PHYSICS

BOOKS - CHETANA PHYSICS (MARATHI ENGLISH)

LIGHT-REFLECTION AND REFRACTION

Exersice

1. What is the reason for the twinkling of star?

A. (a) Explosions occurring in the stars from time to time

B. (b) Absorption of light in the earth's atmosphere

C. (c) Motion of stars

D. (d) Changing refractive index of the atmospheric gases

Answer:

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2. If the refractive index of glass with respect to air is $\frac{3}{2}$ then the refractive index of air with respect to glass___.

A. (a) $\frac{1}{2}$

B. (b) 3

C. (c) $\frac{1}{3}$

D. (d) $\frac{2}{3}$

Answer:

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3. We can see the sun even when it is little below the horizon because of ....

A. (a) reflection of light

B. (b) refraction of light

C. (c) dispersion of light

D. (d) absorption of light

Answer:

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4. When light ray passes form air to glass slab then it___.

A. bends towards normal

B. bends away

C. does not bends

D. turn back

Answer:

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5. When light passes thorough glass slab,the incidnet ray and emergent ray are_____.

A. intersecting

B. parallel

C. making an angle

D. touching

Answer:

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6. When light ray travels from denser medium to rarer, then it

A. bends towards normal

B. bends away from normal

C. goes undeviated

D. deviates randomly

Answer:

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7. The velocity of light in air is _____ m/s

A. 3×10^{10}

B. 3×10^{8}

C. 1.5×10^{8}

D. 0.3×10^{8}

Answer:

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8. Rakesh performs the experiments on tracing The path of a ray light passing through a rectangular glass slab for different angles of incidence .He observes than in all cases $\angle i > \angle r$ but $\angle i = \angle e$ $\angle i < \angle r$ but $\angle i = \angle e$ $\angle i > \angle e$ but $\angle i = \angle r$ $\angle i < \angle e$ but $\angle i = \angle r$

A. $\angle i > \angle r$ but $\angle i = \angle e$

B. $\angle i < \angle r$ but $\angle i = \angle e$

C. $\angle i > \angle e$ but $\angle i = \angle r$

D. $\angle i < \angle e$ but $\angle i = \angle r$

Answer:

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9. When a ray of light travels from air to glass and strikes the surface of separation at 90° ,then it

A. bends towards the normal

B. bends away form the normal

C. passes without bending

D. reflects to air

Answer:

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10. When a ray of light travels from air to glass and strikes the surface of separation at 90° ,then it

A. 0°

B. 30°

C. 60°

D. 120°

Answer:

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11. The ray of light gets deviated when it passes from one medium to another medium because ___

A. the colour of light chagnes

B. the freuency of light changes

C. the velocity of light changes

D. none of these

Answer:

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12. A ray of light strikes the glass slab at an angle of 50° .What is the angle of incidence?

A. 50°

B. 40°

C. 60°

D. 120°

Answer:

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13. A glass-slab is placed in the path of convergent light. The point of convergence of light____

A. moves towards the slab

B. moves away from slab

C. remains at the same point

D. undergoes lateral shift

Answer:

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14. What is the speed of light in a transparent medium having absolute refractive index 1.25?

A. $1,25 \times 10^8 m/s$

B. $2.4 \times 10^8 m/s$

C. $3.0 \times 10^8 m/s$

D. $1.5 \times 10^8 m/s$

Answer:

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15. Which colour of light deviates the least in the spectrum obtained with a prism?

A. red

B. yellow

C. violet

D. blue

Answer:

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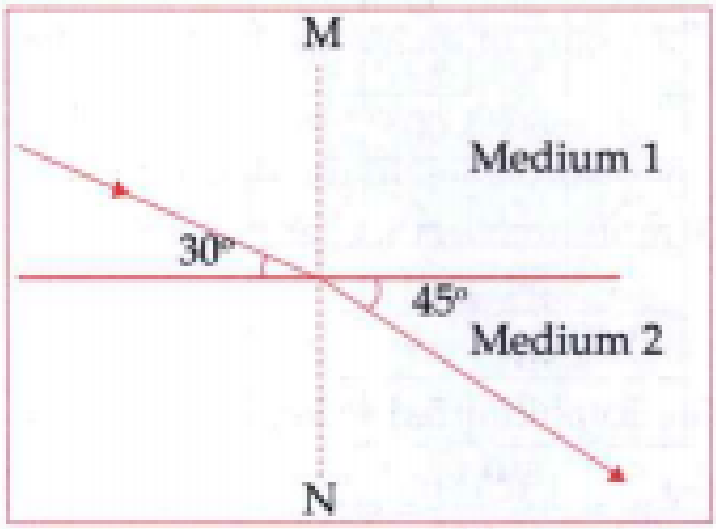
16. The figure shows the path of ray of light propagating from medium 1 to medium 2.The refractive index of medium 1 with respect to

medium 2 is___



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17. Will the light travel through soapy water with the same velocity as is travels through air?

