

Solutions

2.1 B A scale bar provides a known real distance in the same image. Convert the image length and real length to the same unit before dividing. Magnification is a ratio and has no unit.

2.2 Convert image size: 12 mm=12,000 micrometres. Magnification=image/actual=12,000/40=300.

2.3 False. A nucleus is not the only cell structure. Do not claim bacteria have no DNA, or that more magnification always means better resolution.

2.4 magnification. magnification means Image length divided by actual length.

3.1 Length= $18/6 \times 20 = 60$ micrometres. Both image and bar enlarge together; their ratio and inferred real length stay unchanged. An isolated image length without its scale would be insufficient.