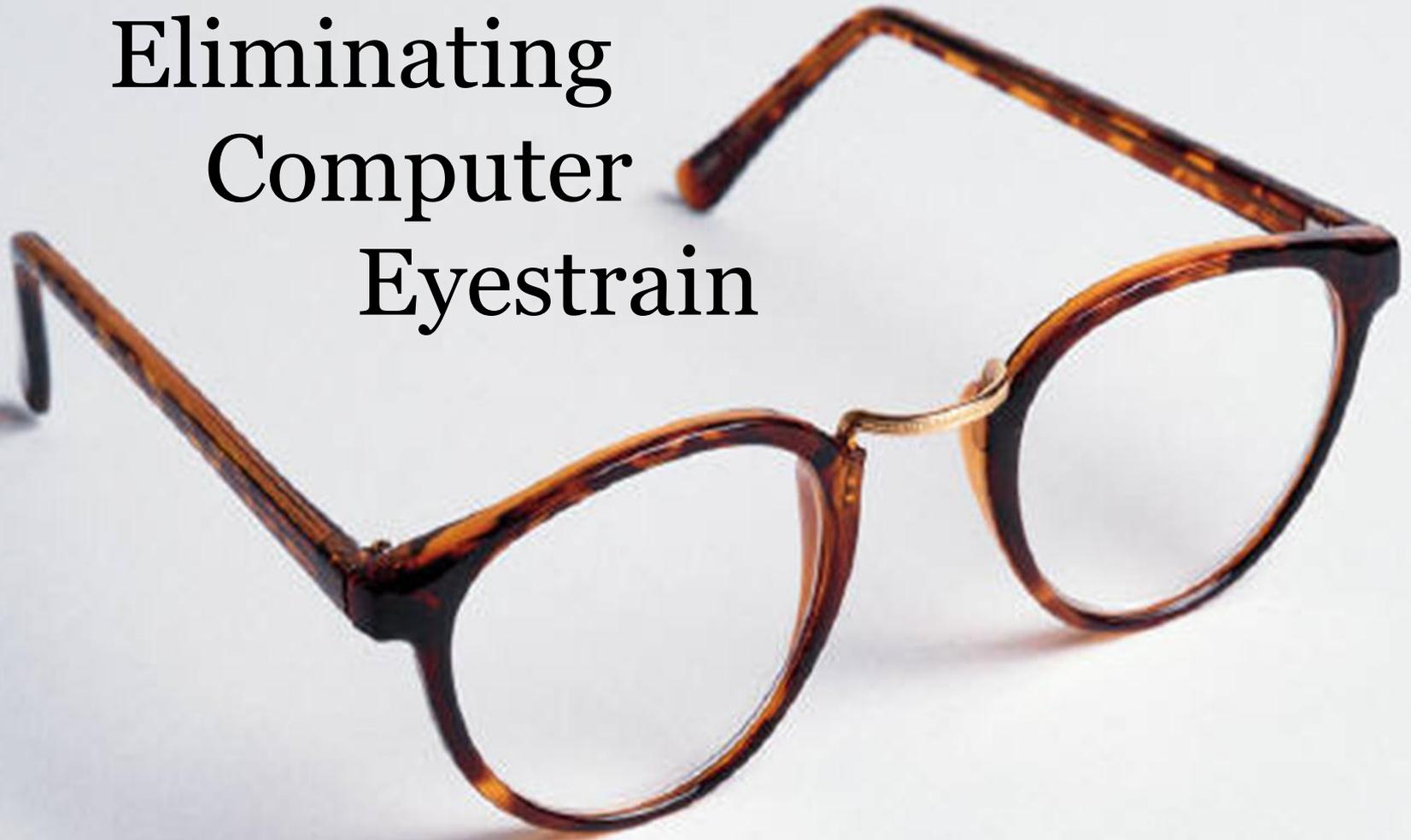


Eliminating Computer Eyestrain



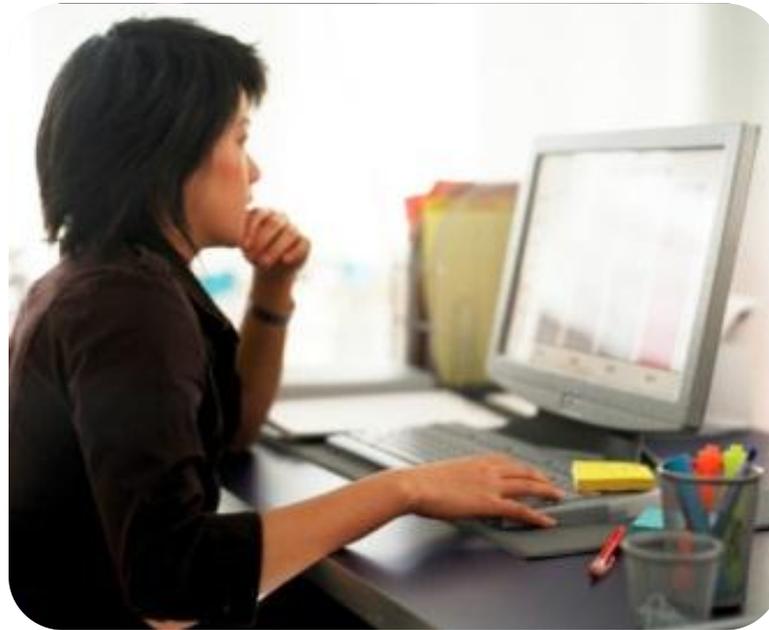
An eBook Resource

Contents



- Introduction
- Lighting
- Workstation Configuration
- Vision & Optometry

Introduction



Eye Strain?



- People are spending more and more time on their computers
 - Any type of close work can cause nearsightedness to develop more rapidly
- Age related eyestrain can also be anticipated
- Close work often leads to nearsightedness which can impact tasks such as driving and cause eyestrain which often leads to discomfort and reduced productivity



Working at Computers may Cause:



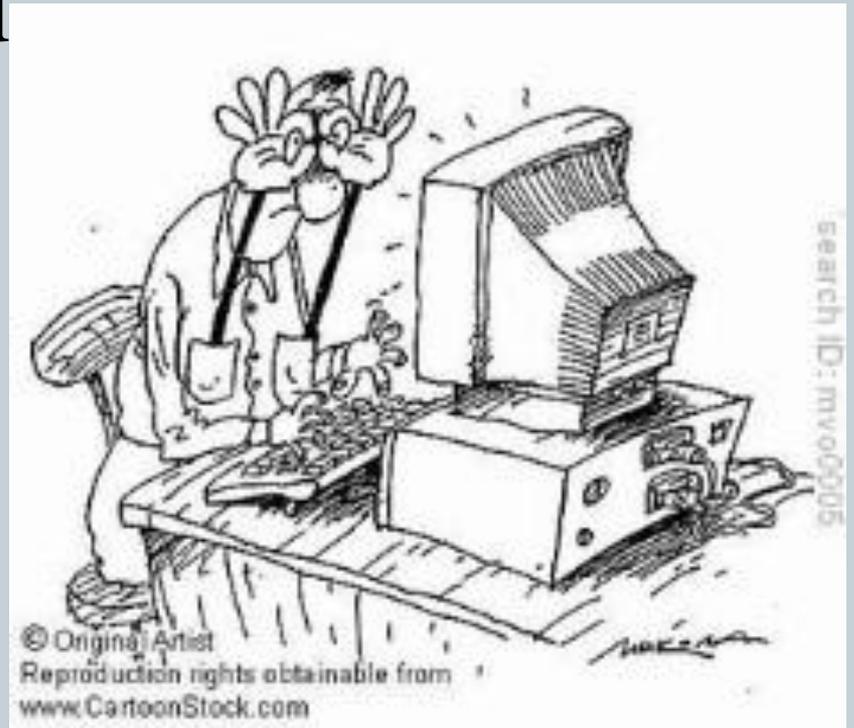
- **Vision impairment**
 - Temporary blurred distance vision
- **Headache**
- **Discomfort such as dry or sore eyes**
- **Musculoskeletal problems (neck and back pain)**
 - When poor posture is assumed to compensate for visual deficits or poor visual ergonomics



Common Vision Deficits:



- Reduced close focusing related to aging
- Insufficient focusing speed
- Binocular insufficiency
 - Eyes don't track well together
- Farsightedness
 - The ability to focus well on distant objects but poorly on close objects



Eyestrain Reduction Tips:

- Make sure your glasses prescription is up-to-date
- See your optometrist if you think you need glasses
- Close your eyes for several seconds
- Relax your focusing and convergent muscles by looking at distant objects



Continued...