A. yes

B. no

C. depends on the conditions

D. none of these

Answer:

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18. If n_v, n_r, n_b are the refractive indices of violet, red and blue light respectively, in a

given medium then which of the following is true?

A. $n_v = n_v = n_r$

B. $n_v > n_b > n_r$

C. $n_v > n_b < n_r$

D. $n_v > n_r < n_b$

Answer:

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19. The speed of light in a transparent medium is $2.5 \times 10^8 m/s$. Find the absolute refractive index of that medium

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20. If the absolute refractive indices of glass and water are $3/2$ and $4/3$ respectively, what is the refractive index of glass with respect to water?

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21. The refractive index of water is $\frac{4}{3}$ and speed of light in air is $3 \times 10^8 m/s$. Find the speed of light in water

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22. Solve and fill in the blanks

Sr. No.	Velocity of light in the first medium v_1	Velocity of light in the second medium v_2	Refractive Index ${}_2n_1$	Refractive Index ${}_1n_2$
(1)	3×10^8 m/s	1.2×10^8 m/s	_____	_____
(2)	_____	2.25×10^8 m/s	$\frac{4}{3}$	_____
(3)	2×10^8 m/s	_____	_____	1.5

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23. The velocity of light in air is _____ m/s

A. 3×10^{10}

B. 3×10^{8}

C. 1.5×10^{8}

D. 0.3×10^{8}

Answer:

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24. When light ray travels from denser medium to rarer, then it

A. bends towards the normal

B. bends away from the normal

C. goes undeviated

D. deviates randomly

Answer:

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25. Find the odd word out: Reflection, dispersion, refractive index, refraction

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26. Complete the analogy: 2n1= V1/V2 : : 1n2 :_____

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27. When light ray travels from denser medium to rarer, then it

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28. Define Law of refraction

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29. Red colour is used in danger signal

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30. Draw neat and labelled diagram for partial and total internal refraction

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31. The ray of light gets deviated when it passes from one medium to another medium because ___

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32. If the angle of incidence and angle of emergence of a light ray falling on a glass slab are i and e respectively, then prove that i=e.

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33. With a neat labelled diagram explain rainbow formation

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34. What is refraction of light?

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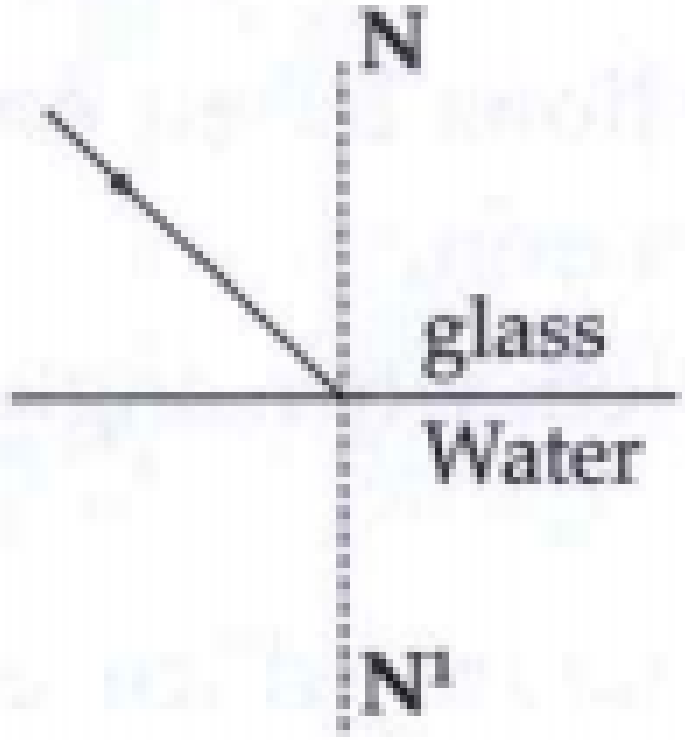
35. Complete the diagram.



