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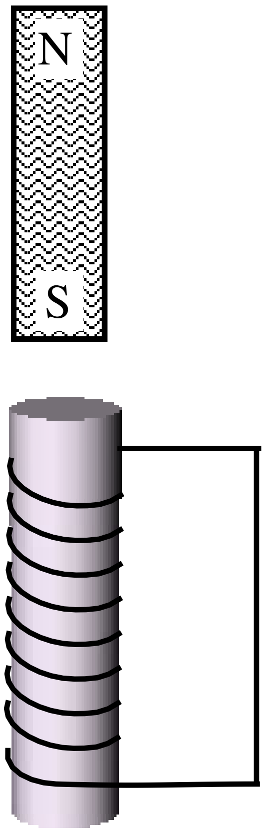
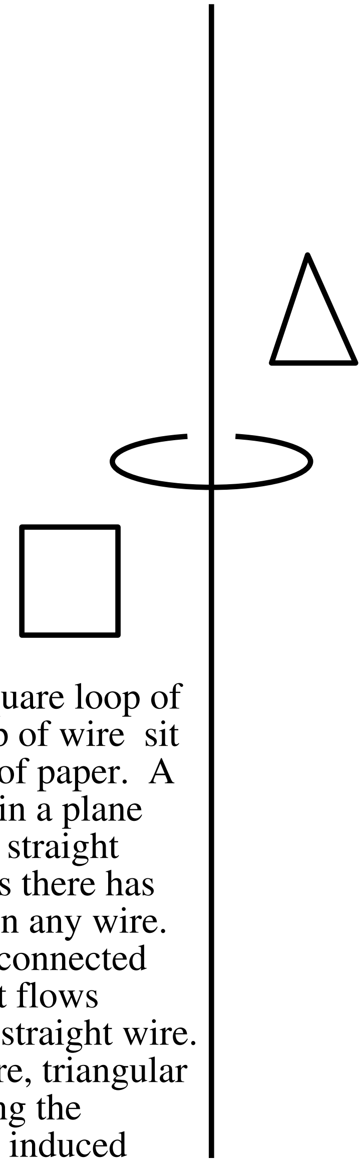
Quiz 5

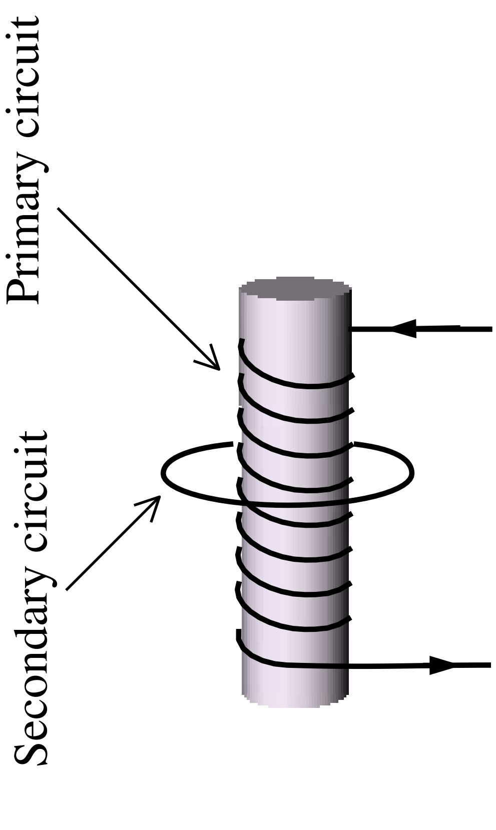
Directly on the below diagrams place arrows (one on each of the **five** secondary circuit) showing induced current directions in (or write 'zero current'). Place the arrow on the wire carring the induced current.



The south pole of a bar magnet has been sitting away from the end of a solenoid. The bar magnet is now moved vertically towards the solenoid. Place an arrow on the solenoid's vertical connecting wire showing the direction of any resulting current induced in the solenoid.



A long straight wire, a square loop of wire and a triangular loop of wire sit in the plane of this sheet of paper. A circular loop of wire sits in a plane perpendicular to the long straight wire. For several minutes there has been no current flowing in any wire. A battery (not shown) is connected and an ever larger current flows upward through the long straight wire. Place arrows on the square, triangular and circular loops showing the direction of any resulting induced currents in these secondary circuits.



