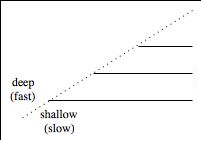
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| Year 11 Worksheet 4 – Formative Assessment 2  **Wave Behaviour and Standing Waves** | | |
|  | | |
| **Name:** | **Teacher:** | **Score /15** |
| **Comment:** | | **Time allowed:**  **15 minutes** |

1. If a wave pulse is reflected from a free boundary, which of the following choices best describes what happens to the reflected pulse?
2. becomes inverted
3. remains upright
4. halved in amplitude
5. doubled in amplitude
6. both choices B and C are valid.
7. What will happen to sound waves traveling through the air when they reach water?
8. they will speed up
9. they will slow down
10. they will not change
11. they will stop
12. The wave fronts below are heading **INTO the deeper water** in which they will have a **HIGHER** velocity.



1. Draw in a pair of arrows to show the direction of the incident ray, as well as the direction of the refracted ray in the deeper water.

**SEE DIAG - AWAY FROM NORMAL (1)**

1. Draw in the wave fronts as they would appear in the deeper water. **PERPENDICULAR TO RAY (1)**
2. Diffraction is the
3. bending of a wave when it changes media.
4. reflection of a wave off of a barrier.
5. combining of two identical waves moving in the same medium.
6. bending of a wave around an obstacle or through an opening.
7. constructive interference of two different waves.
8. A sound wave resonates inside an open pipe filled with air at room temperature, as shown to the right. The length of the pipe is 33 cm.

A N A N A

1. Determine the wavelength of the resonating sound wave.

**L = 1 λ therefore λ = 33cm = 0.33m**

**[1 Mark]**

1. Determine the frequency of the tuning fork.

**v = f x λ**

**346 = f x 0.33 f = 1048 Hz = 1.05 x 103 Hz**

**[1 Mark]**

1. Is this the pipes fundamental frequency or one of its other harmonics? If the latter … which?

**Not Fundamental = 2nd harmonic**

**[2 Mark]**

1. Determine the next higher frequency that will resonate in the same pipe. Support your answer with a diagram.

**[3 Mark]**

1. If the open pipe is replaced with a pipe which is closed at one end, what would have to be the length of the closed pipe required (for the original tuning fork in parts **a**) so that it would resonate at its fundamental frequency? Support your answer with a diagram.

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**[3 Mark]**