

The Metric System

Also referred to as SI (System International)

Fundamental Units

Quantity	Unit	Symbol
Length	meter	m
Mass		
Temperature		
Electric Current		
Time		
Light Intensity		
Quantity of Matter		

Metric Prefixes

Prefix	Symbol	Factor	Decimal
Giga	G	10^9	1,000,000,000
Mega			
Kilo			
Hecto			
Deca			
Unit	-----	10^0	1
deci			
centi			
milli			
micro			
nano			
pico			

***Also important: Angstrom -- $1\text{\AA} = 10^{-10}\text{ m}$ ***

Memory Device

G	x	x	M	x	x	K	H	D	u	D	c	m	x	x	μ	x	x	n	x	x	p
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NAME _____ DATE _____

SIGNIFICANT FIGURES

PART A: Tell the number of significant figures in each of the following measurements.

- | | | | |
|----------------|-------|------------------------------|-------|
| 1. 82 m | _____ | 7. 32.690 cm | _____ |
| 2. 408.3 g | _____ | 8. 0.000829 kg | _____ |
| 3. 0.973 s | _____ | 9. 220.00 g | _____ |
| 4. 794.770 cal | _____ | 10. 90.5700°C | _____ |
| 5. 624000 mm | _____ | 11. 4.28×10^{11} s | _____ |
| 6. 350. km | _____ | 12. 1.80×10^{-5} mm | _____ |

PART B: Perform each of the following calculations and express the answer with the correct number of significant figures.

- | | |
|---|-------|
| 1. $4.672 \text{ mm} + 9.52 \text{ mm} + 11.6702 \text{ mm}$ | _____ |
| 2. $32.067 \text{ kg} + 18.6 \text{ kg} + 135.11 \text{ kg}$ | _____ |
| 3. $42.86 \text{ s} - 13.683 \text{ s}$ | _____ |
| 4. $23.559 \text{ mL} - 8.5 \text{ mL}$ | _____ |
| 5. $3.4 \text{ cm} \times 4.8 \text{ cm} \times 1.2 \text{ cm}$ | _____ |
| 6. $13.293 \text{ m} \times 6.2 \text{ m} \times 35.698 \text{ m}$ | _____ |
| 7. $14.3896 \text{ mm}^3 \div 2.60 \text{ mm}$ | _____ |
| 8. $3.5 \times 10^3 \text{ cm}^2 \div 1.284 \times 10^5 \text{ cm}$ | _____ |
| 9. $0.00368 \text{ mL} \times \frac{760 \text{ mm}}{780 \text{ mm}} \times \frac{273 \text{ K}}{290 \text{ K}}$ | _____ |
| 10. $340 \text{ L} \times \frac{0.867 \text{ atm}}{0.350 \text{ atm}} \times \frac{288.5 \text{ K}}{296.0 \text{ K}}$ | _____ |

NAME _____ DATE _____

SCIENTIFIC NOTATION (I)

PART A: Express each of the following numbers using scientific notation.

- | | | | |
|--------------------|-------|--------------------|-------|
| 1. 10,000 | _____ | 7. 67,800,000 | _____ |
| 2. 0.001 | _____ | 8. 9000 | _____ |
| 3. 100,000,000 | _____ | 9. 0.602 | _____ |
| 4. 30,000,000 | _____ | 10. 0.000023 | _____ |
| 5. 435,000,000,000 | _____ | 11. 54.3 | _____ |
| 6. 109,000,000 | _____ | 12. 0.000000000560 | _____ |

PART B: Write each of the following numbers in expanded form.

- | | |
|-----------------------------|-------|
| 1. 1.0×10^6 | _____ |
| 2. 1.00×10^{-5} | _____ |
| 3. 1×10^{11} | _____ |
| 4. 4×10^{-4} | _____ |
| 5. 6.7×10^{-6} | _____ |
| 6. 8.23×10^8 | _____ |
| 7. 14.76×10^{-9} | _____ |
| 8. 7.68×10^3 | _____ |
| 9. 435.6×10^{-7} | _____ |
| 10. 28.5×10^{-1} | _____ |
| 11. 9.6800×10^{12} | _____ |
| 12. 0.967×10^{-3} | _____ |

NAME _____ DATE _____

SCIENTIFIC NOTATION (II)

DIRECTIONS: Carry out each of the following operations using scientific notation.