- Use eye drops (not those with red-out agents)
- Work on non-computer tasks or take a mini-break at least every half hour
- Look at an object at least 20 feet away for at least 20 seconds



Dry Eyes?



- Some people naturally produce less ocular lubricating fluid
- Contact lenses can interfere with distribution of lubricating fluid across the eye
- Dry office air and drafts from air supply sources may also increase eye dryness



Blinking:



- Studies show that people tend to blink less when working on a computer than during other activities
 - May lead to eye dryness and discomfort
- It is recommended that a conscious effort to blink is made regularly



“Relaxed”-
22 per
minute



Reading a
book-10
per
minute



Reading text
on a
computer- 7
per minute

Lighting



Lighting Levels



- Lower ambient light levels are better for screen intensive jobs (e.g., desktop publishing)
- Higher ambient light levels are more suitable for document work and data entry-especially if characters are small or of low contrast

Lighting Fixtures



- Computerized offices should have $\frac{1}{3}$ to $\frac{1}{2}$ of the ambient light found in traditional paper-based offices
- If you feel your office is too bright, try removing one or more of the lamps

* Contact custodial services
for assistance



Light Ergonomics



- Light should be uniform to avoid bright light directly striking the eye or reflecting off of the computer screen
- While natural lighting can aesthetically enhance an office, it generally creates poor visual ergonomics -if bright sunlight enters the offices, blinds or other light reducing window treatments should be installed



Continued...



- Computer monitors should be set up at right angles to windows and to long runs of overhead fixtures as depicted at right 
- This will eliminate bright light from directly striking the eye and reduce screen glare



Types of Fixtures



- Flat fixtures are often satisfactory when located above a monitor, however, as distance from the monitor increases this type of fixture may create a direct or indirect glare into the operators eyes

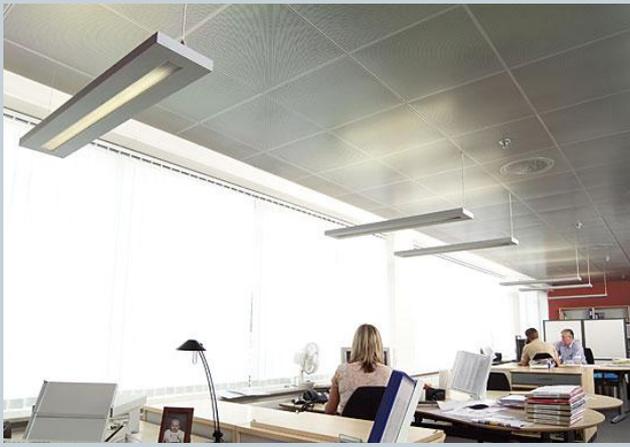


- Parabolic fixtures focus light downward which reduces both direct and indirect (screen) glare which is more suitable for computer use

Continued...



- As opposed to parabolic fixtures which are direct sources of light, pendant fixtures are suspended from the ceiling with the lamps oriented “up”, creating indirect light that is reflected off of the ceiling
- This lighting is ideal for computer work