For several minutes no current has been flowing through the primary circuit. A current now starts and increases in the direction indicated. Place an arrow on the front surface of the secondary circuit showing the direction of any resulting current induced in the secondary circuit

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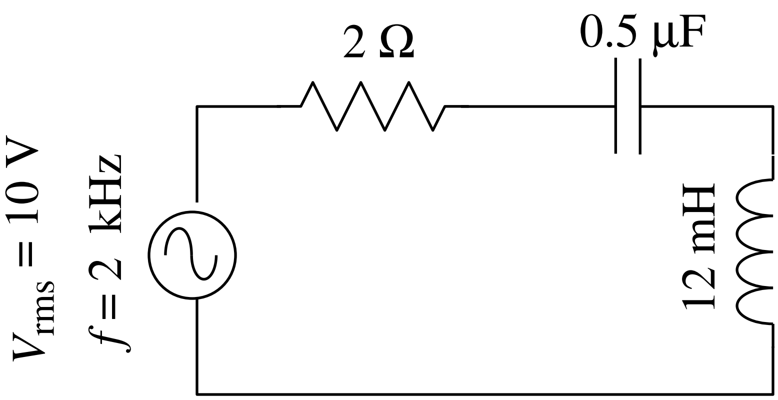
Quiz 6

(A) Calculate the total impedance of the circuit. (B) Calculate the rms current flowing. (C) Calculate the rms voltage drop across each of the three components: ***R***, ***C*** and ***L***. (D) If you add up the numbers from part (C), you get more than the voltage supply (here 10 V). This seems to violate Kirchhoff's Rules. Explain (in at most a sentence and perhaps a single word) the cause.



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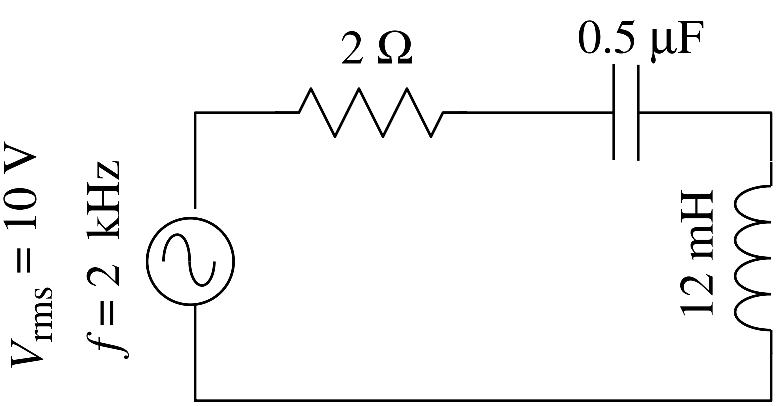

