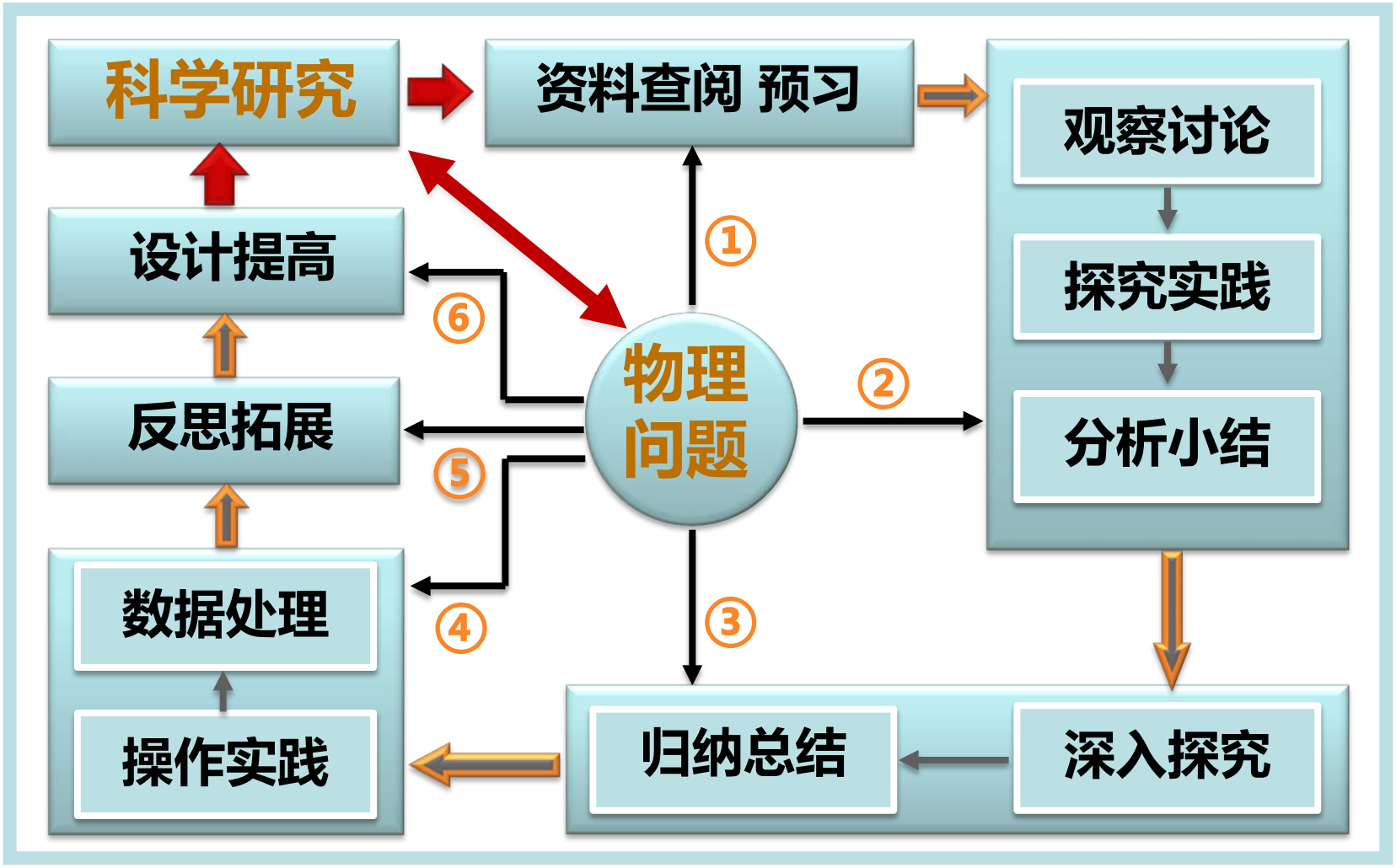
PPBL教学模式框图



六层次，十段式。

光源	介质（光学元件）	光学现象	光学原理	简单应用	研究范畴	相关扩展
太阳光	空气-空气	光线没有变化	直线传播	影子	几何光学	光的干涉 光的偏振 光的色散
	空气-面镜平凹凸	光线方向改变	光的反射	日常用镜子 汽车后视镜等		
	空气-水 空气-玻璃砖 空气-三棱镜	光线弯折	光的折射	折射率测量 棱镜摄谱仪 单色仪		
	水-空气 玻璃砖-空气	光线弯折	光的折射	光纤		
	空气-玻璃砖 空气-透镜 水-透镜	光的折射	成像公式	人眼 放大镜 望远镜 显微镜	几何光学	光的衍射
	肥皂泡 薄膜	彩色条纹	光的干涉 分振幅干涉	迈克尔逊干涉仪 法布里干涉仪 牛顿环 全息照相 杨氏双缝	波动光学	光的衍射
	双缝 双孔 双棱镜	彩色条纹	光的干涉 分波面干涉			
	圆孔 单缝	光强呈现彩色重新分布	光的衍射	测量波长 测量细丝直径 光栅光谱仪	波动光学	光的干涉
	多缝 光栅	光强呈现彩色重新分布	光的衍射 光的干涉			
	某些汽车贴膜	光强重新分布	光的偏振	应力测量	波动光学	光的干涉
	云母片	光强重新分布				
	方解石	双折射				
	偏振片	光强重新分布				

