The pink mirror I 30 questions

1. ‘Blue’ is a group of photons (light) vibrating at specific frequencies. Our eyes gather that light and render the light into Blue. Is there a Blue part of the brain that receives this light?
2. 40+ years ago researchers into artificial intelligence thought that they could give computers sight by adding a camera. What happened? Why is it so hard to teach machines to see?
3. A black bear’s sense of smell is many times more acute than his vision, and there is evidence that bear’s ‘image’ the world with their noses. How would seeing by smell be different than vision?
4. Ask the class how many of them have experienced phantom phone rings. Get a rough count of how many report hearing phantom ringtones and feeling phantom vibrations. Now determine what percentage of rings are phantoms. Discuss why it may be better to trade a few false positives for missing the ring entirely. Compare how smoke alarms are programmed.
5. Auditory signals are gathered in the graduated spiral of your cochlea. This organ is lined with tiny hairs that vibrate on receiving waves of specific frequencies. This ear performs frequency analysis equivalent to a Fourier transform. Please detail the mechanism of the ear and discuss the significance of transforms.
6. Can you imagine things you have never seen? How about a new color, say reddish-green?
7. can you perceive colors in a room illuminated by green light? What colors do you see? how do these colors change over time?
8. Can your senses change? ie, can you get better at sensing certain qualities?
9. Distance will make a mountain seem steeper than it is. Can you explain why?
10. How can emotion alter your perception? Give three examples and propose an experiment to try.
11. How do plants know to make brightly colored flowers when they cannot perceive color? What cues do they use to shape their blossoms?
12. How good is the back of you legs at separating the stimulus from two closely spaced pins?
13. How would the world look different if you could separate your eyes by one meter? Two meters? Five meters?
14. Is it possible that when I see blue you see red? Would it matter?
15. It is possible to learn to see with your tongue. Do you think this would ‘feel’ like vision? Can you describe what that would be like?
16. It’s dark and you turn on a bright light. It hurts, somewhere, but where? What is being hurt and why does the pain go away?
17. My cat stares at my legs before launching a perfect jump. What is he doing to prepare?
18. Olfaction (our sense of smell) might be described as a bag of locks seeking specific molecular keys. How does this differ from the other senses? What’s holding back progress on prosthetic noses?
19. Please bring something to class that will serve as a false hand (hint: the ‘hand’ may not need to be

entirely realistic). Place the ‘hand’ on a table, and have a subject sit so that the hand is parallel to his or her hand. Now mask the real hand with a piece of foamcore and start abusing the ‘hand’. Can your subject feel this abuse?

20. Please construct an Ebbinghaus illusion using containers of colored fluid. Verify that your subjects are convinced that the central (red) vessels are different sizes. Now ask them to grasp each red vessel. Are their grasps fooled by the illusion?
21. Prepare everything you need to perform the thermal grill illusion: two forks, one cup of warm water and one cup of ice water. Heat the one fork, chill the other, intertwine the forks then touch the tines to the forearm of a seated person. What sensation is generated? Why?
22. Ride up in an elevator. There is a chance that you will have sensations of riding that elevator for the rest of the day. What is making you feel this way?
23. The blind spot illusion clearly illustrates that there are holes in our visual field that we fill in by some mechanism. Please make two explanations: the first by memory and the second by imagination.
24. We have notes that our visual systems easily outperform computer vision. Can you make a list of perceptual tasks where computers excel?
25. What contribution do your outer ears (the ‘pinna’) perform? How do they inflect sound arriving at the ears? Why don’t we put pinna on microphones? How would they change the sound? Please demonstrate.
26. what is opponent processing? Can you compare and contrast OP to competition in markets?
27. What kind of visual cues do you get from gravity? Can you tell how far away something is by watching it fall?
28. What would it be like to see the world upside-down? How long before it turns back up again?
29. Why do Baseball outfielders run in arcs when catching a fly ball?
30. Your senses depend on educated guesswork to make sense of the world. Can you show one example where the guesswork gives an incorrect conclusion? eg: how might a bush become a bear? Why is this more likely than a bear becoming a bush?