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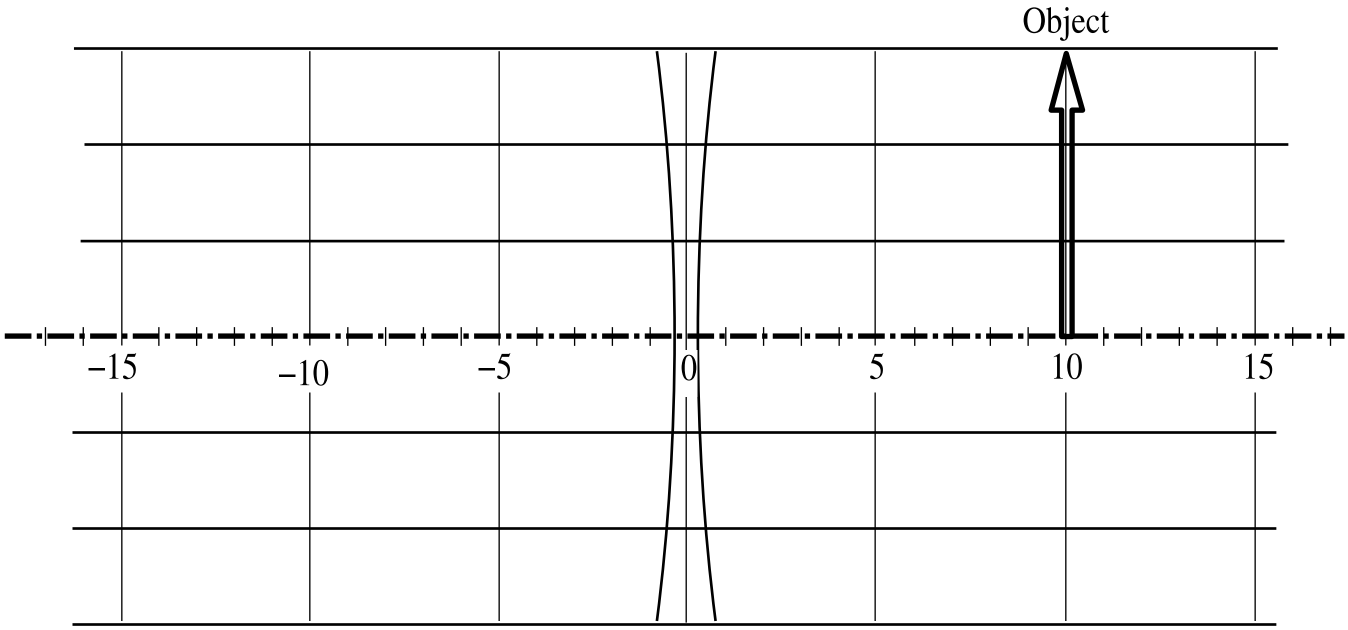
Quiz 7

Accurately draw (using straight edge) the three principal rays (including an arrow for direction of motion) as described in the textbook. Follow the textbook's convention: dotted lines for rays extrapolated by the viewing eye and solid lines for actual rays. Draw an arrow accurately showing the size, location and orientation of the image. Record if the image is real or virtual. Draw an eyeball that is positioned/oriented so it could see the image. Calculate the location of the image and use that as a check of your drawing.



$f = -15$

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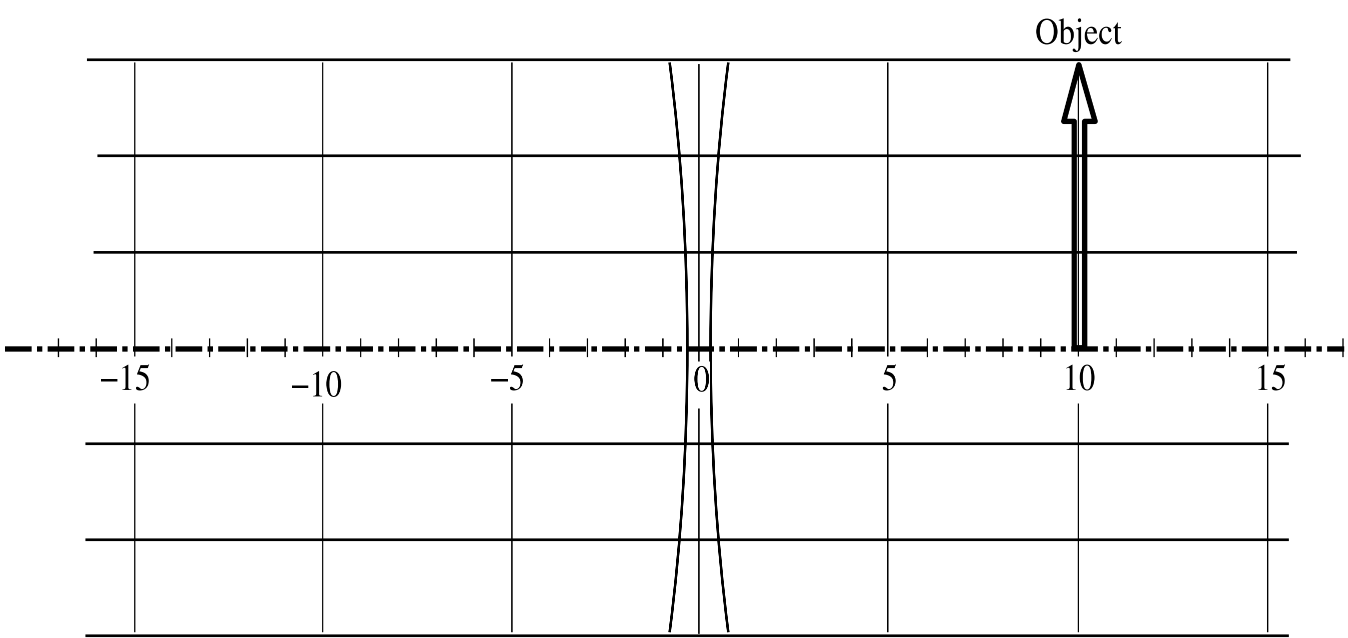