本学期光学作业

英文翻译：**若干**

课后习题：**若干。**

本学期光学考核

期中: 闭卷考试
期末: 教考分离
评卷分离

提前预习，积极主动；
课堂提问，踊跃互动；
布置作业，认真完成；
不可作弊，坑害自己！

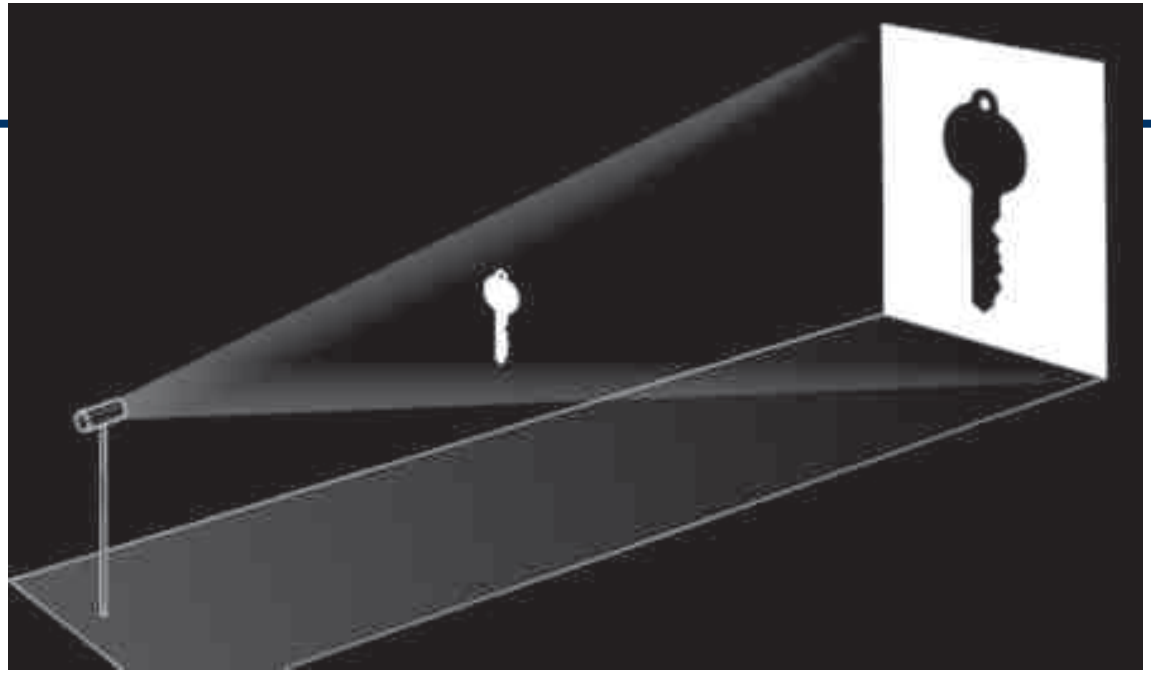
学习是自己的事！

光学是非常有意思的，你一定会喜欢的课程！

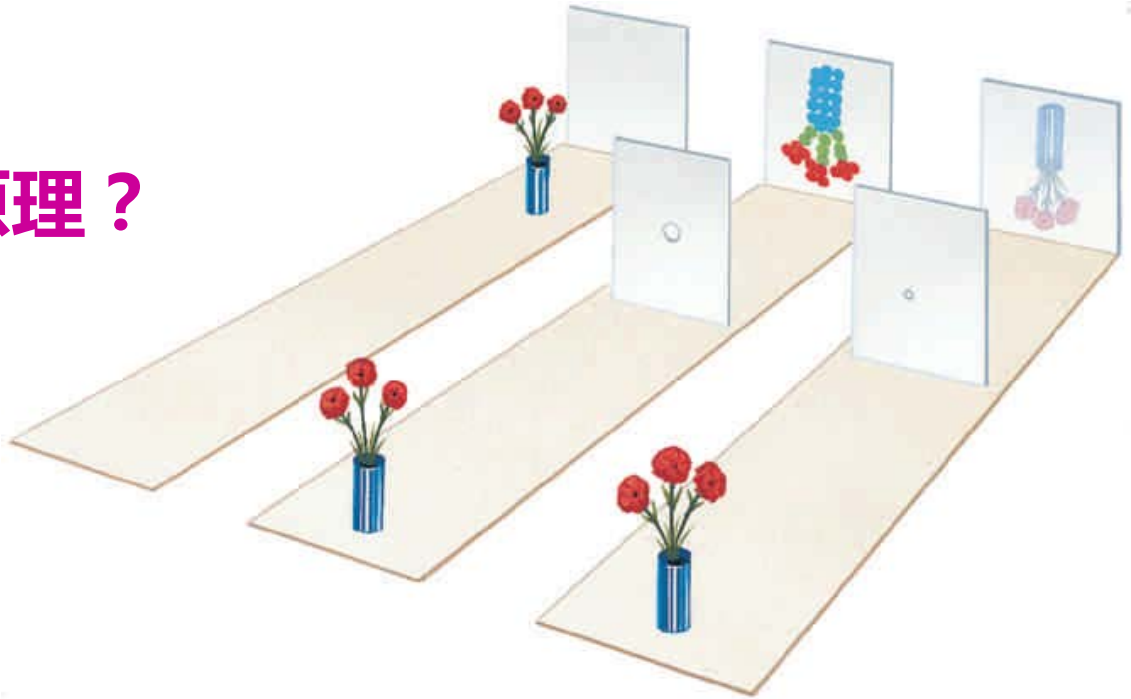
祝小伙伴们学习愉快！

东北师范大学物理学院

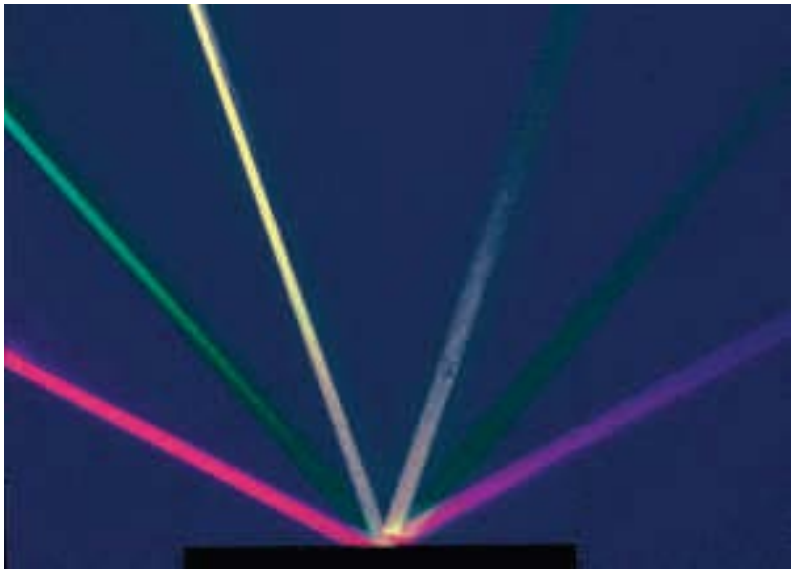
