**Notes: Waves Basics** [Instructions Screencast](https://drive.google.com/file/d/1jrhxCmPTuBPE0VBFvNXlvFRGCvF8BLnq/view?usp=sharing)

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| **Directions**: Watch the [**video**](https://youtu.be/ryV0KEOCOVU) to complete the notes with your teacher, then answer the practice questions. |

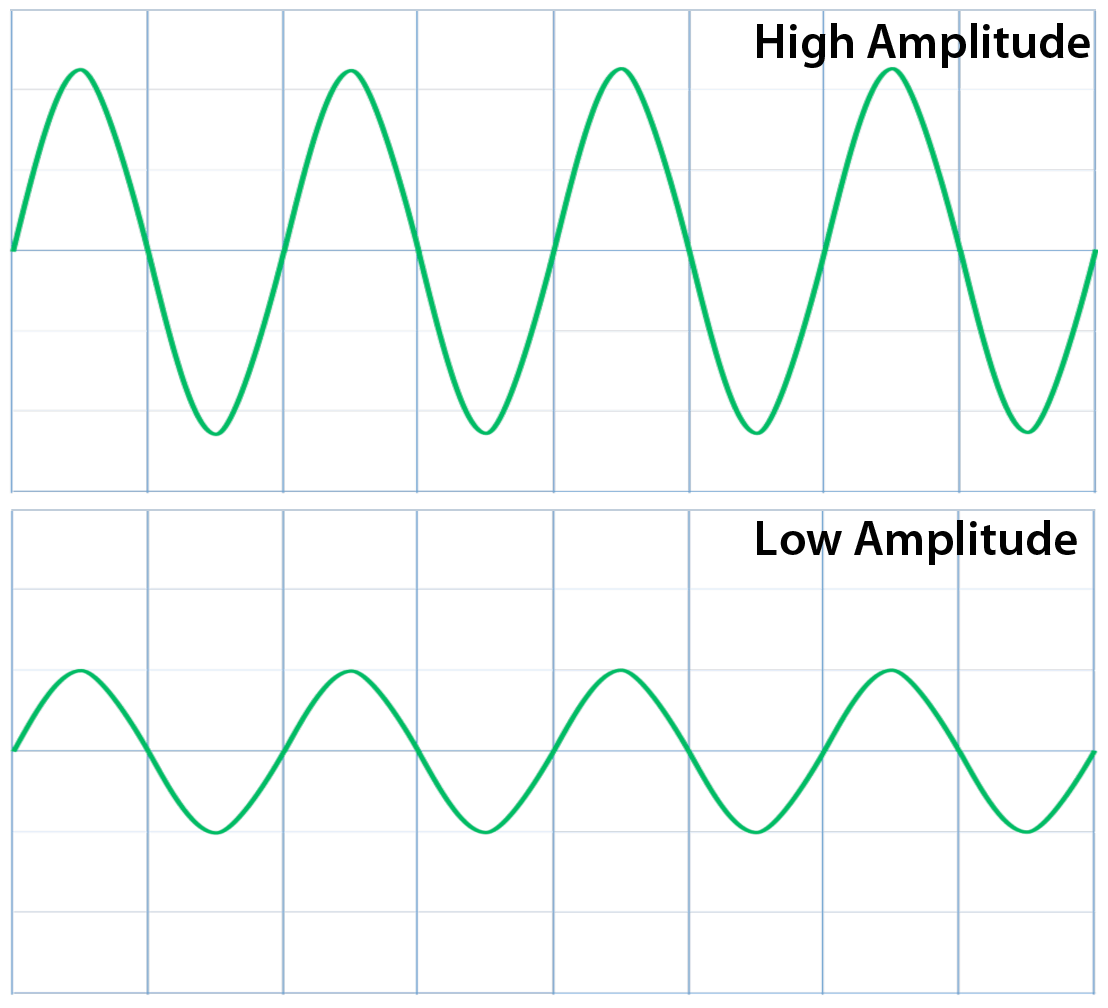
A \_\_wave\_\_ is a \_\_disturbance\_\_ that carries \_\_energy\_\_ from one place to another.



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| **KEY:**  🙂(smiley face) \_\_crest\_\_: the \_\_highest\_\_ point in the wave  💜 \_\_through\_\_: the \_\_lowest\_\_ point in the wave  \_\_amplitude\_\_ : the distance or \_\_height\_\_ of the wave from \_\_resting position\_\_ position  \_\_wavelength\_\_ : the \_\_distance\_\_ between two \_\_crests\_\_ |

If you take high school physics in the future, you’ll learn all about this stuff ↓↓↓↓ I’m putting it here in case you’re interested. Stuff in yellow is what you need to learn for this year.