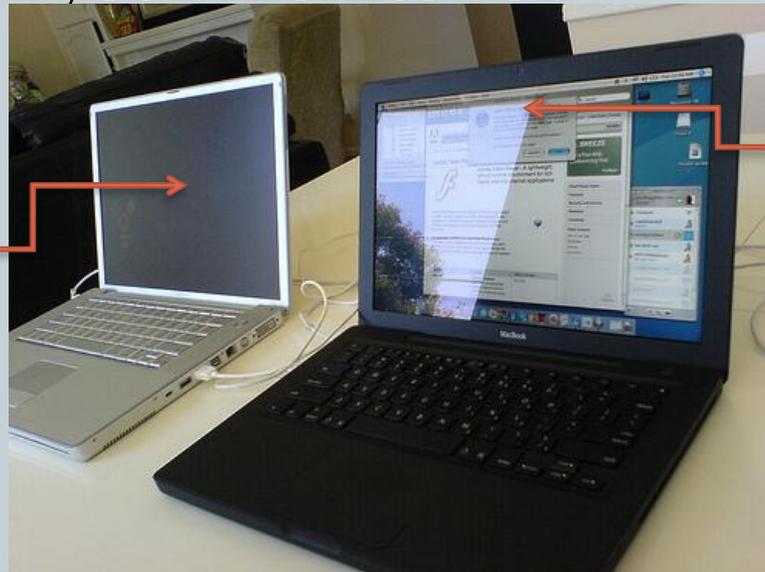
Anti-glare Screens



- If reducing light and changing monitor orientation have not reduced screen glare, try an anti-glare screen
- An easy way to check for screen glare is to sit at your computer with your monitor off

Anti-glare

* You may want to select anti-glare screens that have been certified by the America Optometric Association



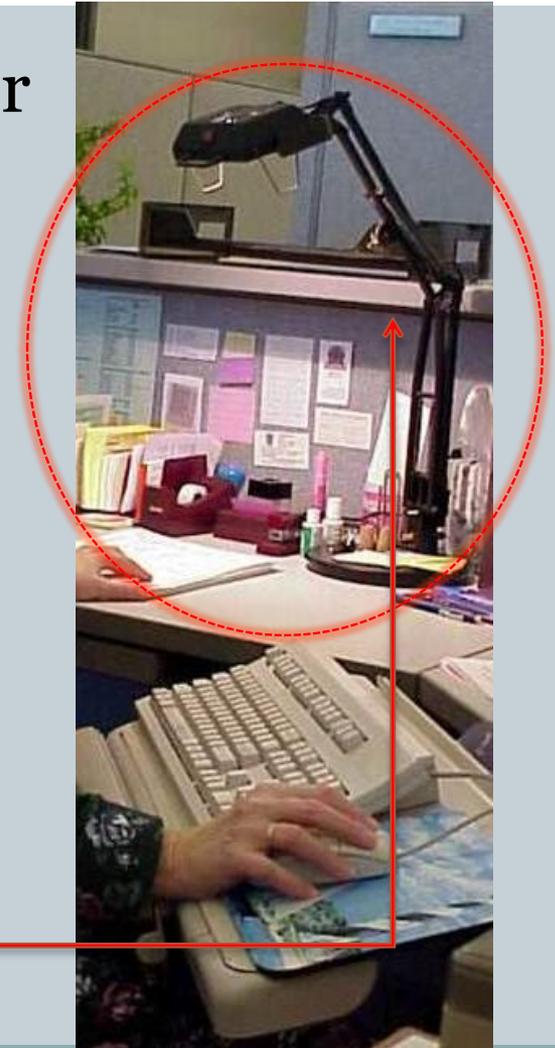
Glare

Adjustable Task Lighting



- Low light levels are best for computer work while higher light levels are better for paper work
- To solve this problem, reduce overhead light sources and add an adjustable task lamp to your workspace to illuminate paperwork

