Geometric Optics: Refraction and Lenses

⚠ This is a preview of the draft version of the quiz

Started: Nov 4 at 10:10am

Quiz Instructions

Question 1	1 pts

A light ray traveling through water exits the water into the air. Which of the following statements is true about the light ray?

○ The light ray bends away from the normal and slows down as it enters the air.

○ The light ray bends away from the normal and speeds up as it enters the air.

○ The light ray bends toward the normal and speeds up as it enters the air.

○ The light ray bends toward the normal and slows down as it enters the air.

Question 2	1 pts

When you place a pencil in a glass of water, the pencil appears to be broken in two. Which wave behavior explains this occurrence?

○ reflection

○ diffraction

○ refraction

○ interference

Question 3

1 pts

Which of the following are true for a concave lens?

☐ can produce inverted images

☐ can produce upright images

☐ can produce virtual images

☐ converging

☐ can produce real images

☐ diverging

Question 4

1 pts

For a concave lens, _____.

☐ the image formed will always be real, inverted and reduced.

☐ the image formed will always be virtual, inverted and enlarged

☐ the image formed will always be virtual, upright and reduced

☐ the image formed will always be real, upright and reduced

Question 5
1 pts

Which of the following are true for a convex lens?

☐ can produce upright images correct

☐ diverging

☐ can produce virtual images

☐ can produce inverted images correct

☐ can produce real images

☐ converging

Question 6
1 pts

For a convex lens with an an object placed at a distance of 2f from the lens, an image is formed that is _____.

☐ real, inverted and reduced

☐ virtual and upright

☐ real, inverted and enlarged

☐ real and inverted

Question 7   1 pts

What is the speed of light through water (n = 1.33)?

☐ 2.25 x 10^8 m/s

☐ 2.63 x 10^8 m/s

☐ 3 x 10^8 m/s

☐ 3.38 x 10^8 m/s

Question 8   1 pts

A 1.8 m tall woman is standing 5.0 m in front of a convex lens with a focal length of 3.0 m.

What is the magnification factor for her image in the lens?

- [ ] 1

- [ ] 0

- [ ] -1.5

- [ ] -1

- [ ] 1.5

Question 9   1 pts

A 1.8 m tall woman is standing in 5.0 m in front of a concave lens with a focal length of 3.0 m.

What is the magnification factor of her image?

- [ ] 0.00

- [ ] .5

- [ ] .38

- [ ] .25

Question 10   1 pts

Which of the following can produce a virtual image with a magnification of 0.5?

I. convex mirror

II. concave mirror

III. convex lens

IV. concave lens

- [ ] II and IV only

- [ ] I and IV only

- [ ] I, II, III, and IV

- [ ] III and IV only

- [ ] I and II only

Question 11

1 pts

Light shines through a diamond (n = 2.42) sitting in a pool of water (n = 1.33) at an angle of 15 degrees from the normal. At what angle from the normal does light escape into the pool of water?

- [ ] 32

- [ ] 26
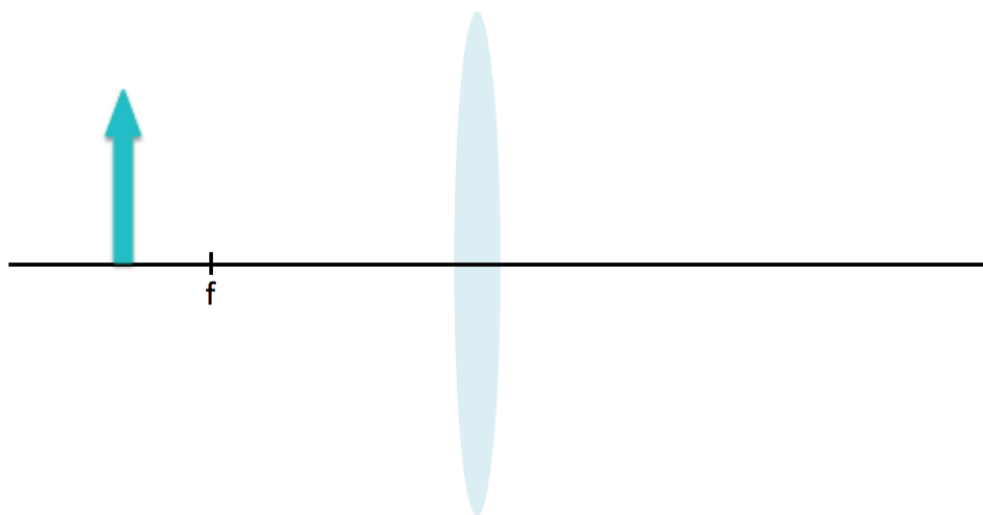
- [ ] 24

- [ ] 28

- [ ] 30

Question 12   1 pts

Red light (665nm) travels through air (n = 1.000) and enters a pool of water (n = 1.33) at a 30 degree angle from the normal. At what angle from the normal does the light travel through the pool?

- [ ] 24
- [ ] 18
- [ ] 16
- [ ] 22
- [ ] 20

Question 13   1 pts

What is the critical angle for light trying to escape from a pool of water (n = 1.33) to air (n = 1.000)?

- [ ] 41
- [ ] 43
- [ ] 45
- [ ] 37

☐   49

Question 14   1 pts

Consider the diagram above. Which of the following terms describe the image that is formed on the other side of the lens?

☐   real, inverted and enlarged

☐   real, inverted and reduced

☐   virtual, upright and enlarged

☐   virtual, inverted and enlarged

☐   virtual, upright and reduced

Question 15   1 pts

A candle is placed in front of a convex lens with a focal length of 16 cm. At which distance(s) in cm from the lens listed below could you place the candle in order to create a real image?

☐ 40

☐ 20

☐ 36

☐ 32

☐ 24

Question 16   1 pts

A candle is located 28 cm from a lens with a focal length of 15 cm. How far away in cm from the lens should a screen be placed to find the focused image?

☐ .31

☐ 32

☐ 40

☐ 36

☐ 34

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