问题



什么现象？什么原理？



什么现象？什么原理？



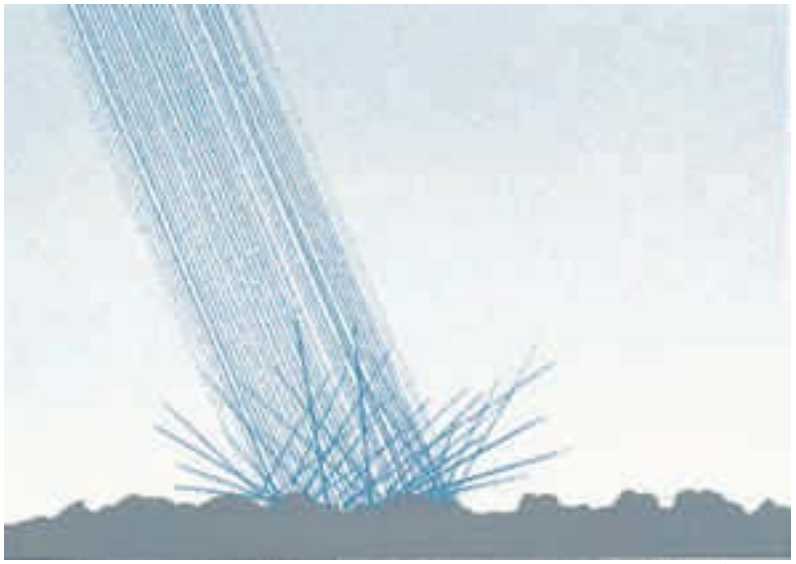


Figure 17-9 The image of a pencil formed by a flat mirror is located behind the mirror.

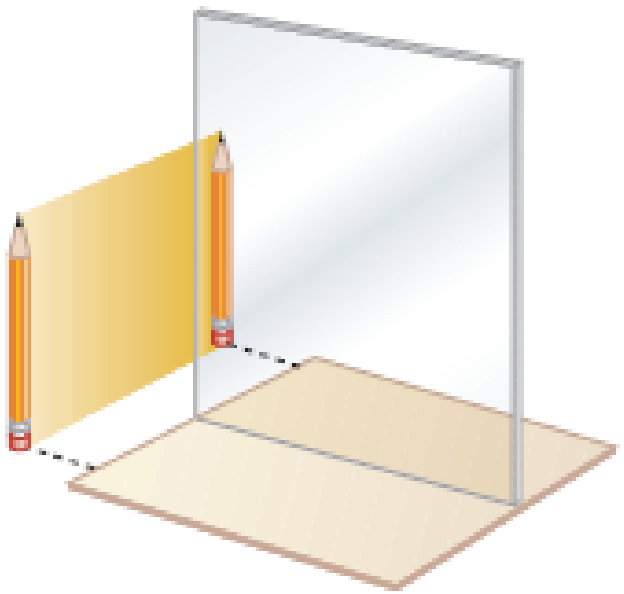


Figure 17-10 A flat mirror forms an image of an object even if the object is not located directly in front of the mirror.

什么现象？什么原理？

(a)

Figure 17-14 (a) Two mirrors at right angles to each other produce three images of the lion. (b) The red, green, and blue lines show sample paths taken by rays that enter the camera lens.