1. $100 - 10$ _____
2. $10,000 + 300,000$ _____
3. $100,000 \times 10,000$ _____
4. $40,000 \times 3,000,000$ _____
5. 0.001×0.000004 _____
6. 0.00052×0.0000002 _____
7. $35,000 \times 620,000,000$ _____
8. $103,000,000 \times 56,500$ _____
9. 0.0037×0.0000052 _____
10. $65,000,000 \times 0.0034$ _____
11. $0.000682 \times 61,000,000$ _____
12. $0.3600 \times 0.00054 \times 92,000$ _____
13. $42,000,000 \times 120,000 \times 0.00045$ _____
14. $0.00082 \times 83,400 \times 0.0000025$ _____
15. $4,500,000 \times 12,500 \times 0.0035 \times 0.00009$ _____
16.
$$\frac{100}{50 \times 400 \times 0.050}$$

17.
$$\frac{45,000 \times 0.0035}{600,000 \times 2,500}$$

18.
$$\frac{4,500,000,000 \times 0.00000034}{8000 \times 0.000027 \times 0.000016}$$

19.
$$\frac{0.00056 (14,500,000 \times 35,000)}{18,900,000/0.0000755}$$

20.
$$\frac{75,000 \times 0.000062 \times 0.00015}{125,000,000,000,000 \times 0.0000030}$$

NAME _____ DATE _____

METRIC SYSTEM

DIRECTIONS: Convert each of the given measurements to the unit indicated.

1. 100 cm to _____ m
2. 500 g to _____ kg
3. 0.01 m to _____ cm
4. 250 mL to _____ L
5. 35 kg to _____ g
6. 0.89 L to _____ mL
7. 3.484 cm to _____ mm
8. 15.93 mg to _____ dg
9. 435.8 ms to _____ s
10. 89.05 mL to _____ dL
11. 0.00467 kg to _____ cg
12. 6.054 cm to _____ hm
13. 84.59 Å to _____ cm
14. 9.45 μm to _____ mm
15. 10.4 cm to _____ mm
16. 34.2 mm to _____ cm
17. 192.3 cg to _____ mg
18. 4.006 L to _____ mL
19. 70.5 cm^3 to _____ mL
20. 2.58 μg to _____ cg
21. 1.5×10^4 g to _____ cg
22. 3.2×10^{-3} cm to _____ mm
23. 0.5×10^{-9} Å to _____ mm
24. 8.22×10^{-5} μm to _____ Å
25. 14.8×10^{-6} cm to _____ Å
26. 5.552×10^{14} μm to _____ km
27. 3.680×10^{-9} cm to _____ μm
28. 9.92×10^7 mm to _____ m
29. 14.82×10^{-3} g to _____ cg
30. 4.82×10^5 mg to _____ kg

1 Angstrom (Å) = 1×10^{-10} m

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NAME _____ DATE _____

FACTOR-LABEL METHOD

DIRECTIONS: Convert each measurement given to its equivalent, as indicated.

1. 60.0 mi/hr = _____ km/hr
2. 6.14 g/cm³ = _____ mg/mL
3. 6.6 ft/sec = _____ cm/sec
4. 283 L/sec = _____ gal/min
5. 218.5 km/hr = _____ m/sec
6. 1.02 cm/day = _____ m/yr
7. 87.9 ft/sec = _____ mi/hr
8. 0.432 kg/L = _____ lb/ft³
9. 1.86×10^5 mi/sec = _____ mi/yr
10. 1.8×10^{-4} mm/hr = _____ in/yr
11. Determine the unit factors for each of the following conversions:
 - a. km/hr to m/sec
 - b. mi/hr to ft/sec
 - c. mi/hr to m/sec
 - d. lb/ft³ to kg/L



Name: _____
Physics

Date: _____
Ms. Nigro

ORDER OF MAGNITUDE

Determine the order of magnitude of the following measurements:

1. The height of a classroom doorknob: _____ m

2. The length of the classroom: _____ m

3. The thickness of a dollar bill _____ m

4. The mass of a chicken egg: _____ kg

5. One kg of nickels: _____ dollars

