Real-Life Smartphone Physics:

Examine your own hearing threshold with a smartphone

_____

Name

Audiometric Test

Audiometric test with a smartphone

1. Which of the following factors could distort a hearing test? Check.

Root cause	can distort	can not distort
Body size	☐	☐
Traffic noise	☐	☐
Conversations in the room	☐	☐
Gender	☐	☐
Respiratory rate	☐	☐
Loose headphone contact	☐	☐

In the following hearing test, be sure to do it in a quiet environment and avoid interference. If possible, use the headphones that came with your smartphone.

2. Conduct audiometric test with the iOS app (alternative for Android smartphones: see last page)

1. Open the app *Hearing Test & Ear Age Test*  or download the app.

2. Start *Hearing Test* and follow the instructions on the screen.

3. At the end you get a graph. Press *Share* and then *Save Image*.

3. Open *Fotos* and look at the results of your hearing test. The graph shows how well you hear different tones. The tones are getting higher and higher from left to right.

4. What may have disturbed / influenced the measurement?
   - _____
   - _____
   - _____
   - _____

5. Read the dB-HL for the seven frequencies and both ears from the audiogram, enter the values in the following table and calculate the mean of both ears!

	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Left ear							
Right ear							
Mean							

Enter the means in the following online table: http://did.physik.lmu.de/qr/q.php?c=zsb

6. Compare

1. Compare your result with the results of your classmates.

2. Who can hear best …?

   … conversations (2.0 kHz): _____

   … at a frequency of 8.0 kHz: _____

   … at a frequency of 0.125 kHz: _____

3. Who can hear best overall?

   Name: _____

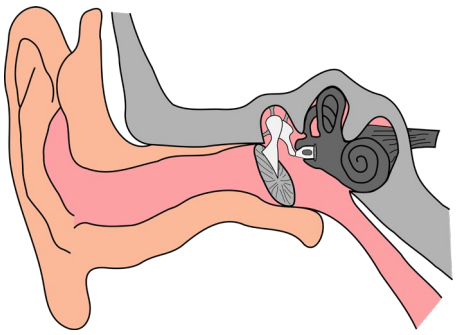
4. How did you know who heard best?

   _____

   _____

   _____

7. The process of hearing – put the appropriate words in the blank spaces!



The _____ hit the pinna. There they are passed through the ear canal to the middle ear. The _____ sits in the middle ear and begins to vibrate. There are fine _____ in the cochlea. The _____ eardrum stimulates them to vibrate via several intermediate stations.

There are _____ under the fine sensory hairs, which register the _____ and pass them on to the _____. Different sensory hairs are stimulated depending on the _____. We hear tones around a frequency of 3.5 kHz the _____. We perceive tones with lower or higher frequency the _____.

sensory hairs	brain	loudest	quietest	vibrating
nerves	sound waves	ear drum	movements	tone

For Android smartphones

An alternative app for Android smartphones is e.g. *Hörtest*  by e-audiologia.pl.

You can download it for free: https://play.google.com/store/apps/details?id=mobile.eaudiologia