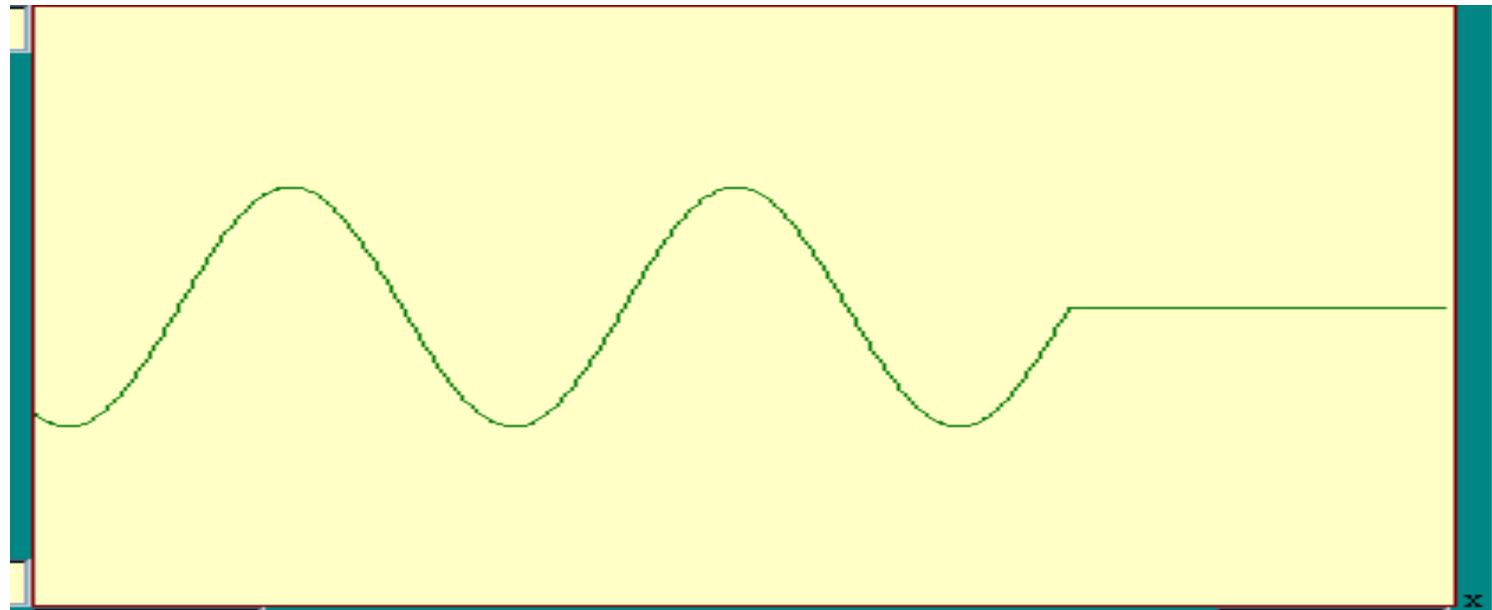


Waves



Essential Questions:

What do you already know about waves?



What knowledge of waves is important?



How do waves get classified?



What can we measure?



What can we calculate / predict?

Where should we start?



Where should we start?

What is a
wave?

What is a WAVE?

A disturbance (vibration) that travels through a medium

A wave transmits ENERGY not the medium

Where should we start?

How do we classify
waves?

What is a wave? How do we classify waves?

Read the Physics Classroom (PCR)



SKIM Waves: Lesson 1 a-c (5 min or less)



Record the most important info on white board (10-15 min)



AFTER notes are complete, use the ***check your understanding*** (CYU) questions on pages b and c to determine if your notes cover the basic info (10-15 min)

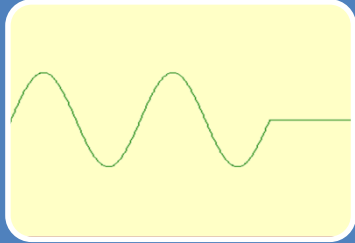
Do you remember?

