

Assessment Question Set 1

Give your answers two decimal places.

1. By answering F for false or T for true only, identify the correct and incorrect statements from the following;

- A. Rays that spread out from a point are diverging T
- B. Rays that come together at a point are convergent T
- C. Rays that spread out from a point are converging F
- D. Rays that come together at a point are divergent F

2. By answering F for false or T for true only, identify the correct and incorrect statements from the following;

- A. Converging lenses produce a real image if the object is inside the focal length F
- B. Converging lenses produce a virtual image if the object is inside the focal length T
- C. A diverging lens gives a real image if the object is outside the focal length F
- D. A diverging lens always gives a virtual image T

3. If a building of height 25m is viewed through a lens with a magnification of 0.12, how tall is the image in metres? 3m

4. A lens forms a virtual image that is larger than the object and the same way up. Is the lens converging or diverging? Converging

5. A lens of focal length 20cm produces an image with an image distance of -10cm. Use the lens maker's formula to calculate the object distance. Give your answer in cm, and state whether the image is real or virtual. -20cm, virtual

6. A microscope, focused on a sample slide positioned 10mm from the lens produces a sharp image at the eyepiece. The focal length of the microscope lens is 8mm. Calculate the distance between the lens and the eyepiece. Give your answer in cm. 4cm

7. Long sightedness is a problem with focusing the light from a nearby object onto the retina. Identify the correct statement from the list below.

A. Diverging rays from a nearby object are focused in front of the retina. Long sightedness is corrected using a converging lens.

B. Diverging rays from a nearby object are focused behind the retina. Long sightedness is corrected using a converging lens.

C. Diverging rays from a nearby object are focused in front of the retina. Long sightedness is corrected using a diverging lens.

D. Diverging rays from a nearby object are focused behind the retina. Long sightedness is corrected using a diverging lens.

8. An optician prescribes glasses with +4D lenses. Calculate the focal length of the lens and state type of lens used. **0.25m, converging**

9. A pair of glasses uses converging lenses with a focal length of 0.2m. State the lens power in dioptries. **-5D**

10. Jayne has a converging lens, and is trying to project the image of an object onto a wall, but she can only see the image if she is looking through the lens. This is because the object distance is;

A. Less than one focal length away from the lens

B. Greater than one focal length away from the lens

Assessment Question Set 2

Give your answers to two decimal places.

1. Identify the single correct statement from the following;

- A. Convex lenses are diverging lenses with an inward curvature
- B. Convex lenses are converging lenses with an outward curvature**
- C. Convex lenses are converging lenses with an inward curvature
- D. Convex lenses are diverging lenses with an outward curvature

2. A pencil of length 8cm is viewed through a lens. The image of the pencil is 2cm in length. Calculate the magnification of the lens. **0.25**

3. If the image height of an object as viewed through an $m=2.2$ lens is 12cm, how tall is the object in cm? **5.45cm**

4. A lens produces a real image of an object. The object is 2m from the lens and the image distance is 0.5m. Use the lens maker's formula to calculate the focal length of the lens in metres. **0.4m**

5. The lens – CCD distance of a digital camera is 2.5cm when the camera is focused on an object 2m from the lens and producing a sharp image at the CCD. Calculate the focal length of the lens. Give your answer in cm to two d.p.
2.47cm

6. Short sightedness is a problem with focusing far away objects. Identify the correct statement from the list below.

- A. The parallel rays from a distant object are focused in front of the retina. To correct this sight defect, a convex lens must be used.
- B. The parallel rays from a distant object are focused behind the retina. To correct this sight defect, a concave lens must be used.
- C. The parallel rays from a distant object are focused in front of the retina. To correct this sight defect, a concave lens must be used.**
- D. The parallel rays from a distant object are focused behind the retina. To correct this sight defect, a convex lens must be used.

7. An optician prescribes glasses with -3.6D lenses. Calculate the focal length of the lens and state whether the lenses are converging or diverging.
0.28m, diverging

8. A pair of glasses uses diverging lenses with a focal length of 30cm. State the lens power in dioptries. **+3.3D**

9. Jim has a converging lens, and is projecting the image of an object onto a wall. He notices that the image is real, upside down, and smaller than the object. Is the object;

A. Less than one focal length away from the lens

B. Greater than one focal length away from the lens

10. Consider the following diagram, and identify;

A. **Ciliary Muscle**

B. **Lens**

C. **Cornea**

D. **Vitreous Humor**

E. **Retina**

