Using Labels in Calculations Name_____

For each of the following "equations" show the correct resulting unit. If it is not possible to complete the operation write "NP". The only time it is not reasonable to complete the operation is when you are adding or subtracting different units.

1. $4.0\ \text{cm} \cdot 5.0\ \text{cm} =$

2. $\dfrac{4.0\ \text{cm}}{2.0\text{cm}} =$

3. $3.25\ \text{g} + 1.1\ \text{g} =$

4. $2\ \text{m} + 2\ \text{m} + 2\ \text{m} =$

5. $3.0\ \text{m} \cdot 3.0\ \text{m} \cdot 3.0\text{m} =$

6. $\dfrac{4.0\ \text{cm}^2}{2.0\ \text{cm}} =$

7. $4.0\ \text{cm}^2 \cdot 3.0\ \text{cm} =$

8. $1.0\ \text{g} + 5.0\ \text{m}^3 =$

9. $2.1\ \text{m}^2 - 4.4\ \text{sec} =$

10. 2.50 g divided by $1.23\text{m}^3 =$

11. 2.3 g multiplied by 4.0 °C =

12. 5.3 m multiplied by 0.77 kg =

Simplify the following (solve for Y):

13) $\dfrac{10.0\text{g}\ \ 5.30\text{cm}^3}{2.31\ \text{g}} = \text{Y}$

14) $\dfrac{3.50\text{cal}^2\ \ 4.32\text{cm}^3}{2.31\ \text{g}\ \ \text{cm}^2\ \ 46.66\text{cal}} = \text{Y}$

15) $\dfrac{7.6\text{g}\ \ 4.22°\text{C}}{12.0\ \text{cal}\ \ \text{g}^3} = \text{Y}$

Now **ON A SEPARATE SHEET OF PAPER** solve for Y **SHOW STEPS AND CANCELLATION**. The best way to do this is to manipulate the equation so that Y is by itself. It should look like problems 13-15 before you finally solve it.

16) $\text{Y} = \dfrac{5.032\text{g}}{2.56\text{cm}^3}$

17) $1.03\dfrac{\text{g}}{\text{cm}^3} = \dfrac{\text{Y}}{2.56\text{cm}^3}$

18) $9.65\dfrac{\text{g}}{\text{cm}^3} = \dfrac{2.34\text{g}}{\text{Y}}$

19) $6.54\dfrac{\text{g}}{\text{cm}^3} = \dfrac{\text{Y}}{2.44\text{cm}^3}$

20) $33.2\dfrac{\text{g}}{\text{cm}^3} = \dfrac{1.5\text{g}}{\text{Y}}$

21) $\text{Y} = 0.215\dfrac{\text{cal}}{\text{g}\ \ ℃}\ \ 14.00\text{g}\ \ 5.0°\text{C}$

22) $666\text{cal} = 0.215\dfrac{\text{cal}}{\text{g}\ \ ℃}\ \ \text{Y}\ \ 4.31°\text{C}$

23) $250.9\text{cal} = \text{Y}\ \ 25.0\text{g}\ \ 15.34°\text{C}$

24) $443\text{cal} = 9.961\dfrac{\text{cal}}{\text{g}\ \ ℃}\ \ 25.0\text{g}\ \ \text{Y}$

25) $5.67\text{cal} = 0.0308\dfrac{\text{cal}}{\text{g}\ \ ℃}\ \ \text{Y}\ \ 10.0°\text{C}$

26) $617\text{cal} = \text{Y}\ \ 64.3\text{g}\ \ 38.86°\text{C}$

1) 20 cm^2 or 2.0 x 10^1 cm^2 (this would be better to show two significant digits)

2) 2.0 (no unit on this because they canceled)

3) 4.4 g (don't forget rules for significant digits)

4)6 m

5) 27 m^3

6) 2.0 cm

7) 12 cm^3

8) NP (not possible - you can't add differnt units)

9) NP

10) $2.03 \frac{g}{m^3}$

11) $9.2 g\ ℃$

12) $4.1\ m\ \ kg$

13) $Y = 22.9\ cm^3$

14) $Y = 0.140 \frac{cal\ \ cm}{g}$

15) $Y = 2.7 \frac{°C}{cal\ \ g^2}$

16) $Y = 1.97 \frac{g}{cm^3}$

17) $Y = 2.64 g$

18) $Y = 0.242 cm^3$

19) $Y = 16.0 g$

20) $Y = 0.045 cm^3$

21) $Y = 15$ cal

22) $Y = 719$ g

23) $Y = 0.654 \frac{cal}{g\ ℃}$

24) $Y = 1.78° C$

25) $Y = 18.4 g$

26) $Y = 0.247 \frac{cal}{g\ ℃}$