什么现象？什么原理？

Gerald F. Wheeler (both)

(a)

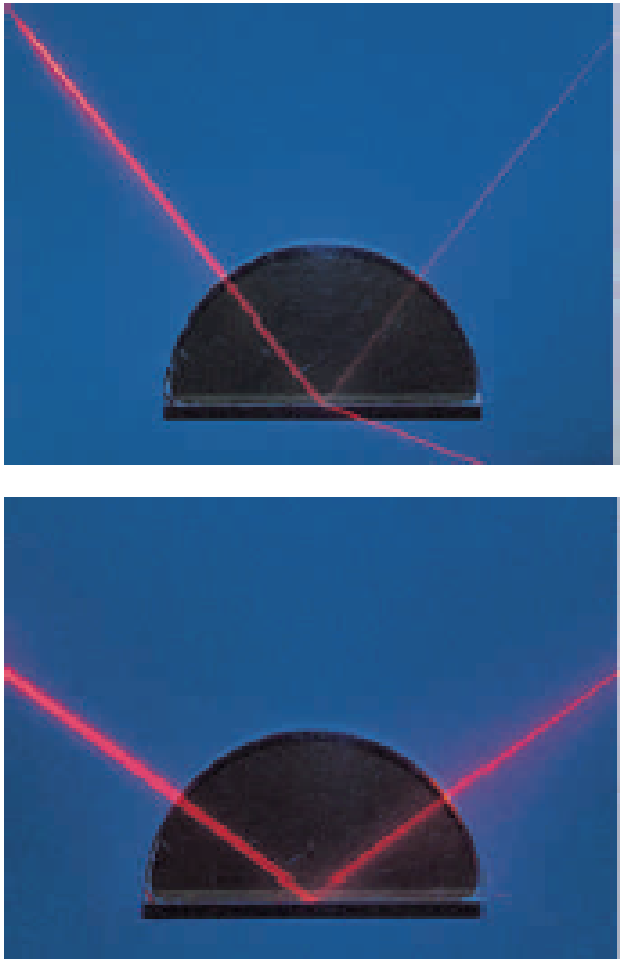
(b)

Figure 17-11 (a) The woman's head appears to sit on the table. How is this done? (b) The same scene with both mirrors removed.

什么现象？什么原理？

rallel mirrors form an Infin
riangles.

什么现象？什么原理？



© Cengage Learning/ David Rogers (both)

Figure 18-5 (a) Light traveling from glass into air at the lower surface bends away from the normal. (b) When the incident angle is larger than some critical angle, the light is totally reflected. None of the light passes through the surface.

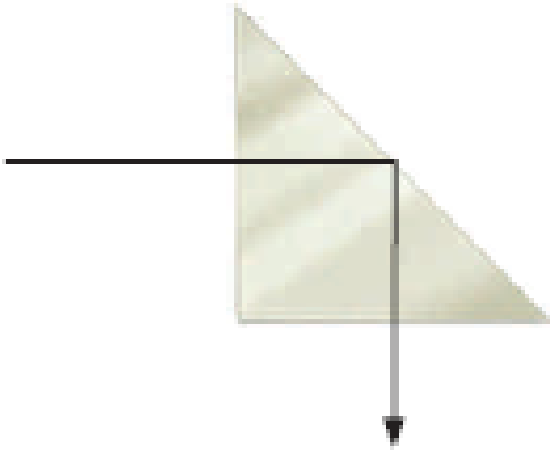


Figure 18-6 A prism acts as a flat mirror when the light is totally internally reflected.

什么现象？什么原理？

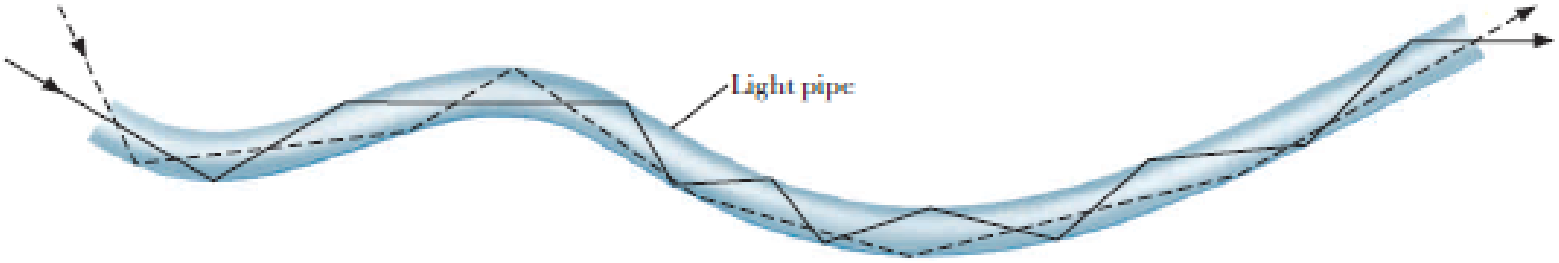


Figure 18-7 Light may be "piped" through solid plastic or glass rods using total internal reflection.