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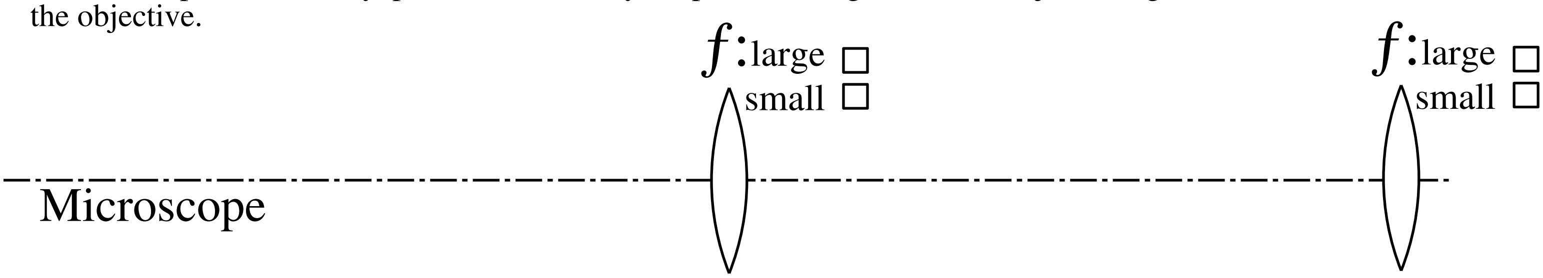
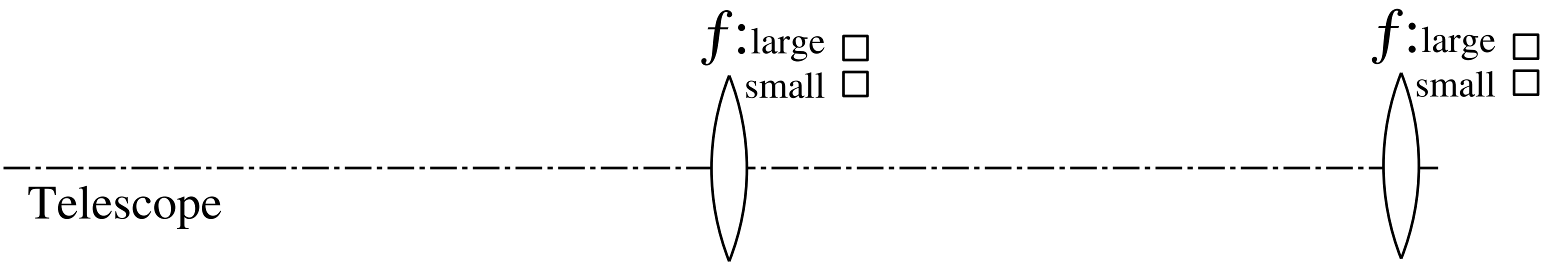
Quiz 8

Consider the below two-lens situations showing a simple compound microscope and a telescope. For each system display in the drawing how the final image is made. Begin by drawing an upright arrow depicting the actual object under observation. Draw and properly locate/size/orient the image of the objective. Label this image **OV** if it is virtual; **OR** if it is real. Draw and properly locate/size/orient the image of the eyepiece. Label this image **EV** if it is virtual; **ER** if it is real. Check a box reporting the relative size of the focal length of the objective and eyepiece. Mark with ● the focal points (one on each side of the lens) of the objective; mark with ∇ the focal points of the eyepiece. Note: the eye is placed far right, and the object being viewed is to the left of the objective.





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