Contrast mechanical waves with electromagnetic waves.

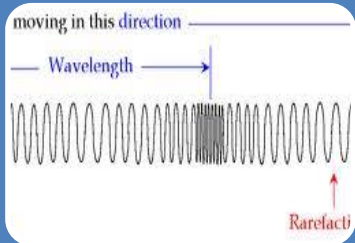
What is a medium? Give an example.

Name two categories of waves. Give an example of each.

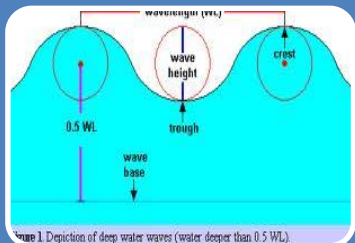
Types of Mechanical Waves



Transverse: the medium oscillates perpendicular to the propagation of the wave



Longitudinal: the medium oscillates parallel to the propagation of the wave (ex: sound)



Surface: the medium oscillates in a circle – this is a combination of the other two types of waves

What's next?

What's next?

What are the features of waves?

What can we measure?

What are the features and measures?

Read the Physics Classroom (PCR)
Waves: Lesson 2 a&b (5-10min)



Record information about wave
FEATURES in notes (5-10 min)



Create a Word Web for the three NEW
MEASUREMENTS (already have Period)



AFTER notes are complete, use the ***check your understanding*** (CYU) questions on pages a and b to determine if your notes cover the basic info (10-15 min)

Wave Features

medium: material that transports a mechanical wave

crest: top (of a _____ wave)

trough: bottom (of a _____ wave)

compression: medium is dense (_____ wave)

rarefaction: medium has low density (_____ wave)

Wave Measurements

λ – wavelength: the distance from crest to crest (m)

T – period: the duration for a complete wave to pass a fixed position (s)

f – frequency: how many waves pass a given point each second (Hz)