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36. The absolute refractive index of water is 1.36. What is the velocity of light in water? (velocity of light in vacuum is $3 \times 10^8 m / s$)

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37. If the light was incident on the interface at an angle greater than critical angel what occurs?

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Example

1. Find odd one out: Mirage, twinkling of stars, scattering of light, apparent position of stars

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2. Find odd one out: Critical angle, angle of incidence, angle of refraction, alternate angle

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3. Find odd one out: Reflection, dispersion, refractive index, refraction

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4. Find odd one out : Brown, Blue, Green, Red

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5. Complete the analogy : Refractive index of water:1.33: : Refractive index of air:___

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6. Stars:Point source of light: : Planets :

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7. Complete Analogy : Diamond: Denser medium: : Air:_____

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8. Complete Analogy : Least deviation : Red: Maximum deviation:

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9. What is the reason for the twinkling of star:?

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10. Complete Analogy : Ice:1.31: : Water:_____

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11. If n_v, n_r, n_b are the refractive indices of violet, red and blue light respectively, in a given medium then which of the following is true?

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12. Complete the analogy: 1n2 = v2/v1 : : 2n1 :_____

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13. Complete the analogy: Lens: Transparent: : Mirror:_____

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14. What is the refractive index of water?

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15. Write the ratio of velocity of light in first medium to the velocity of light in the second medium.

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16. What do you mean by dispersion of light?

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17. What is critical angle?

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18. What is refraction of light?

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19. What is the value of angle of refraction if angle of incidence is 0°?

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20. When sunlight passes through glass prism which light deviates the least?

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21. What is total internal reflection?

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22. What is partial reflection?

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23. What is absolute refractive index?

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24. Match the pairs:

Column A	Column B
(1) Diamond	(a) 1.5
(2) Air	(b) 2.42
(3) Alcohol	(c) 1.77
(4) Benzene	(d) 1.36
	(e) 1.0003

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25. Match the pairs:

Column A	Column B
(1) Formation of rainbow	(a) Total internal reflection
(2) Twinkling of stars	(b) Dispersion
(3) Mirage	(c) Dispersion, refraction, reflection
(4) Spectrum	(d) Atmospheric refraction

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26. Match the pairs:

Column A	Column B
(1) Refraction	(a) With respect to vacuum
(2) Refractive index	(b) Change in direction of light
(3) Absolute refractive index	(c) Spectrum
(4) Dispersion	(d) $\frac{\sin i}{\sin r}$
	(e) Mirage

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27. True/false: Light has different velocities in different media.

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28. True/false: The speed of violet light is less than that of red light in prism.

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29. True/false: Incident ray and refracted rays are parallel to the normal

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30. True/false: The refractive index of the medium depends on the wavelength of light

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31. When light ray travels from denser medium to rarer, then it

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32. When light ray travels from denser medium to rarer, then it

Watch Video Solution

33. True/false: If angle of incidence is zero,then the angle of refraction is 90°

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34. When light ray travels from denser medium to rarer, then it

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35. True/false: The splitting of white light into its component colours is called dispersion

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36. The phenomenon of splitting of sunlight into spectrum is called _____

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37. A mterial whose refractive index is 2.42.

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38. What is the reason for the twinkling of star:?

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39. Fill in the blanks : The ratio of sine of angle of incidence to the sine of angle of refraction is called _____.

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40. Which colour of light deviates the least in the spectrum obtained with a prism?

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41. Fill in the blanks : Phenomenon behind formation of rainbow is _____.

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42. The unit of refractive index

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43. Refractive index of kerosene

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44. The absolute refractive index of water is 1.36. What is the velocity of light in water? (velocity of light in vacuum is $3 \times 10^8 m / s$)

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45. Light travels with a velocity $1.5 \times 10^8 m/s$ in a medium. On entering $2nd$ medium its velocity becomes $0.75 \times 10^8 m/s$. What is the refractive index of the $2nd$ medium with respect to the first medium

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46. If the speed of light in a medium is $1.5 \times 10^8 m/s$, what is the absolute refractive index of the medium?

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47. If the absolute refractive indices of glass and water are $3/2$ and $4/3$ respectively, what is the refractive index of glass with respect to water?

