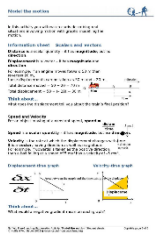
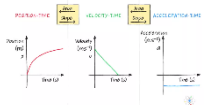
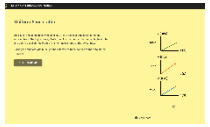
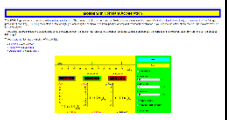
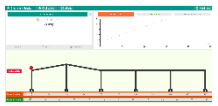
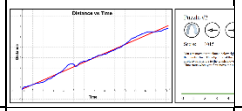
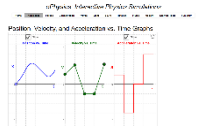
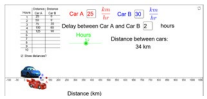
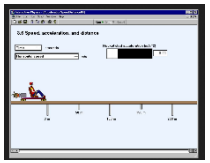
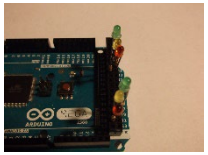
MARKET RESEARCH: physics concepts of 2D motion, speed vs. time, acceleration, and sim/game about driving on a road and designing traffic signals and optimize the flow of vehicles

Market Research//my rating	Purpose	Title/Intended players	Found where?	Description/ Narrative	Core dynamic/ Interactions / Inputs	Related links/additional info
https://www.stem.org.uk/resources/elibrary/resource/31103/model-motion great teaching tools	Activity sheet	- For students various levels high school		Intro to scalar and vectors Displacement graphs	• Model the motion. Discuss if graphs are realistic or unrealistic (velocities changes abruptly)	STEM learning Community UK https://www.stem.org.uk/all-news/stem-community-a-place-to-grow
https://sciencing.com/difference-graph-position-time-graph-8472236.html	Info article	Motion graphs	 https://sciencing.com/			Vocabulary and English wording of interest
https://www.ck12.org/physics/velocity-vs-time-graphs/lesson/Velocity-Time-Graphs-MS-PS/ * nothing happens to tell me if I am correct or wrong	SIM + teacher info	Velocity vs. Time Graphs		Three people play baseball with various acceleration rates	Drag the red dots within the graphs below to fit the functions to the data stated above	PLIX simulations Some are great with datasheet Vocabulary and English wording of interest
https://www.walter-fendt.de/html5/phen/acceleration_en.htm download available *** Clear and simple to use	SIM ONLY	Motion of a car with Constant Acceleration Flat line - For Students junior high	https://www.walter-fendt.de 	Car moving with constant acceleration. Real time display of 3 graphs and 3 digital clocks.	• Enter Input Parameters (initial position, velocity, acceleration) • Place two barriers can be placed to stop clocks.	https://www.walter-fendt.de/html5/phen/ lots of great physics simulations (HTML5)
http://graphsandtracks.com/#/challenges/5	SIM GAME	Sloped tracks. Motion of a ball -	http://graphsandtracks.com	Your mission is to discover the motion of a rolling ball using the	Recreate the motion given:	http://graphsandtracks.com/#/challenges/tutorial great info:

* Was 3 stars originally but very difficult to play without hints, too many parameters. Did not learn anything, only mimicking		For students various levels high school & College level		graph information provided	• Enter initial conditions by moving the ball and cursors. • Adjust tracks' slope. • Use hints and view solution.	http://graphsandtracks.com/#/about sim is not entirely realistic to make the game more playful
http://davidwees.com/graphgame/ *** Easy to use great visual feedback and scoring a little raw	SIM GAME	Puzzles For students as early as middle school	https://davidwees.com/ blog and other things 	Get as close as possible to simulate the distance vs time graph	• Move a stickman • Get a score higher if you get closer to the curve	There are 12 puzzles, not sure how to get more info about this. Contact the author?
https://ophysics.com/k4b.html * Watch is too passive	SIM ONLY	Position, Velocity, and Acceleration vs. Time Students high school	https://ophysics.com 	Adjust the shape of a Velocity vs. Time graph by sliding points up or down	• Watch how the graphs of Position vs. Time and Acceleration vs. Time change	Geogebra as well
https://www.geogebra.org/m/mhmsbuxq ** Interesting idea Not entirely working as expected	SIM only	Speed Distance Time (Measuring the distance) Students Middle school	https://www.geogebra.org 	Investigating the distance covered by two cars with different starting time and speed.	• Input car speed • Drag cars along the distance ruleer	plenty of simulations in geogebra