什么现象？什么原理？

© Cengage Learning/David Rogers

(a)

Figure 17-21 The image of a candle inside

© Cengage Learning/David Rogers

(a)

Figure 17-22 The image of a candle outside smaller than the object.

什么现象？什么原理？

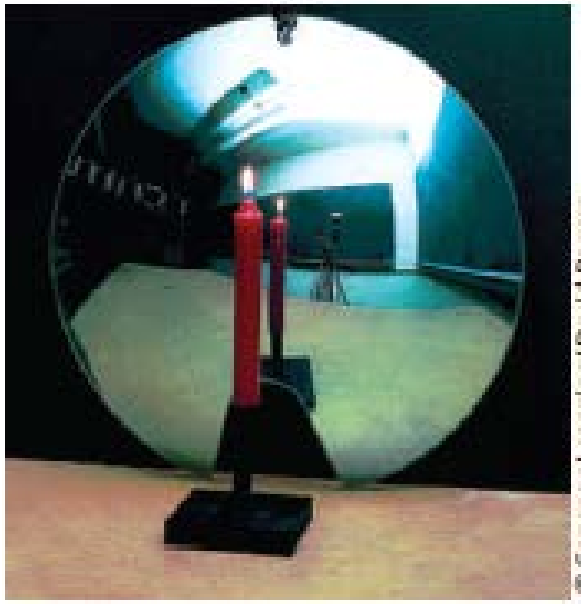
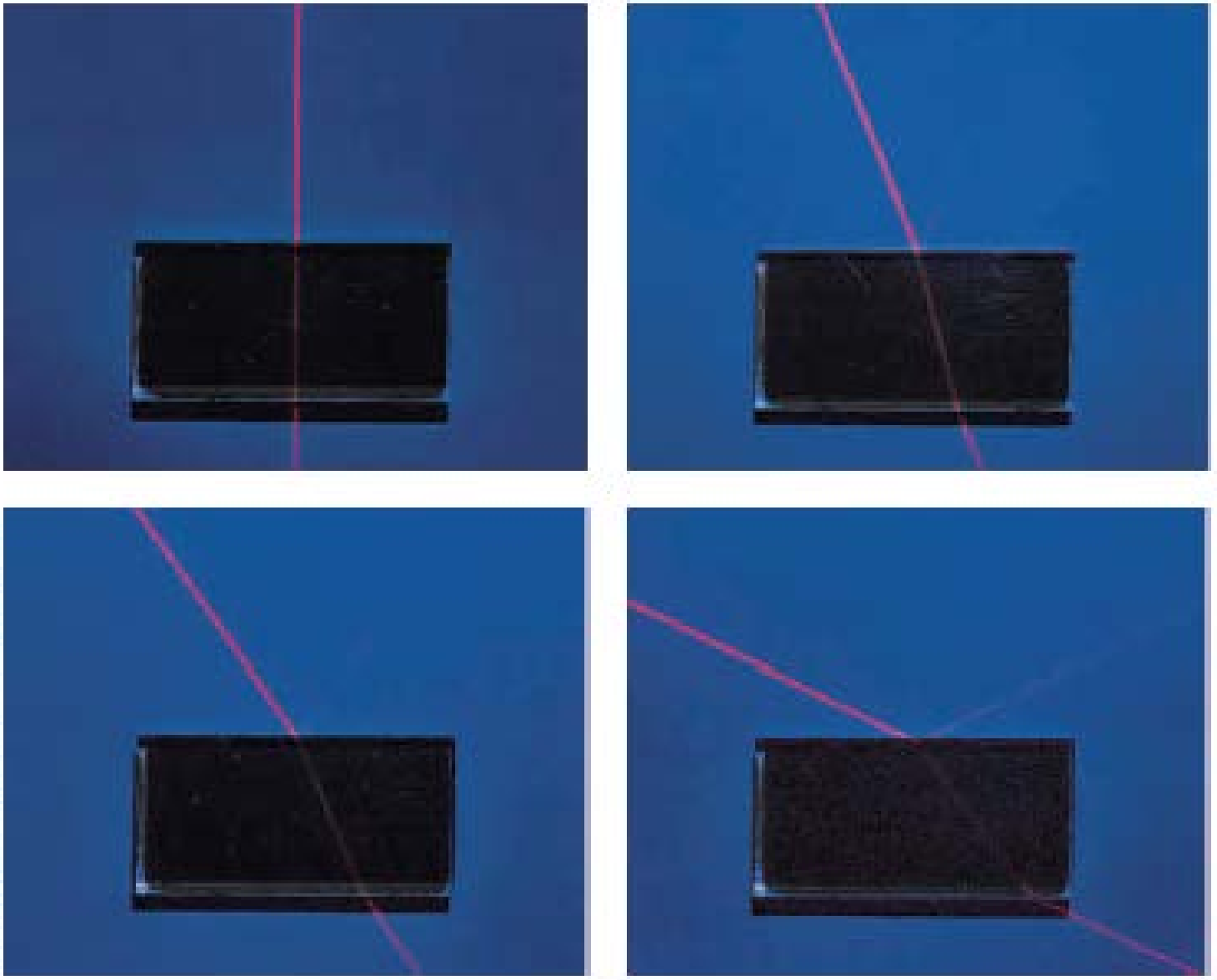