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48. If the refractive index of second medium with respect to first medium is $_2n1$ and that of

third medium with respect to second medium is 3_n2 What and how much is 3_n1?

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49. If the angle of incidence and angle of emergence of a light ray falling on a glass slab are i and e respectively, then prove that i=e.

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50. What is refraction of light?

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51. What do you mean by dispersion of light?

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52. Define Spectrum of light.

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53. Define Angle of incidence

Watch Video Solution

54. Define Angle of incidence

Watch Video Solution

55. Define Law of refraction

Watch Video Solution

56. What do you mean by dispersion of light?

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57. What is absolute refractive index?

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58. What is total internal reflection?

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59. Mirage or have you seen mirage which is an illusion of water on a hot road or desert. Explain

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60. Explain Rainbow formation or prove that a rainbow is the combined effect of the refraction, dispersion and total internal reflection of light

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61. Why Stars twinkles at night ?

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62. Give Reason : Planets do not twinkle.

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63. We can see the sun even when it is little below the horizon because of ....

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64. Red colour is used in danger signal

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65. Is it possible to enjoy a rainbow at fountain in any season?

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66. Will the light travel through soapy water with the same velocity as is travels through air?

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67. Will the velocity of light be same in all media?

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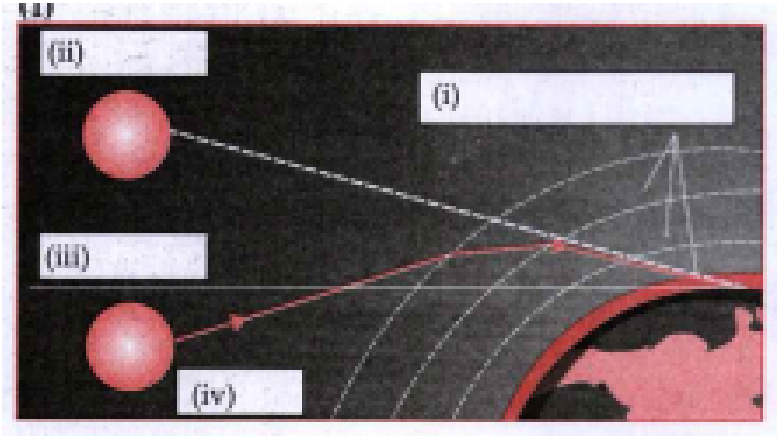
68. label the diagram.



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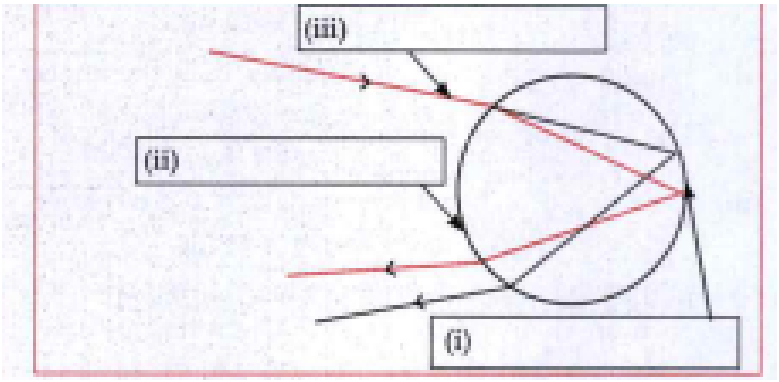
69. label the diagram.



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70. What is absolute refractive index?

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71. The ray of light gets deviated when it passes from one medium to another medium because ___

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72. The ray of light gets deviated when it passes from one medium to another medium because ___

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73. When light ray travels from denser medium to rarer, then it

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74. The phenomenon of splitting of sunlight into spectrum is called _____

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75. Refraction of light passing through a glass slab. what is the relation between angle of incidence and angle of emergent? and which rays are parallel ?

