1. What is wrong with this pie chart?

All sectors add up to $30 + 20 + 15 = 65\%$. In a pie chart the total should always be $100\%$.

2. What is wrong with this histogram?

Serious problems: The horizontal axis is missing $20$. The distance between $50$ and $55$ is less than other intervals of length $5$. The bars for ranges $25 - 30$ and $30 - 35$ are not separated (so it’s unclear if there is the same number of individuals with values in these ranges or if the bar represent the values in the range $25 - 35$).

Less serious problems: $40$ is not indicated on the horizontal axis. If the scale of the vertical axis stands for $1$, $2$, etc then the bars do not represent whole numbers of individuals ($1$ may stand for $1,000$ but this should be indicated).

3. Are the following statements true or false? Explain your answer.

(a) The median is the midpoint between $Q1$ and $Q3$.

TRUE: There are $25\%$ of values between $Q1$ and $M$ and $25\%$ between $M$ and $Q3$.

(b) If two data sets have the same mean and standard deviation, their histograms must be the same.

FALSE: The mean and standard deviation do not determine the distribution completely.

4. In a right-skewed distribution, what is greater, the mean or the median? Explain your answer.

The mean is greater. A right-skewed distribution extends more to the right than to the left. This does not affect the median, which is the middle value. However, the greater the values on the right, the greater the mean, so the mean gets affected and is pulled towards the right.