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| **Term** | **Symbol** | **Definition** | **Equation** | **Units** |
| Frequency | **f** | The number of crests (or complete cycles) that pass a certain point in a given amount of time, usually in one second | Number of Crests/Time  OR  Speed of Wave/Wavelength | Hertz (Hz)  *One wave per second.* |
| Wavelength | **λ** | The length from one crest to the next crest | Speed of Wave/Frequency | Meter (m) |
| Speed of Wave | v | The distance traveled by a wave in a given amount of time | Frequency X Wavelength | Meters/Second (m/s) |



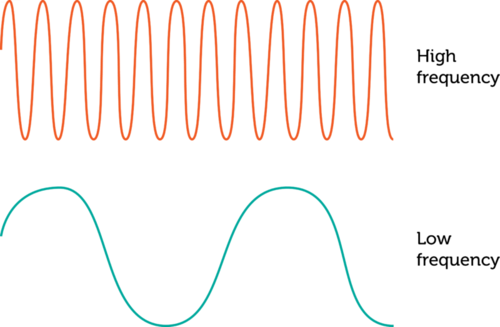
Energy in Waves

1. The amount of energy in waves is directly

\_\_proportional\_\_ to the \_\_amplitude\_\_.

\_\_The higher\_\_ the amplitude, the \_\_higher\_\_ the energy.

\_\_The lower\_\_ the amplitude, the \_\_lower\_\_ the energy.



2. The amount of energy in waves is directly

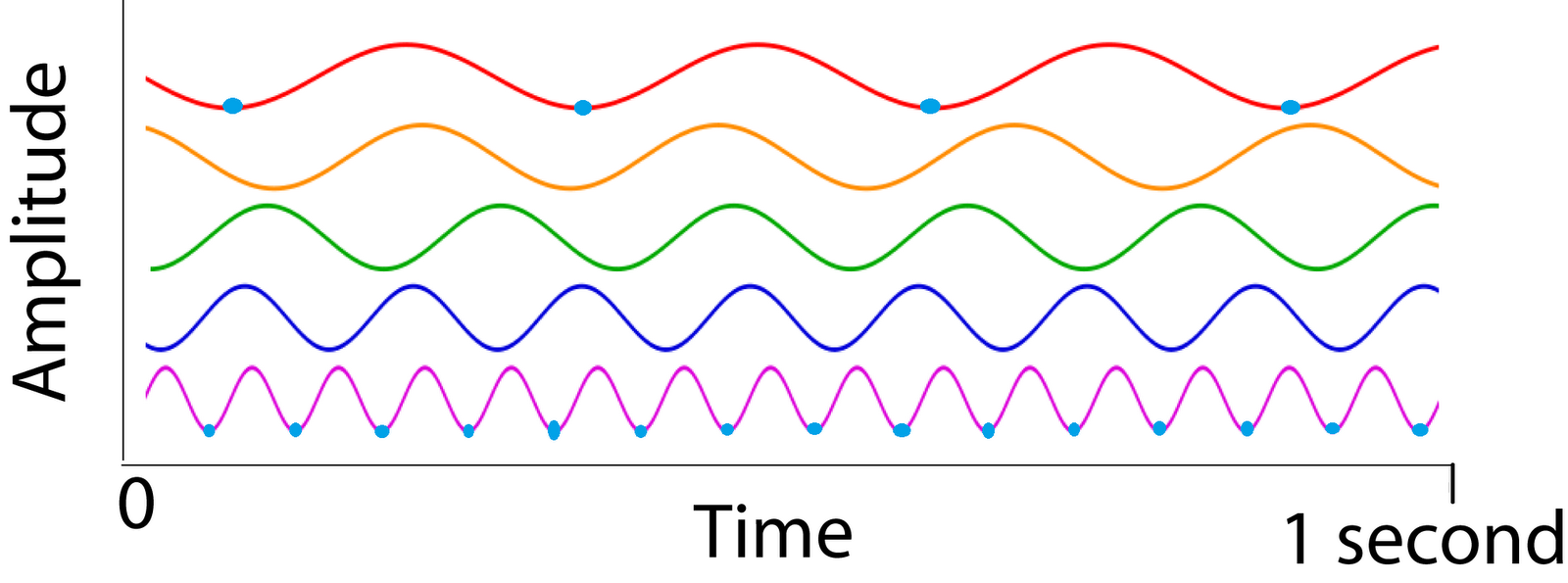
\_\_proportional\_\_ to the \_\_frequency\_\_.

\_\_The higher\_\_ the frequency, the \_\_higher\_\_ the energy.

\_\_The lower\_\_\_\_ the frequency, the \_\_lower\_\_ the energy.

**PRACTICE QUESTIONS!**

**Analyze the image below and answer the following questions.**



1. Which wave has the longest wavelength? The shortest wavelength?

The red has the longest, the purple has the shortest.

1. Describe what the wave with the longest wavelength looks like compared to the wave with the shortest wavelength.

It looks like it has less energy and it is slower.

1. What is the frequency for each wave? (Simplest way: Count the crests, divide by the time)
   1. Wave A: f = 3/1s = 3 Hz
   2. Wave B: f = 4 Hz
   3. Wave C: f = 5 Hz
   4. Wave D: f = 7 Hz
   5. Wave E: f = 14 Hz
2. Which wave has the highest frequency? The lowest frequency?

Wave e has the highest, a has the lowest.

1. Describe what the wave with the highest frequency looks like compared to the wave with the lowest frequency.

It looks like it has much more energy and it is faster.

1. Which wave has the MOST energy? The LEAST energy? How do you know this?

Wave e has the most, a has the least. I know this because waves with higher frequency have a higher energy.

end!