Figure 17-23 The image of a candle in front erect, and reduced in size. Ray 2 reflects as if it ca the focal point.

什么现象？什么原理？



什么现象？什么原理？

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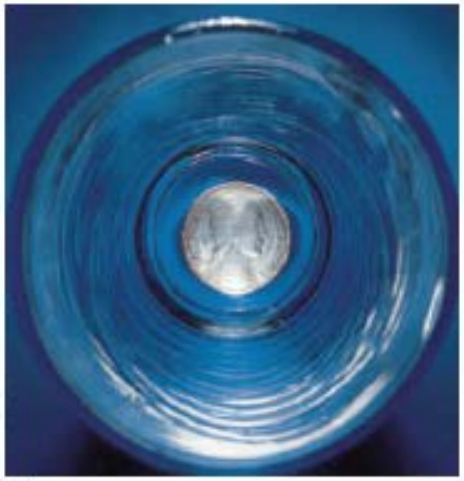
Figure 18-3 A straight pencil appears to be bent at the surface of the water.



© Cengage Learning/David Rogers (both)

(a) (b)

Figure 18-4 A coin underwater (a) appears closer than an identical coin in air (b). (c) Some of the rays that produce the virtual image.

什么现象？什么原理？

Patrick J. Endres/Visuals Unlimited

Figure 18-11 A rainbow's magic is that it seems to appear out of thin air. Notice the secondary rainbow on the right.