A – Amplitude: the distance from the *equilibrium position* to a crest or trough

No formula to define

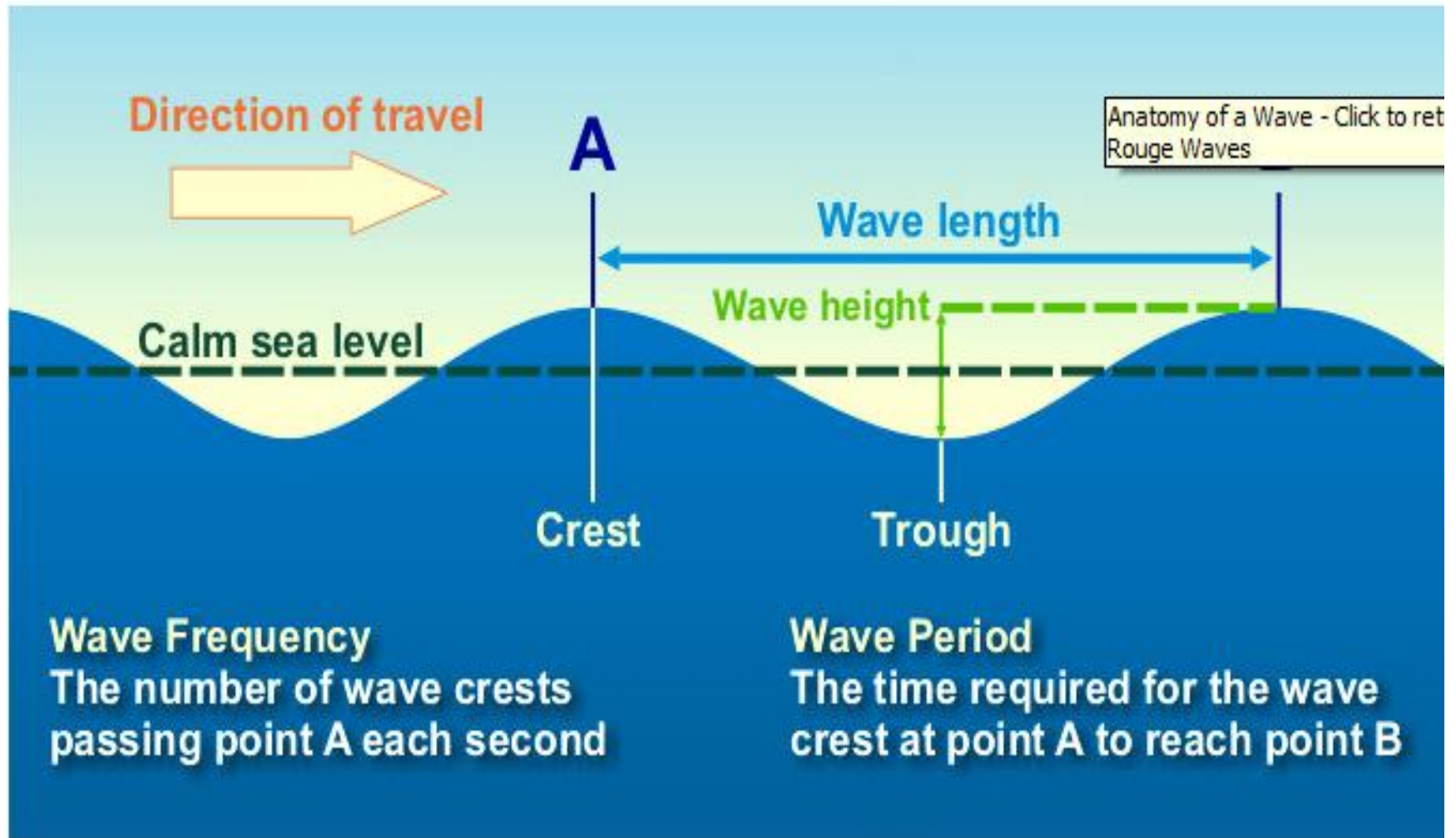
the distance from crest to
crest or trough to trough

λ : wavelength

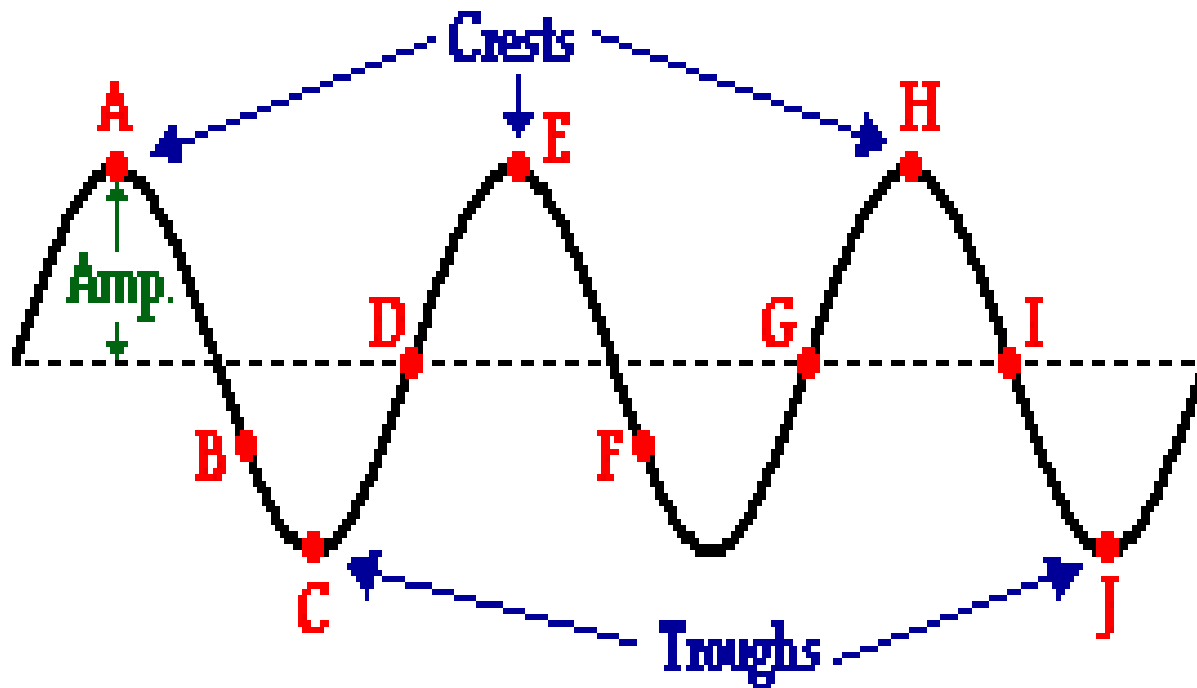
SI unit: meter (m)