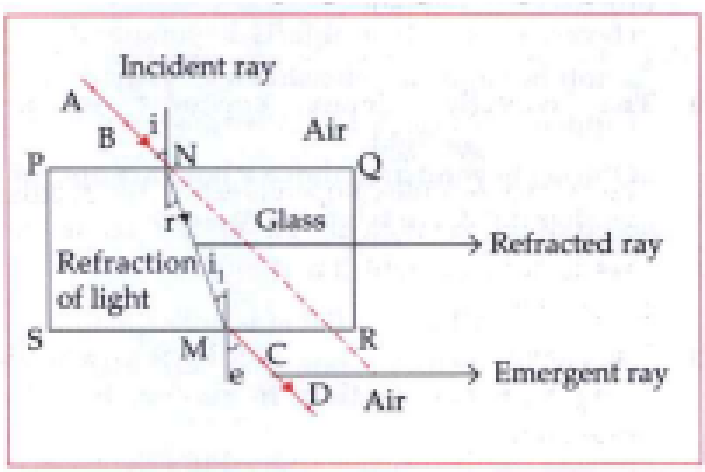

Fig. 6.6: Refraction of light passing through a glass slab

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76. What do you mean by dispersion of light?

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77. What is total internal reflection?

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78. Explain Rainbow formation or prove that a rainbow is the combined effect of the

refraction, dispersion and total internal reflection of light

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79. When light passes thorough glass slab,the incidnet ray and emergent ray are_____.

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80. Write the colours of the spectrum?

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81. Write the colours of the spectrum?

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82. What is the dispersion of light?

Watch Video Solution

83. What is spectrum of light?

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84. Which colour of light deviates the least in the spectrum obtained with a prism?

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85. Which three major phenomena are responsible for rainbow formation?

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86. What do you mean by dispersion of light?

Watch Video Solution

87. Give a diagrammatic representation of Rainbow production

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88. When light passes thorough glass slab,the incidnet ray and emergent ray are_____.

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89. From incident white light how will you obtain emergent light by making use of two prisms?

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90. You must have seen chandeliers having glass prism. The light from a tungsten bulb gets dispersed while passing through these

prisms and we see coloured spectrum. If we use on LED light instead of tungsten bulb, will we be able to see the same effect?

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91. Have you seen that objects beyond and above a holi fire appear to be shaking? why does this happen ? Give scientific reasons

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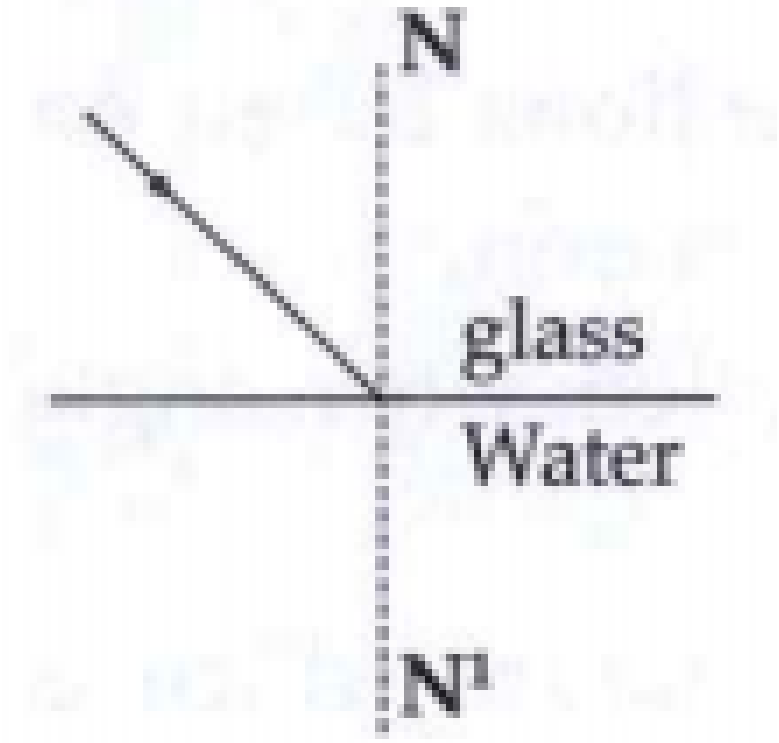
92. Complete the diagram.



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93. Write the ratio of velocity of light in first medium to the velocity of light in the second medium.

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94. If the light was incident on the interface at an angle greater than critical angle which phenomenon occurs?

