a)

$$H(fair\ dice) = -\frac{1}{6}\log_2\frac{1}{6} - \frac{1}{6}\log_2\frac{1}{6} - \frac{1}{6}\log_2\frac{1}{6} - \frac{1}{6}\log_2\frac{1}{6} - \frac{1}{6}\log_2\frac{1}{6} - \frac{1}{6}\log_2\frac{1}{6}$$
$$= 0.43 + 0.43 + 0.43 + 0.43 + 0.43 + 0.43 = 2.58$$

b)

$$H(loaded\ dice) = -\frac{1}{10}\log_2\frac{1}{10} - \frac{1}{10}\log_2\frac{1}{10} - \frac{1}{10}\log_2\frac{1}{10} - \frac{1}{10}\log_2\frac{1}{10} - \frac{1}{10}\log_2\frac{1}{10} - \frac{1}{2}\log_2\frac{1}{2}$$
$$= 0.33 + 0.33 + 0.33 + 0.33 + 0.33 + 0.5 = 2.15$$