

**B4.** Professor Sher's cat, Thor, has a fine furry face which is 10 centimeters high.

(a)(15) While Thor is sleeping, Professor Sher puts a concave mirror with a focal length of 50 centimeters in front of the cat's face, 20 centimeters away. When Thor awakens, he sees the image, and considers an immediate attack on the intruder. What is the location of the image and the size of the intruder's face? Is the intruder upside-down or right-side up?

(b)(10) While 10 centimeters away from Thor, Professor Sher takes a photograph. He selects a lens that will fill the film (24 millimeters from top to bottom) with Thor's face. What is the focal length of the lens?