*Make sure your task light is constructed and oriented to avoid screen glare



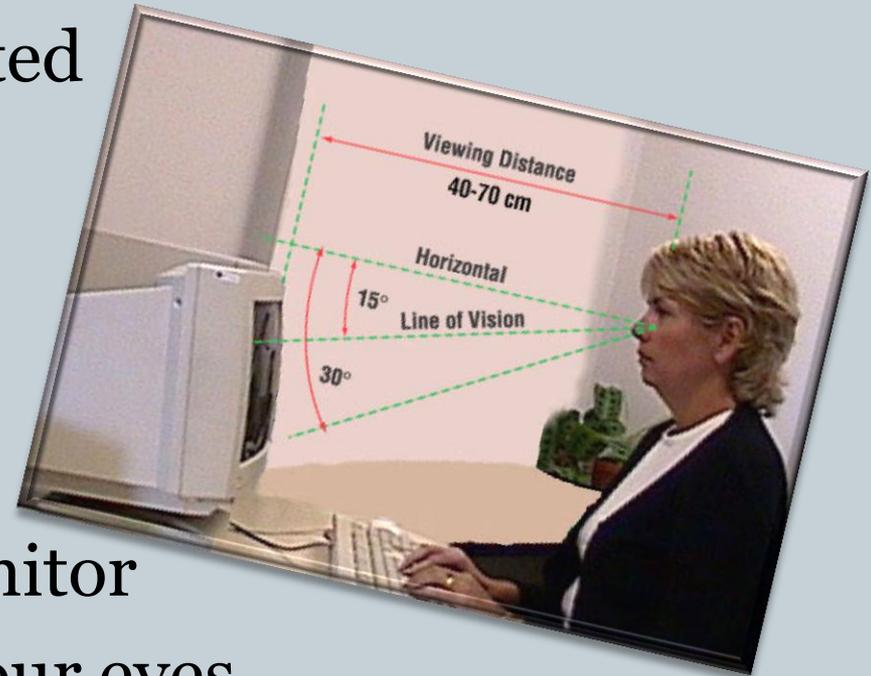
Visual Arrangement of the Workstation



Monitor Placement



- Viewing close objects causes the focusing muscles in the eyes to work harder-moving your monitor back about 20"-26" is suggested to help reduce eye strain

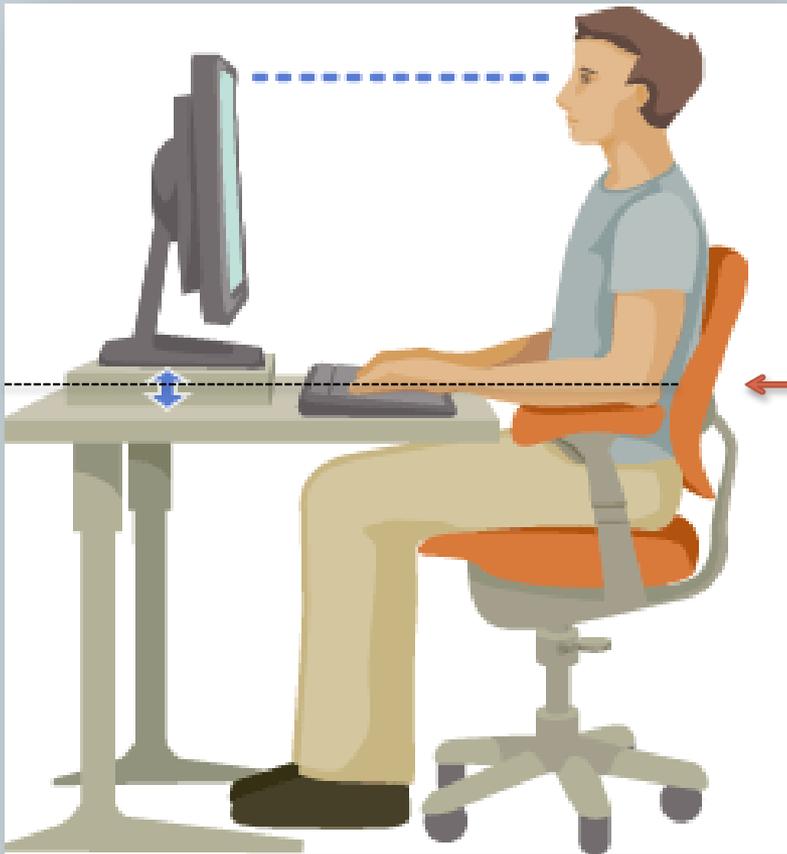


- The top of the viewable monitor screen should be level with your eyes

Continued...



- Orient the chair, keyboard, and monitor in roughly the same direction to reduce neck strain

