Year Group: 11 Term: 1 (Motion)

We are learning:

1. **Speed, Velocity, and Acceleration – Speed is scalar; velocity is vector; acceleration is change in velocity over time.**
2. **Distance-Time Graphs – Show how far an object travels over time; slope = speed.**
3. **Velocity-Time Graphs – Show how velocity changes; slope = acceleration, area under graph = distance.**
4. **Stopping Distance – Total distance to stop a vehicle = thinking distance + braking distance; affected by speed, road conditions, and driver reaction time.**
5. **Newton's First Law – An object stays at rest or moves at constant speed unless acted on by a resultant force.**
6. **Newton's Second Law – Force = mass × acceleration:**
   F=ma
7. **Newton's Third Law – For every action, there is an equal and opposite reaction.**

How can you support your child:

- Encourage them to make revision posters on each of the sub-topics within the topic.
- Encourage them to make cue cards with questions and answers on all the sub-topics.
- Encourage them to use the notes, videos, and quizzes, on BBC Bitesize.
- Encourage them to use Seneca Learning to supplement and secure their knowledge on the topic.

Try asking them:

1. **"What do you need to accelerate?"**
   Answer: A resultant force — otherwise, you keep doing what you're doing.
2. **"Can you remember the rule that links force, mass, and acceleration?"**
   Answer: Yes!
   F=ma (Force = mass × acceleration)
3. **"What happens when you push me — what do I do back?"**
   Answer: I push you back with an equal and opposite force — that's Newton's Third Law!
4. **"How do we know if you're accelerating?"**
   Answer: If your velocity changes — even if your speed stays the same.
5. **"What does a steep slope mean on a distance-time graph?"**
   Answer: You're going fast — slope = speed.
6. **"Why do cars take longer to stop at high speeds?"**
   Answer: Because thinking distance and braking distance both increase — total stopping distance gets longer.

Useful Links:

Senecal Learning = https://senecalearning.com/en-GB/

BBC Bitesize = GCSE Physics (Single Science) - AQA - BBC Bitesize

Kerboodle = www.kerboodle.com