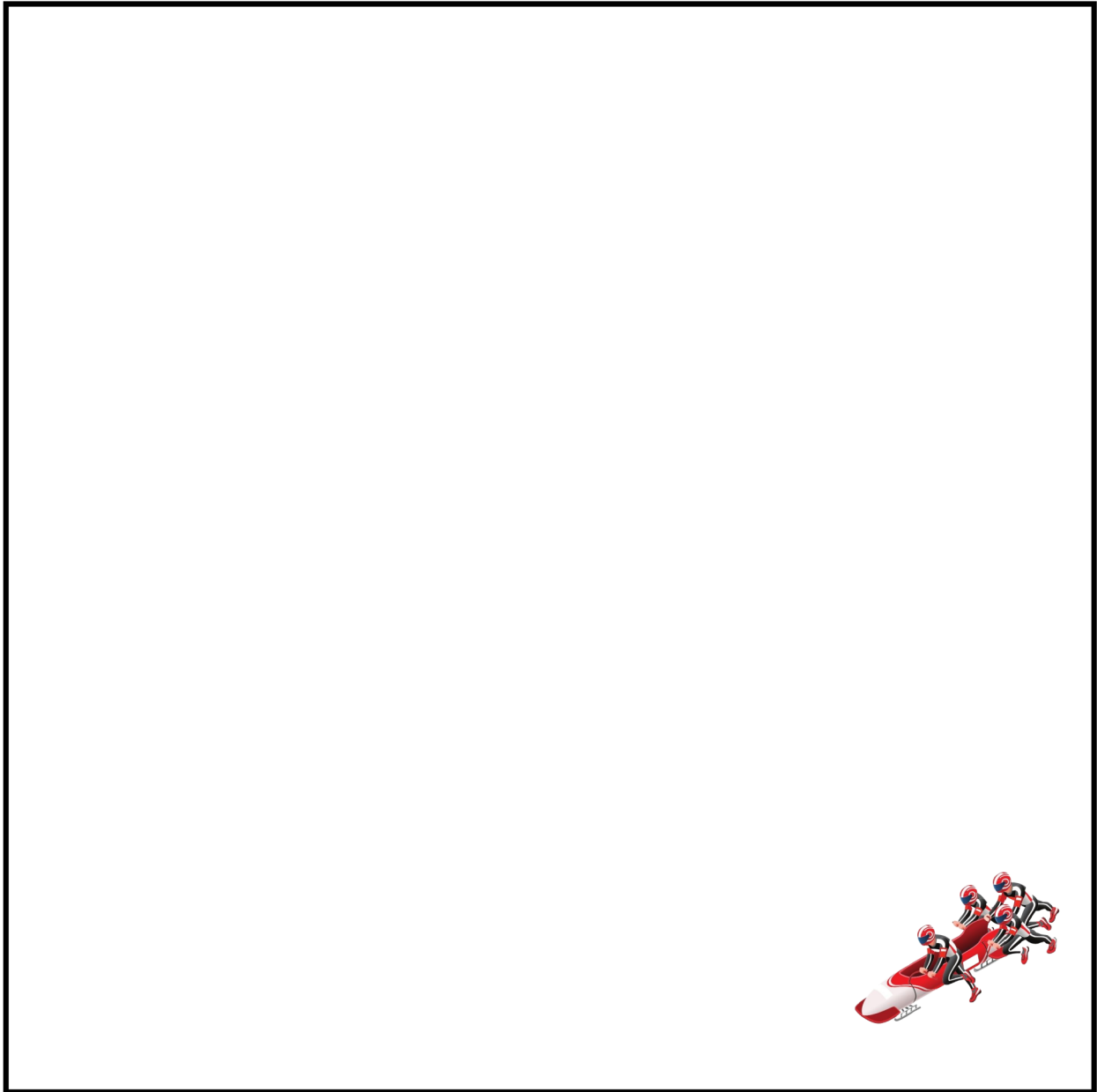
Repeat three times for each condition and find the average time.

Gravity is an invisible force that pulls objects down to Earth. When a marble is at the top of a marble run, it has potential energy, when it starts to move the potential energy is converted to kinetic (movement energy) energy. At the top of the slope, the marble has 100% potential energy, but as it drops down, its potential energy goes down and kinetic energy goes up!

Rough surfaces slow moving objects down, so if you add bubble wrap or velcro to the inside of a tube, the marble will slow down. This is friction!

Marble Run Bobsleigh Challenge

☒ Marble Run Design



Materials list

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Prediction

Adding a rough material to the inside of a tube will slow the marble down

No

☐

Yes

☐

Results

Time taken for the marble to complete the track



	Time (seconds)	Time (seconds)	Time (seconds)
Smooth track			
Rough surface added to:			
1 tube			
2 tubes			
3 tubes			

Conclusion

My prediction was correct

☐

incorrect

☐

Notes