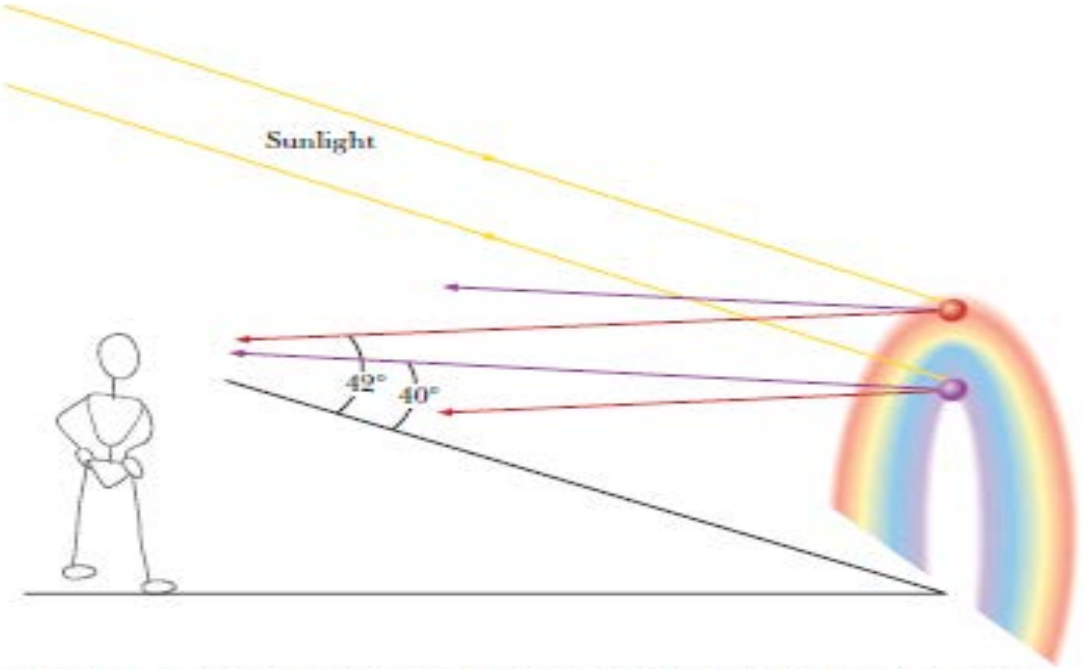
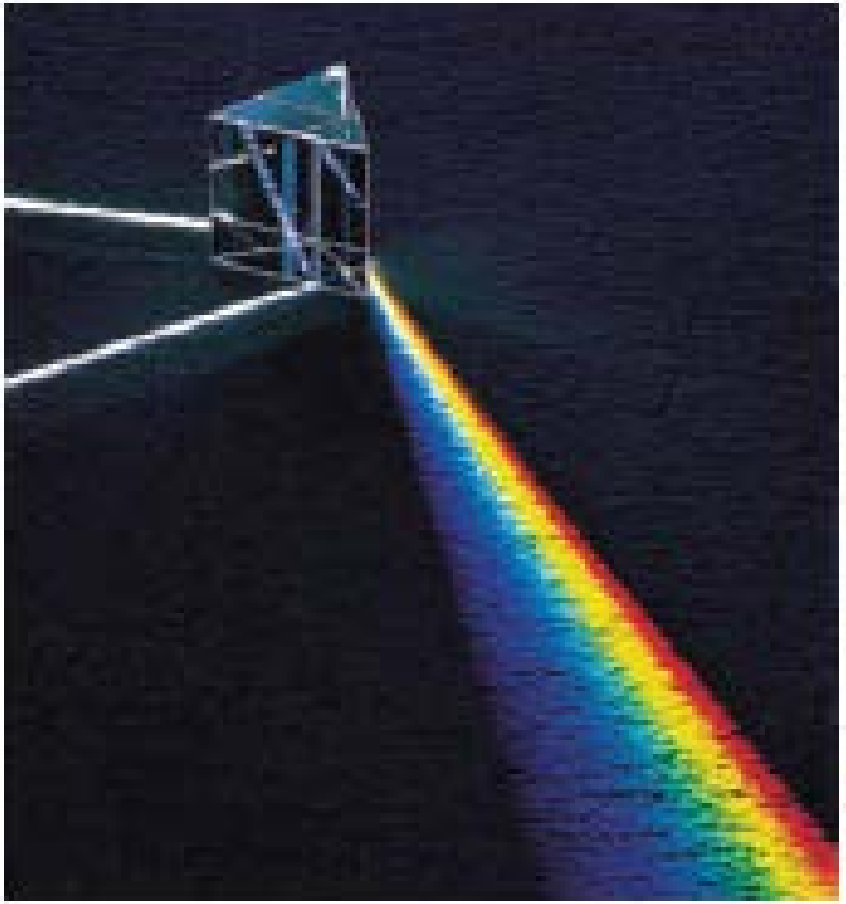


Figure 18-13 The color of each water droplet forming the rainbow depends on the viewing angle.

什么现象？什么原理？

什么现象？什么原理？



David Parker/Science Photo Library/
Photo Researchers, Inc.

Figure 18-10 A prism separates white light into the colors of the rainbow.