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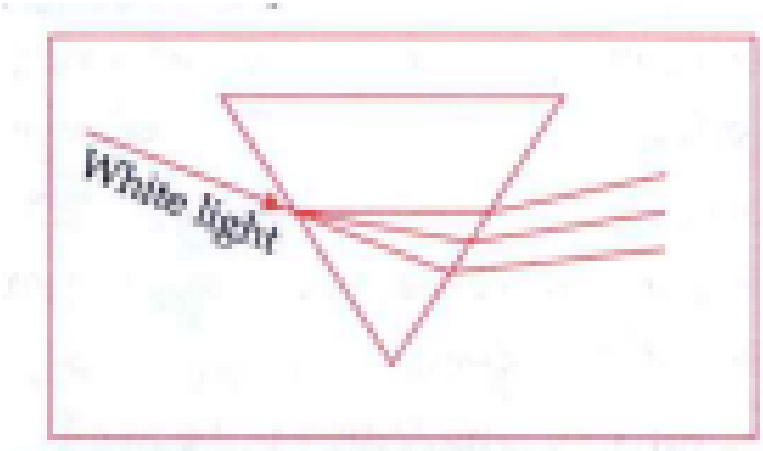
95. Compete the followign diagram:



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96. Which colour of light deviates the least in the spectrum obtained with a prism?

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97. Among orange and violet, which colour has highest velocity?

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98. What is critical angle?

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99. State any one phenomenon in nature which is based on total internal reflection.

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100. What is total internal reflection?

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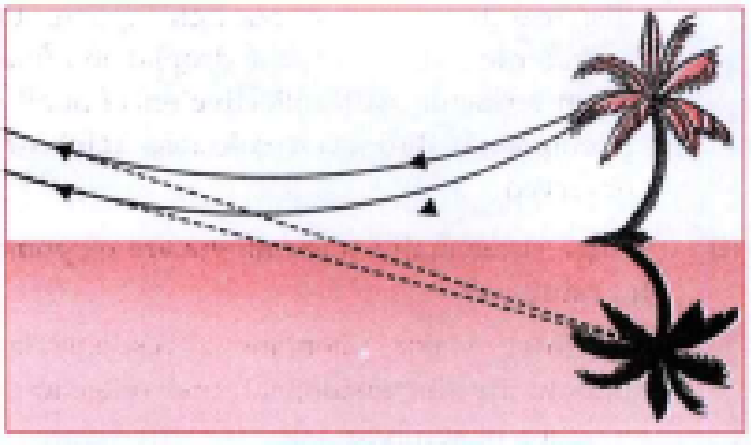
101. Which phenomenon does the diagram show?



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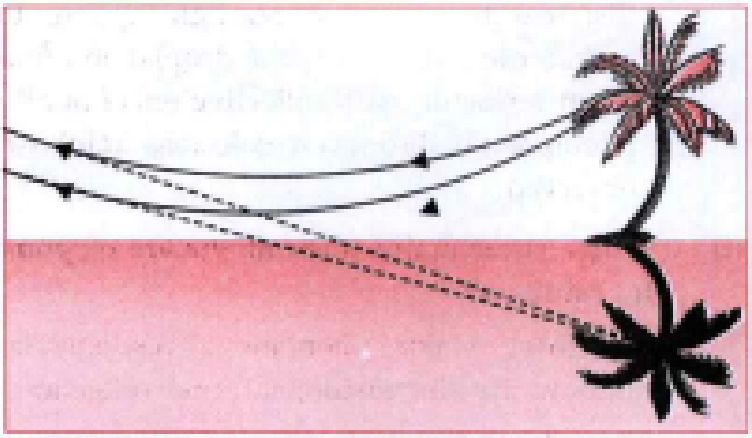
102. Which law obeyed by light makes this phenomenon occur?



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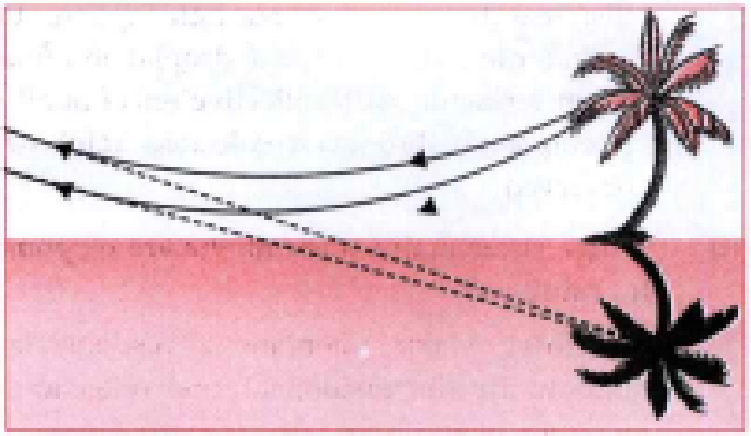
103. Name one more phenomenon in nature where the below law is observed.



