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Appendix D

Potential Scenarios to Model

Scenario 1:

Manfred is a mild-mannered young accountant who must peer at seemingly endless rows of numbers in his daily work. The print is often fine. He doesn't wear glasses. He has never had trouble reading print like that in his accounting ledgers or in the newspaper. But the opposite is true for objects he sees at a distance. He must get closer to them in order to see them well. Until he was able to buy a large screen TV he often had difficulty seeing his favorite programs clearly. His visual defect is consistent too. If he can see something it's like that in the "whole picture he sees." There are no areas in what he sees that are blurrier than others, and none that are sharper than others.

Use the Ingersoll Eye Model and the equipment provided with it to show its configuration. Name the visual defect(s) represented in your model. Once you have done so, ask your teacher to check your work. Once your teacher has done so, use the equipment provided to correct the visual defect.

Scenario 2:

Iris is a long-haul truck driver who has noticed that she has no problem reading road signs and recognizing the rigs her friends drive and various landmarks she often sees along her routes**.** She doesn't wear glasses now but has noted that she must either bring her road maps closer to her face or use a magnifying glass in order to correctly read them. She has also noticed that while reading the gauges and dials on the dashboard they are uniformly hard to see. In other words they are blurry on the top row, middle and bottom rows alike.

Use the Ingersol Eye Model and the equipment provided with it to show its configuration. Name the visual defect(s) represented in your model. Once you have done so, ask your teacher to check your work. Once your teacher has checked your work, use the equipment to correct the visual defect.

The teacher will be looking for each of the following characteristics:

- ***Since students are working at their bench, the light box should be positioned 33 cm from the front of the model.***
- ***In this configuration, it is necessary for the +20 diopter to be in the position representing the lens.***
- ***Since the condition being described is farsightedness (hypermetropia), the retina should be in the position furthest toward the front of the eye. (The middle position is used to represent normal vision.)***
- ***Students should be able to demonstrate that although blurry at 33 cm the image will improve in clarity and brightness if moved further from the model and will become even more difficult to see if moved closer.***

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- ***Placing the light box back at 33 cm and placing either of the + diopter lenses in front of the cornea outside the eye should demonstrate that a convergent/convex lens must be used to correct the visual acuity and which of these works best.***

Scenario 3:

Ted is a successful entrepreneur who has managed to amass a very large set of financial assets, so much so in fact that at the age of 55 he spends very little time indoors running his multiple business interests. He has been fortunate to find trustworthy and loyal executives to manage and administer each of his corporate concerns. Other than his most recent complaints about his vision he has managed to maintain a very active lifestyle, some might even call him a "jetsetter." He plays tennis, rugby, sails, surfs, and skis as much as he can. He made an appointment to see his optometrist when he started noticing that his vision seemed to be deteriorating. He reported to the doctor that he had been getting headaches more frequently, was noticing that there were areas in his field of view that were more out of focus than the others and that he was definitely having more difficulty seeing objects at a distance and in reading print like *The Wall Street Journal*. He also mentioned several changes of sunglasses with an upgrade to darker tint each time. The results of the optometrist's exam indicated that intraocular pressure had risen significantly since his last exam, his visual acuity is 20/60 in both his left and right eye, astigmatism in each eye, and three areas indicative of the cataracts in the right eye.

Use the Ingersoll Eye Model and the equipment provided with it to show the conditions listed in Ted's right eye. Identify the configuration you have used to represent each of the visual defect(s) in your model. Once you have done so, ask your teacher to check your work. Once your teacher has checked your work, use the equipment available to correct the visual defect.

The teacher will be looking for each of the following characteristics:

- ***Since students are working at their bench, the light box should be positioned 33 cm from the front of the model.***
- ***In this configuration, it is necessary for the – 5.50 diopter to be in the position representing the lens. The condition being described above is consistent with astigmatism and indicates either a non-uniform curvature in the lens or the cornea of the eye. To indicate astigmatism of the cornea this lens could be moved to the position in front of the cornea (outside) and the +20 diopter lens returned to its position in the lens slot. In addition to these defects, it is also stated that Ted has cataracts in this eye. Since cataracts can manifest in both the cornea and/or the lens, it would be appropriate for students to create opacities in the lens by smearing some petroleum jelly in points on the surface of either of them.***
- ***Since the condition being described is farsightedness (hypermetropia), the retina should be in the position furthest toward the front of the eye. (The middle position is used to represent normal vision.)***
- ***Students should be able to demonstrate that although blurry at 33 cm the image will improve in clarity and brightness if moved further from the model and will become even more difficult to see if moved closer.***

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- ***Placing the light box back at 33 cm and placing either of the + diopter lenses in front of the cornea outside the eye should demonstrate that a convergent/convex lens must be used to correct the visual acuity and which of these works best. However, having the +5.50 diopter lens in place to simulate the astigmatism can only be corrected by placing the appropriate complementary corrective lens from the box in front of it. Students will succeed in finding the correct one by trial and error. However, unless surgery is simulated by clearing the petroleum jelly from either of the lenses on which it was applied to represent cataracts, this defect can't be eliminated and total visual acuity cannot be achieved.***