Review of Previous Lesson

- State as many Vocabulary words and Learning Objectives that you remember from the last lesson as you can.
- Now complete the content learning objectives.
- Remember to grade yourself from 0 – 3.

1

Vocabulary

Language:	Start	End
define		
calculate		
compare		

4

Momentum

2

Learning Objectives

Grade 7

Content:	Start	End
Define momentum.		
Recognise momentum is a vector quantity.		
Compare and contrast momentum and inertia.		
Identify large and small momenta.		
Discuss how to increase/decrease momentum of a system.		
Describe what physical quantities are necessary to change the momentum of a system.		
Calculate Momentum and rearrange to find mass or velocity given momentum.		

Note: all momentum calculations will be along a single axis.

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Vocabulary

Content:	Start	End
momentum		
single object		
system of objects		

3

Learning Objectives

Grade 7

Content:	Start	End
Define and identify conserved quantities.		
Define and identify isolated systems.		
State the Conservation of Momentum.		
Apply Conservation of Momentum to analyse one dimension, multiple object scenarios: Calculate momentum, velocity, mass.		
Identify and discuss qualifications for elastic and inelastic collisions.		
Apply Conservation of Momentum to collisions to derive collisions equations.		
Calculate velocity of an object after an elastic or inelastic collision (2 objects only).		

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Learning Objectives

12/14/2017

Grade 8

Content:	Start	End
Define momentum mathematically and calculate it for a single object, or a system of objects.		
Compare the momenta of two objects.		
Calculate a change in momentum of a single object or of a system of objects.		
Apply conservation of momentum to any closed system.		
Distinguish between an elastic and inelastic collision (bounce or stick).		
Mathematically analyse a 2 object collision of either type.		

Note: all momentum calculations will be along a single axis.

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Bouncing fruit collision example

12/14/2017

(Khan Academy)
https://www.khanacademy.org/science/physics/linear-momentum/momentum-tutorial/v/bouncing-fruit-collision-example
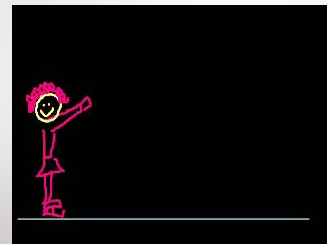

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Learning Objectives

12/14/2017

Language:	Start	End
Use equations to define mathematically.		
Compare verbally and in writing.		

8

Momentum: Ice skater throws a ball

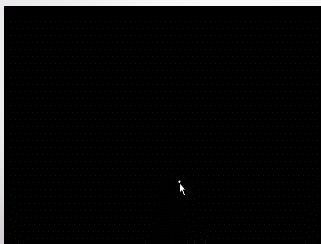12/14/2017

(Khan Academy)
https://www.khanacademy.org/science/physics/linear-momentum/momentum-tutorial/v/momentum-ice-skater-throws-a-ball

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Introduction to momentum

12/14/2017

(Khan Academy)
https://www.khanacademy.org/science/physics/linear-momentum/momentum-tutorial/v/introduction-to-momentum

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System of objects

12/14/2017

- A system is a collection of two or more objects.

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Closed / Isolated System of objects

- An isolated system is a system that is free from the influence of a net external force that alters the momentum of the system.
  - Usually meaning that we ignore friction and gravity.
    - Because of the inevitability of friction, air resistance and gravity in any real collision, no system is ever completely isolated. However, the effect of friction is fairly small.
      http://www.physicsclassroom.com/Class/momentum/u4l2c.cfm
      http://www.physicsclassroom.com/class/momentum/Lesson-2/Using-Equations-as-a-Recipe-for-Algebraic-Problem

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Elastic and Inelastic collisions

- Basically at this level:
  - Elastic Collisions:
    - Bounce
  - Inelastic Collisions:
    - Stick together

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The law of momentum conservation can be stated as follows:

- For a collision occurring between object 1 and object 2 in an isolated system, the total momentum of the two objects before the collision is equal to the total momentum of the two objects after the collision.
  - **That is, the momentum lost by object 1 is equal to the momentum gained by object 2.**
    http://www.physicsclassroom.com/class/momentum/Lesson-2/Momentum-Conservation-Principle

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Plenary *(Conservation of Momentum for a system of objects)*:

- http://www.physicsclassroom.com/class/momentum/Lesson-2/Using-Equations-as-a-Recipe-for-Algebraic-Problem
- http://www.physicsclassroom.com/class/momentum/Lesson-2/Using-Equations-as-a-Guide-to-Thinking
- http://www.physicsclassroom.com/class/momentum/Lesson-2/Momentum-Conservation-in-Explosions
- https://sciencenotes.org/conservation-of-momentum-example-problem/
- http://courses.ncssm.edu/apb11/resources/guides/G09-1a.cons_mom_1d.htm
- https://edurev.in/studytube/Conservation-of-Momentum-Numerical-Problems/6cf066d3-fda7-4740-b875-e0c7d03197cc_t

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Plenary *(Momentum of a single object)*:

- http://www.softschools.com/quizzes/physics/momentum/quiz1502.html
- http://www.physicslessons.com/quiz/quiz8.html
- http://www.stmary.ws/HighSchool/Physics/home/notes/dynamics/momentum/momentum_word_problems.htm
- http://www.stmary.ws/HighSchool/Physics/home/marys_java/gravity_friction_momentum/momentumQuiz.htm
- http://www.bbc.co.uk/bitesize/quiz/q95598405
- http://www.ducksters.com/science/quiz/momentum_questions.php
- https://quizizz.com/admin/quiz/58d9b234444dc40658zd76a2

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