https://contrib.pbslearningmedia.org/WGBH/conv20/phy03-int-accel/index.html *** great ideas graph is great and arrows are easy to use but Too much text Gives a headache (speed vs velocity concepts) and weird moves.	SIM GAME	Unfinished game? Students Middle school	 https://www.pbslearningmedia.org/	Use arrow to control a car Stop by decreasing the speed	• Arrow to go faster/slowler • Arrow to go left and right	PBS Bring the World to Your Classroom Lots to explore
https://www.design-simulation.com/IP/curriculum/misccontent/accelerationspeeddistance.php ** seems interesting No longer works?	SIM?	Speed, acceleration, and distance Students Middle school to junior high school	https://www.design-simulation.com 	Click on run to get the rocket sled to move?	• Visualize time speed and acceleration of a rocket sled	Interactive physcis
https://phet.colorado.edu/sims/cheerpj/moving-man/ * it bored me No graphs Why a man?	SIM	The moving man Students Middle school to junior high school	https://phet.colorado.edu/	Click and drag the man	• Click and drag the man • Visualize cursors moving and time displayed •	Well, this is famous right? I used it in the teaching algebra course I took last summer
https://store.steampowered.com/app/1944790/Train_Sim_World_3/ *** Appealing and great cockpit with lots of sensors and commands, immersive feeling	GAME	Train Sim World series Players who like to conduct a train	https://store.steampowered.com/ 	Conquer American mountains as you haul incredible tonnage!	• Manage various kinds of breaks, manage energy charge, and many other controls • Visualize the accelerometer • Lots of great scenes to watch on the travel journey	US package other for UK and Germany exist Video let's play: https://www.youtube.com/watch?v=7wXBriPt5EQ

https://store.epicgames.com/en-US/p/snowtopia-ski-resort-builder-5f941b ** Fun, empowering, and appealing for civil engineering apprentices.. Missed out on sustainability and green considerations.		Snowtopia: Ski Resort Builder Players who enjoy design and build a ski resort from the ground up to have fun and ski all day	https://store.epicgames.com/ 	Build the ideal ski resort to keep your skiers smiling all the way down the mountain. Get to know every cliff and crevice as you plan pistes, place lifts and build essential facilities.	• Strategize where to place things and manage risks • Construct ski routes, lifts and gondola, service buildings like in a CAD software.	Trailers: https://www.youtube.com/watch?v=hvNzqfBlyAY&t=1s https://www.youtube.com/watch?v=G1PkUZ5qrTY Test gameplay: https://www.youtube.com/watch?v=-0_RnUkumbo
https://www.ea.com/games/simcity/simcity-buildit ***	GAME	Simcity build it Everyone plays this game, any age?	Electronics Art 	Be the hero of your very own city as you design and create a beautiful, bustling metropolis, in SimCity BuildIt, the most popular city builder.	• To be investigated further	How to manage intersection stops, optimize traffic flow in sim city: https://www.youtube.com/watch?v=g-8lhpINmXE
https://www.ea.com/games/simcity/simcity-4-rush-hour	GAME	SimcCity 4: Rush Hour Everyone plays this game, any age?	Electronics Art 	Take complete control of your city's transportation system including roads, rail, air, and waterways. Watch your approval rating skyrocket as you get your Sims on the go.	• To be investigated further	
https://www.youtube.com/watch?app=desktop&v=DP62ogEZgkI	VIDEO	How Do Traffic Signals Work?	Practical Engineering 	Explains civil engineers reasoning and plenty of useful details	Concepts of 3 lights: cost, space saving, handle large volume. Typical intersection 8 movements, cycle ring-barrier diagram	Amber light 1 s per every 60km/h Slope Other considerations Intersection to clear Set timing sequence. Actuated signals receive input from outside sensors: inducted loop, camera. Control =simple computer. More flexibility.

http://www.mrmont.com/games/trafficsim2.html	SIM	Traffic SIM 2 	MrMont	Visualize traffic flow of cars at an intersection with traffic signals	Input traffic nature (heavy, medium, light) Change light Start end	River crossing: http://www.mrmont.com/games/rivercrossing.html
https://www.friv2online.com/trafficcommand.html *** Fun to play. learning quickly how to sequence things Missing pedestrians? Annoying ads to skip at every leve :=(	GAME	Traffic Command Anyone who understand how to move cars and pedestrians can play	https://www.friv2online.com 	Regulating the flow of vehicles at various intersections	Activate green lights to let cars pass Earn money rewards Mistakes create accidents and fail, redo is permitted Angry drivers make you fail too	Starts with a road with pedestrian crossing two lanes traveling in opposite direction then each level is more complex intersection
https://www.allaboutcircuits.com/projects/build-a-traffic-light-controller-with-an-arduino-mega/ *** Seems great, lots provided to have a realistic sequence and make it all work	Electronic card SIM	Build a traffic light controller with arduino	https://www.allaboutcircuits.com 	Learn how to simulate a traffic light using an Arduino. Busy lane and Lazy lane exemples	All requirements provided tables with loop sequences, schematic, code,	More details: https://www.allaboutcircuits.com/projects/arduino-traffic-light-timing-lesson/ Next steps: use this setup to time Christmas lights or for simple stage lighting effects.