

2. A severely near-sighted sailor on a ship is asked to be the lookout for icebergs on the horizon. To do so, he is give a Newtonian telescope with  $f_{\text{objective}} = 30\text{cm}$  and  $f_{\text{eyepiece}} = 5\text{cm}$  (see diagram).

- If the sailor's relaxed eye focuses objects at a distance of 1m (his far-point distance), how far apart  $d$  must the telescope lenses be for the sailor to see a clear image of an iceberg?
- With what angular magnification does the sailor see an iceberg on the horizon?
- Is the iceberg image real or virtual? Upright or inverted?

