

Answers

1. Any equation that is equivalent to the real one (look it up)
2. Any equation that is equivalent to the real one (look it up)
3. Any equation that is equivalent to the real one (look it up)
4. Convex, Biconvex, Plano-convex
5. Concave, Biconcave
6. Negative meniscus
7. 0.500000 radians
8. Downward
9. 0.280084 radians
10. Answers may vary
11. 0.493753 radians
12. Calculate it yourself. Sorry.
13. You see an image inverted in all directions, because in order for any ray of light to bounce off of the concave surface and reach your eye, it must pass through the spoon's focal point first, and it comes out inverted (or something to that effect).
14. The refractive index of glass varies for different frequencies of light
15. Blue
16. The thermometer just beyond red light was being hit by invisible infrared radiation, which heated up the thermometer. Herschel discovered infrared radiation.
17. The high refractive indices of water and glass cause total internal refraction.
18. Answers may vary
19. Longest wavelength - Radio, Microwave, Infrared, Visible, Ultraviolet, X-ray, Gamma - Highest energy
20. Each cone cell detects one of three specific ranges of frequencies/wavelengths, while each rod cell detects the entire spectrum of visible light OR cone cells detect colors, and rod cells only detect black and white
21. Answers may vary

22. Red/Orange/Yellow, Green, Blue/Violet
23. Yellow
24. Blue
25. The rate at which light energy can strike a surface, per each unit of surface area (or something to that effect)
26. 43.5000 petawatts
27. Redshift/Blueshift OR the doppler effect (should be explained)
28. 149,896,229 meters per second
29. No
30. Answers may vary