

Review of Significant Digits, Scientific Notation and SI Units

State the number of significant digits in each of the following measured values:

- | | | | |
|-------------------------|----------|----------------------------|----------|
| 1. 18.56 g | <u>4</u> | 4. 1.00 W | <u>3</u> |
| 2. 1500°C | <u>4</u> | 5. 0.05730 mol | <u>4</u> |
| 3. 0.0062 L | <u>2</u> | 6. 8.0×10^{-2} mL | <u>2</u> |
| 7. 14.08 cm | <u>4</u> | 9. 0.100 km | <u>3</u> |
| 8. 1.58×10^8 m | <u>3</u> | 10. 62 km/h | <u>2</u> |

Convert the following numbers into scientific notation. The number in brackets indicates the number of significant digits the answer is to be rounded to.

- | | | | | | |
|-----------|--|-----|---------------|---|-----|
| 1. 1000 | <u>1×10^3</u> | (1) | 4. 0.00001098 | <u>1.10×10^{-5}</u> | (3) |
| 2. 492.32 | <u>4.92×10^2</u> | (3) | 5. 6 995 000 | <u>7.00×10^6</u> | (3) |
| 3. 0.0573 | <u>5.7×10^{-2}</u> | (2) | 6. 62.49 | <u>6.2×10^1</u> | (2) |

Using the SI Prefixes table on your data sheet, perform the following conversions. Maintain the same number of significant digits in each conversion.

- | | |
|--|---|
| 1. 0.520 km = <u>520</u> m | 6. 200 mL = <u>2.00×10^8</u> L |
| 2. 100 mL = <u>0.100</u> L | 7. 45 g = <u>4.5×10^{-2}</u> kg 0.045 |
| 3. 152.5 cm = <u>1.525</u> m | 8. 10.8 mol = <u>1.08×10^4</u> mmol 10800 |
| 4. 3300 mg = <u>3.300</u> g | 9. 0.450 L = <u>450</u> mL |
| 5. 650 kg = <u>650000</u> g
<u>6.50×10^5</u> | 10. 1500 m = <u>1.500</u> km |

Perform the following calculations. Round your answer to the correct number of significant digits, using scientific notation where necessary. Include units.

- 16.56 mL - 6.3 mL = 10.3 mL
- 21.4 g ÷ 0.825 mol = 25.9 g/mol
- 480 km + 24.07 km = 504 km
- 0.550 mol × 40.00 g/mol = 22.0 g
- 18.4 g/mL × 5.5 mL = 1.0×10^2 g
- 22.99 g/mol + 35.45 g/mol = 58.44 g/mol
- 18.5°C - 4.5°C = 14.0°C
- 6.0 g ÷ 24.30 g/mol = 0.25 mol
- 19.55 mL - 17.55 mL = 2.00 mL
- 15 600 g ÷ 2000 mol = 7.800 g/mol