alternate units: cm, feet

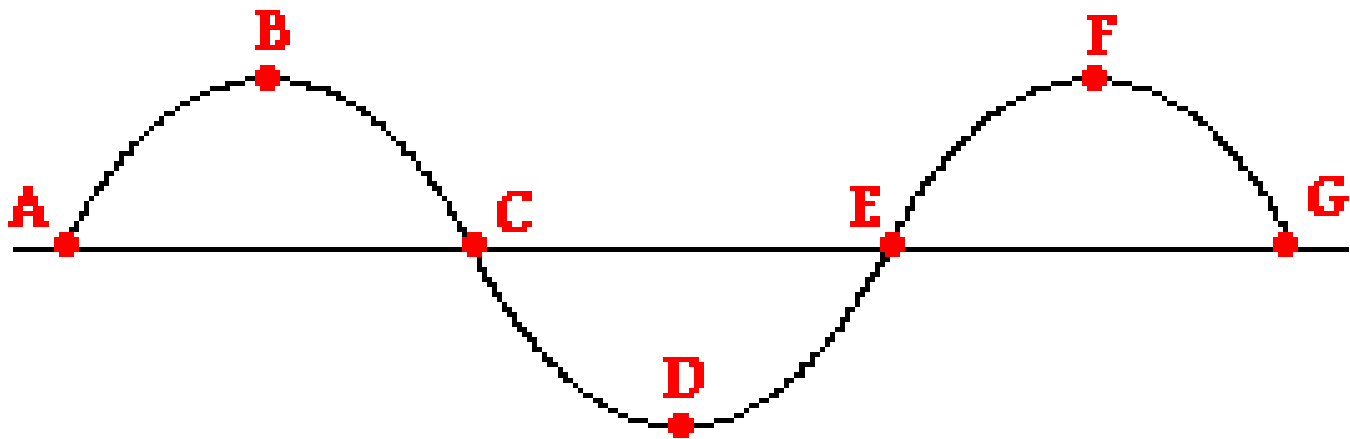
Anatomy of a Wave



Anatomy of a wave



Review...