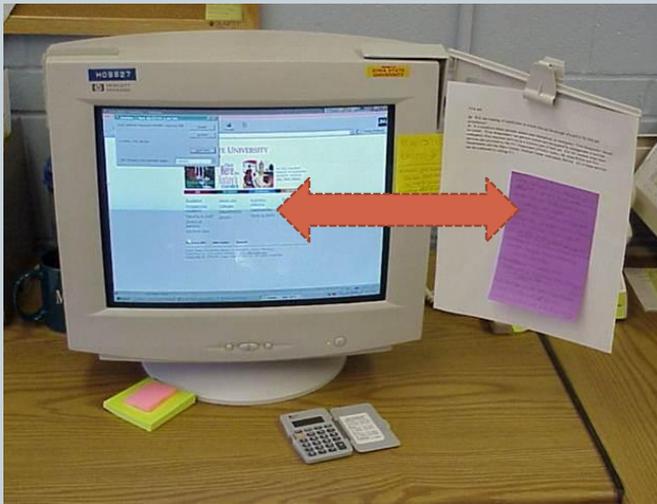


Straight line-
helps posture while
reducing eye and
neck strain

Document Placement



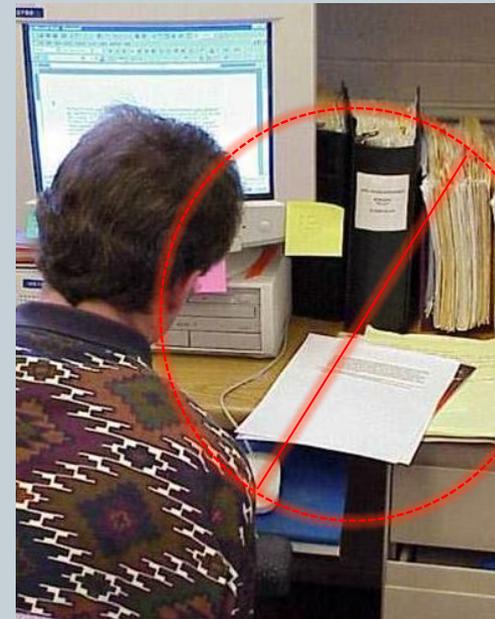
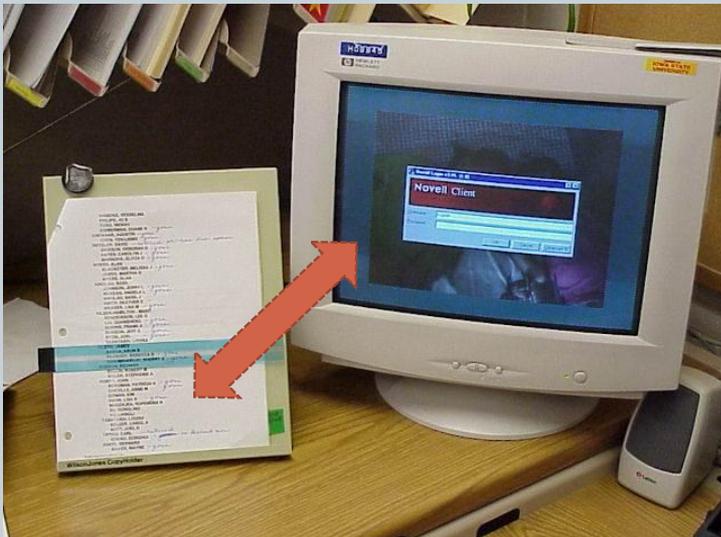
- Reference documents are best oriented horizontally with respect to the monitor to reduce eyestrain
- Vertical orientation can improve posture and slightly reduce eyestrain if a “copyholder” is used properly and can be effective if document marking is necessary



Continued...



- Avoid oblique (diagonal) orientation as this is less optimal
- Laying documents flat on the desktop may lead to visual and musculoskeletal strain



Monitor Characteristics

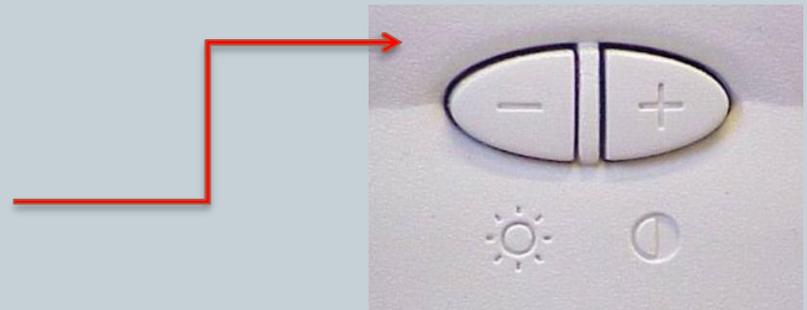


Monitor Features



- Computer users are encouraged to optimize contrast, brightness and other monitor settings
 - Black text on a white background optimizes contrast and reduces glare
- Larger monitors have advantages and disadvantages
 - Larger screens allows for reduced scrolling and image re-targeting
 - A *potential* problem is lower screen resolution which can also cause eye strain

You can adjust the brightness of your screen



Vision & Optometry



Getting Your Eyes Checked?



