

Optics Answer KEY

Grading: Each BLANK (NOT question) is worth one point. Allow a reasonable range for math questions (e.g. if the answer key answer is 1.34cm, and the student answer is 1.32cm, accept it). If students give answers in different units than in the answer key, it is OK as long as their answers are still correct. Questions marked (TIEBREAKER) should be used to break ties. Teams with most tiebreakers correct win ties.

1. ___Specular Reflection_____
2. ___Diffuse Reflection_____
3. ___True_____
4. ___Time_____
5. ___55°_____
6. ___50%_____
7. (TIEBREAKER)___None (0%)_
8. ___25%_____
9. (TIEBREAKER)___25%_____
10. (TIEBREAKER)___53.06°_____
11. ___Brewster's Angle_____
12. ___False_____
13. ___False_____
14. (i)___Dispersion_____ (ii)___Wavelength (or frequency)_____
15. (TIEBREAKER)___48.75°_____
16. ___D_____
17. ___True_____
18. ___45°_____
19. ___Angle of Reflection_____
20. ___28.13°_____
21. ___Angle of Refraction_____
22. ___Reflected_____
23. ___Refracted_____
24. ___ 2×10^8 m/s_____
25. ___Diamond_____
26. ___Vacuum_____
27. ___1.33m_____
28. ___virtual___ and ___upright___ (1 pt each)
29. ___real___ and ___inverted___ (1 pt each)
30. ___1_____
31. (i)___16.7cm_____ (ii)___-0.667_____
32. (i)___15.0cm_____ (ii)___-0.50_____ (iii)___Real_____ (iv)___Inverted_____
33. (i)___-7.50cm_____ (ii)___0.250_____ (iii)___Virtual_____ (iv)___Upright_____
34. ___1.504m_____
35. ___400___ to ___700___ (1 pt each)
36. ___ 6×10^{14} Hz_____
37. ___False_____

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38. __ B ____
39. __ 3.98×10^{-19} J ____
40. __ 1.33×10^{-27} kgm/s (or N*s) ____
41. __ False ____
42. __ True ____
43. __ Nearby ____
44. (i) __ Objective ____
(ii) __ Eyepiece ____
45. __ Inverted ____
46. __ Upright ____
47. (TIEBREAKER) __ Accept anywhere between
400 and 450nm ____
48. __ Green ____
49. __ False ____
50. __ Yellow ____
51. __ Red ____
52. (TIEBREAKER) __ Green ____