

EASTERN LEBANON COUNTY SCHOOL DISTRICT
STUDENT LEARNING MAP

Course/Subject: PHYSICS Days: ALL
Topic: KINEMATICS Grade
Level: 12

Key Learning: Concepts of measurement are to be discussed visually, summarized numerically, and theoretically .



Unit Essential Question
What are the advantages of various measurement systems?

<u>Concept</u> Mathematics and Physics	<u>Concept</u> Measurement	<u>Concept</u> Graphing data
Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4	Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4	Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4
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Lesson Essential Question How are math and physics different and the same?	Lesson Essential Question What are the difference between precision and accuracy?	Lesson Essential Question What is the relationship between dependent and independent variables?
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Vocabulary Physics Dimensional analysis Significant digits Scientific method Hypothesis Scientific law Scientific theory	Vocabulary Measurement Precision accuracy	Vocabulary Independent variable Dependent variable Line of best fit Linear relationship Quadratic relationship Inverse relationship

Additional Information/Resources:

EASTERN LEBANON COUNTY SCHOOL DISTRICT
STUDENT LEARNING MAP

Course/Subject: PHYSICS
Topic: REPRESENTING MOTION

Days: ALL
Grade Level:12

Key Learning

Concepts of motion are to be discussed visually, summarized numerically, and theoretically .









Unit Essential Question

How can motion be represented and calculated?

<u>Concept</u> Picturing Motion	<u>Concept</u> Where and when	<u>Concept</u> Position-Time Graph
Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4	Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4	Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4
↓	↓	↓
<u>Lesson Essential Question</u> How do motion diagrams describe motion?	<u>Lesson Essential Question</u> How are distance and displacement the same and different?	<u>Lesson Essential Question</u> How does a position-time graph represent an objects motion?
↓	↓	↓
<u>Vocabulary</u> Motion Diagram Particle Model	<u>Vocabulary</u> Coordinate systems Origin Position Distance Magnitude Vectors Scalars Resultant Time interval displacement	<u>Vocabulary</u> Position-time graph Instantaneous position

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<u>Concept</u> How fast?	<u>Concept</u>	<u>Concept</u>
<u>Standards:</u> 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4	<u>Standards:</u>	<u>Standards:</u>
		
<u>Lesson Essential Question</u> How are speed and velocity the same and different?	<u>Lesson Essential Question</u>	<u>Lesson Essential Question</u>
		
<u>Vocabulary</u> Average velocity Average speed Instantaneous velocity	<u>Vocabulary</u>	<u>Vocabulary</u>

<u>Additional Information/Resources:</u> Textbook, guided notes, calculators
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EASTERN LEBANON COUNTY SCHOOL DISTRICT
STUDENT LEARNING MAP

Course/Subject: PHYSICS
Topic: ACCELERATED MOTION

Days: ALL
Grade Level: 12

Key Learning

Concepts of motion are to be discussed visually, summarized numerically, and theoretically .



Unit Essential Question

How can accelerated motion be represented and calculated?

<u>Concept</u> Acceleration	<u>Concept</u> Motion with Constant Acceleration	<u>Concept</u> Free - Fall
Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4	Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4	Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4
↓	↓	↓
Lesson Essential Question How do velocity and acceleration relate to each other?	Lesson Essential Question How does constant acceleration and changing acceleration affect motion?	Lesson Essential Question How does gravity affect objects falling?
↓	↓	↓
Vocabulary Velocity – time graph Acceleration Average acceleration Instantaneous acceleration	Vocabulary	Vocabulary Free fall Acceleration due to gravity

Additional Information/Resources:

Textbook, guided notes, calculators

EASTERN LEBANON COUNTY SCHOOL DISTRICT
STUDENT LEARNING MAP

EASTERN LEBANON COUNTY SCHOOL DISTRICT
STUDENT LEARNING MAP

Course/Subject: PHYSICS
Topic: FORCES IN ONE DIMENSION

Days: ALL
Grade Level: 12

Key Learning

Concepts of motion are to be discussed visually, summarized numerically, and theoretically .



Unit Essential Question

How do forces (1 Dimensional) affect motion?

Concept Force and Motion	Concept Using Newton's Laws	Concept Interaction forces
Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4	Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4	Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4
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Lesson Essential Question How can one use Newton's 2 nd Law to help solve motion problems?	Lesson Essential Question How are weight and mass related?	Lesson Essential Question How does Newton's 3 rd help describe forces in your life?
↓	↓	↓
Vocabulary Force Free – body diagram Net force Newton's 1 st law Newton's 2 nd law Inertia equilibrium	Vocabulary Apparent weight Weightlessness Drag force Terminal velocity	Vocabulary Interaction pair Newton's 3 rd law Tension Normal force

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<u>Concept</u>	<u>Concept</u>	<u>Concept</u>
<u>Standards:</u>	<u>Standards:</u>	<u>Standards:</u>
↓	↓	↓
<u>Lesson Essential Question</u>	<u>Lesson Essential Question</u>	<u>Lesson Essential Question</u>
↓	↓	↓
<u>Vocabulary</u>	<u>Vocabulary</u>	<u>Vocabulary</u>

Additional Information/Resources:

Textbook, guided notes, calculators

EASTERN LEBANON COUNTY SCHOOL DISTRICT
STUDENT LEARNING MAP

Course/Subject: PHYSICS
Topic: FORCES IN TWO
DIMENSIONS

Days: ALL
Grade Level: 12

Key Learning

Concepts of motion are to be discussed visually, summarized numerically, and theoretically .



Unit Essential Question

How do forces (2 Dimensional) affect motion?

<u>Concept</u> Vectors	<u>Concept</u> Friction	<u>Concept</u> Force and motion in 2 Dimensions
Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4	Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4	Standards: 3.1.P.B1; 3.2.P.B1; 3.2.P.B5; 3.1.P.B6; 3.2.P.B2; 3.2.P.B6; 3.1.P.C4; 3.2.P.B3; 3.2.P.A6; 3.2.P.B4
↓	↓	↓
<u>Lesson Essential Question</u> How do you find the x and y components of vectors?	<u>Lesson Essential Question</u> What is friction really?	<u>Lesson Essential Question</u> How can one calculate the equilibrant force in a system?
↓	↓	↓
<u>Vocabulary</u> Components Vector resolution	<u>Vocabulary</u> Kinetic friction Static friction Coefficient of kinetic friction Coefficient of static friction	<u>Vocabulary</u> Equilibrant

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<u>Concept</u>	<u>Concept</u>	<u>Concept</u>
<u>Standards:</u>	<u>Standards:</u>	<u>Standards:</u>
↓	↓	↓
<u>Lesson Essential Question</u>	<u>Lesson Essential Question</u>	<u>Lesson Essential Question</u>
↓	↓	↓
<u>Vocabulary</u>	<u>Vocabulary</u>	<u>Vocabulary</u>

Additional Information/Resources:

Textbook, guided notes, calculators