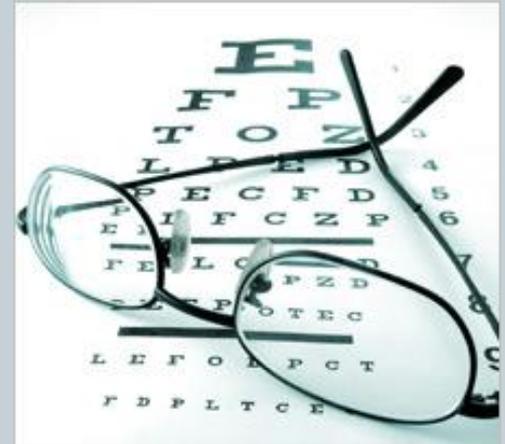
- Make sure your eye care provider asks for details about your work and work environment
- If you suffer from computer related eyestrain, have your vision tested at screen viewing distance



Age Related Vision Facts



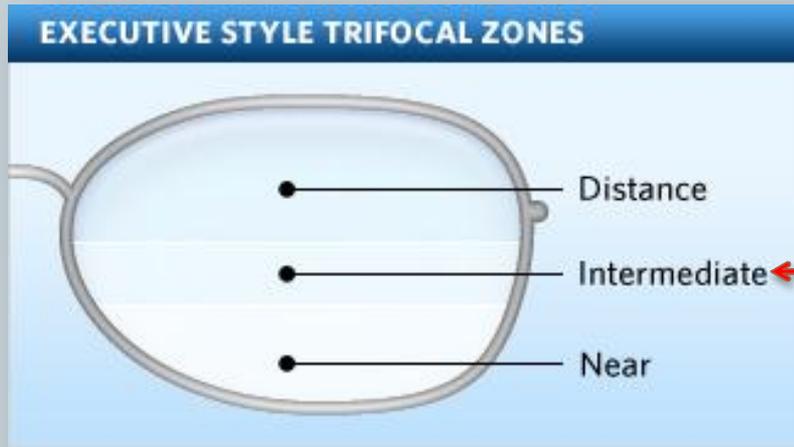
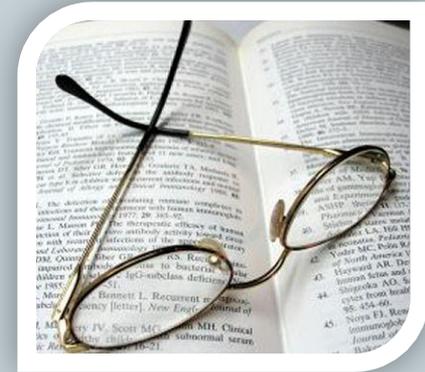
- Presbyopia (loss of ability to focus eyes) starts at age 10 and is complete by age 70
- Visual acuity declines with age
- Glare becomes more troublesome with age
- The amount of light needed to read increases by 2 - 3 times between ages 20 and 60



Lenses?



- Remember that reading bifocals are essentially incompatible with computer use



- Trifocals are available with a wider intermediate segment for computer viewing

*Ask your eye doctor about the many eyeglass prescription options that are available

- Studies show that lens tints serve only a cosmetic function
 - Anti-reflective coatings will reduce glare on the glasses lens but do not reduce screen glare

Remember!



- EH&S staff are available to perform ergonomic evaluations and lighting surveys for ISU personnel
 - Call (515).294.5359 for details
- Additional information on vision and eye care can be found at the American Optometric Association website
 - <http://www.aoa.org/>



In Summary...



- Place the top of your computer monitor screen at eye level
- Use bright light for paper and dim light for computers
- When working with computer and paper materials simultaneously, use less overhead light and add task lighting
- If you experience computer related eyestrain, worksite evaluations and comprehensive optometric exams are recommended



Finish