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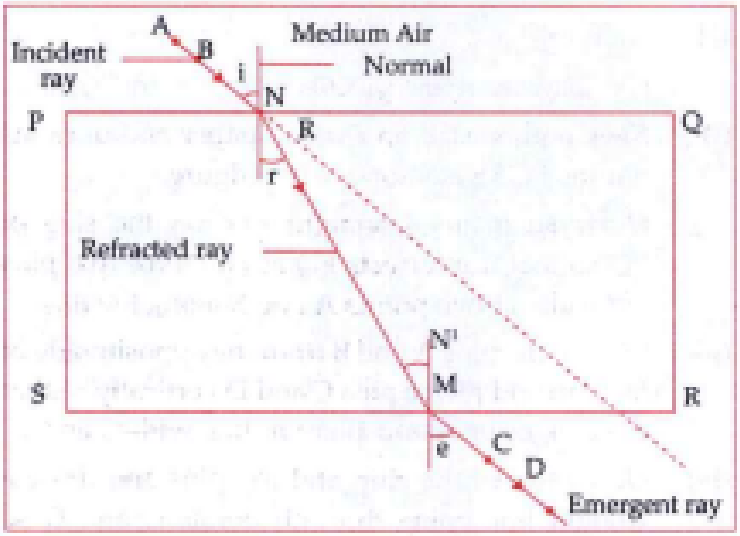
104. Answer the following question form the diagram: How many times does the light

undergo refraction?



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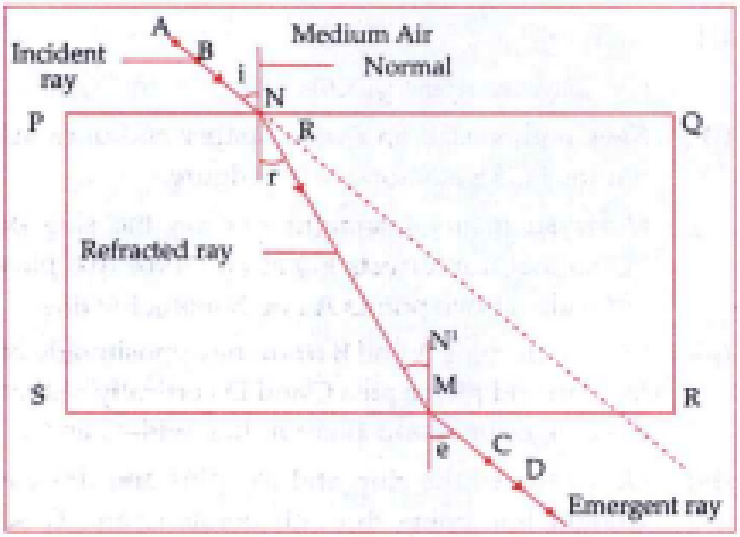
105. Answer the following question form the diagram: Which two rays are parallel?



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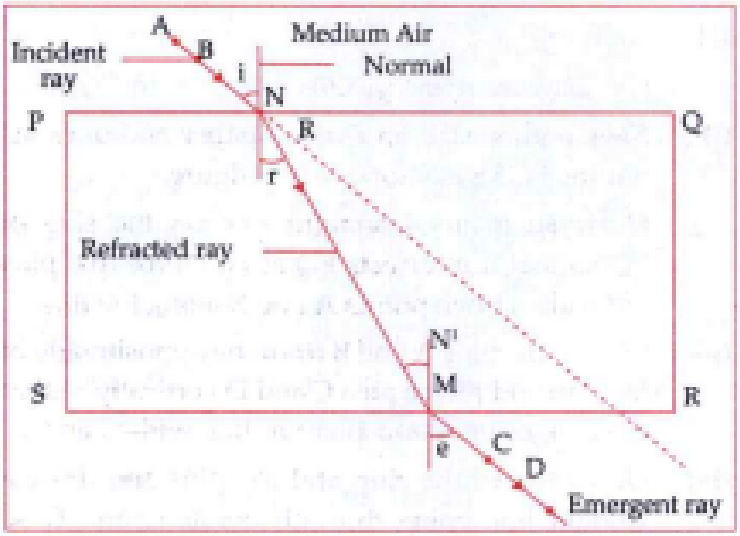
106. Answer the following question form the diagram: Which two angles are equal?



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