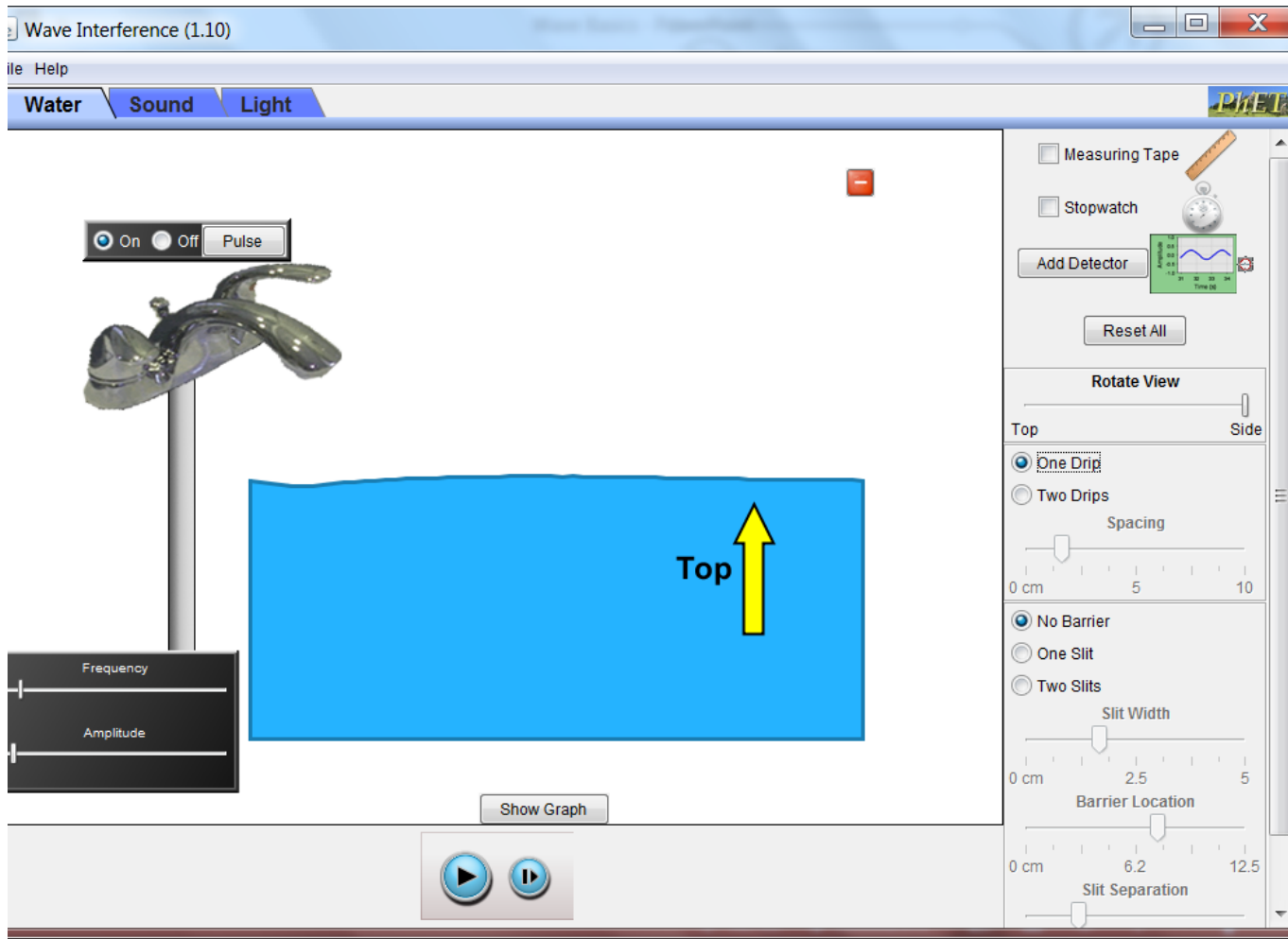
Waves and ENERGY

- Waves transmit energy. Which measurement is most closely linked to the amount of energy the wave transmits?

PHET Simulation

- If you are finished the assignment early, you will benefit by:
 - Googling PhET
 - Going to Physics Simulations
 - Choosing Sound & Waves
 - Selecting Wave Interference
 - Using the first tab (Water) to investigate what affects the wave measurements

PHET Simulation



What is the mathematical relationship
between the...

What is the mathematical relationship between the...

amplitude (m) of a wave and the energy (J) it transmits?

energy (J) in a wave and its amplitude (m)?

Energy vs Amplitude

What is the relationship?

Amplitude (m)	Energy (J)
0.1	10
0.2	39
0.3	88
0.4	157
0.5	244

Conclusion

- For a wave, the _____ is(_____)proportional to the _____ (_____)as shown by the equation:_____
- This means if the _____ is _____ then the _____ will _____.
- For example...