

Wine Math: Calculating the Proper Amount of Wine to Buy

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1. Introduction

Wine is the perfect pairing with any dinner party. Unlike food, the amount of wine for a dinner party is difficult to accurately calculate. At a dinner party with 4 people, 2 bottles may suffice while 4 may not be enough.

What is needed is a formula that considers the multiple variables beyond attendees and drinking level. This formula must include the following input variables:

- Are parents or in-laws staying in the house as part of this event?
- How many attendees are in the middle of a divorce or completed a divorce in the past 12 months?
- Are any close family members seriously ill?
- Have any close family members recently died?
- What is the distance traveled for the event?
- How many months have passed since you last saw each other?
- How many toddlers will be in the house as part of the event?

2. Attendees

Attendees are broken in three buckets: Standard, Light, and Non-Drinker. Non-drinkers are not part of any of the calculations.

TYPE OF DRINKER	DESCRIPTION
Standard	Person who imbibes on a semi-regular to regular basis.
Light	A holiday drinker. The aunt who will have a glass of wine at Christmas.
Non-Drinker	Self Explanatory.

3. Baseline Calculations

Consider the following baseline calculation where *SD* represents the number of standard drinkers and *LD* represents the number of light drinkers. The baseline is 2.25 glasses of wine / standard drinker and 1 glass / light drinker.

$$\text{Glasses} = (SD * 2.25) + (LD)$$

With a standard pour representing 4 glasses / 750 ml bottle, our base bottle count is determined by the following:

$$Bottles = \left\lceil \frac{(SD * 2.25) + LD}{4} \right\rceil$$

The limitation of the calculation above is that it does not differentiate between the need for red and white wine. Simply splitting the total assumes that the drinkers' preference will be split evenly among the two types of wine. Since this is unlikely we accommodate by adding one bottle to half of the total bottles needed.

$$Red\ Bottles = \left\lceil \frac{((SD * 2.25) + LD) / 4}{2} \right\rceil + 1$$

$$White\ Bottles = \left\lceil \frac{((SD * 2.25) + LD) / 4}{2} \right\rceil + 1$$

3. Additional Factors and Variables

For an accurate count, the following variables and additions must be considered.

VARIABLE	FRACTION OF A GLASS INCREASE
How Many Parents / In-laws are staying with you as part of the event?	0.3 / parent or in-law
How many Attendees are involved (or were recently involved) in a divorce	0.6 / involved person attending
Is there a seriously Ill Family Member	0.5
Is there a recently deceased Close Family Member	0.2
Did anyone travel more than 400 miles to attend?	0.25
How many months since you were last together with the attendees?	0.2 / month
How many toddlers (3 or under) will be at the event	0.1 / toddler

To get the new baseline for standard drinkers, we calculate as follows:

$$\begin{aligned} & Glasses\ Per\ Standard\ Drinker \\ & = [2.25 + (Inlaws * 0.3) + (Divorcing * 0.6) + (Ill * 0.5) + (Died * 0.2) \\ & + (Long\ Distance * .25) + (MonthsPassed * 0.2) + (Toddlers * 0.1)] \end{aligned}$$

To Properly offset the increase for the light drinkers utilize 1/3 of the multiplier increase as follows:

$$Glasses\ Per\ Light\ Drinker = \left\lceil 1 + \frac{((Inlaws * 0.3) + (Divorcing * 0.6) + (Ill * 0.5) + (Died * 0.2) + (Long\ Distance * .25) + (MonthsPassed * 0.2) + (Toddlers * 0.1))}{3} \right\rceil$$

Combining these to get the total glasses necessary results in the following formula:

$$Glasses = SD * ([2.25 + (Inlaws * 0.3) + (Divorcing * 0.6) + (Ill * 0.5) + (Died * 0.2) + (Long Distance * .25) + (MonthsPassed * 0.2) + (Toddlers * 0.1)]) + \left[LD * \left(1 + \frac{((Inlaws*0.3)+(Divorcing*0.6)+(Ill*0.5)+(Died*0.2)+(Long Distance*.25)+(MonthsPassed*0.2)+(Toddlers*0.1))}{3} \right) \right]$$

Utilizing a standard pour of 4 glasses / bottle:

$$Bottles = \frac{SD * \left(\begin{matrix} 2.25+(Inlaws*0.3)+ \\ (Divorcing*0.6)+ \\ (Ill*0.5)+ \\ (Died*0.2)+ \\ (Long Distance*.25)+ \\ (MonthsPassed*0.2)+ \\ (Toddlers*0.1) \end{matrix} \right) + LD * \left(1 + \frac{\begin{matrix} (Inlaws*0.3)+ \\ (Divorcing*0.6)+ \\ (Ill*0.5)+(Died*0.2)+ \\ (Long Distance*.25)+ \\ (MonthsPassed*0.2)+ \\ (Toddlers*0.1) \end{matrix}}{3} \right)}{4}$$

We now face the same limitation of choosing the correct amount of red wine vs. white wine. Following the same approach as the baseline provides us with our final count of red and white wine.

$$Red Wine Bottles = \frac{\left(SD * \left(\begin{matrix} 2.25+(Inlaws*0.3)+ \\ (Divorcing*0.6)+ \\ (Ill*0.5)+ \\ (Died*0.2)+ \\ (Long Distance*.25)+ \\ (MonthsPassed*0.2)+ \\ (Toddlers*0.1) \end{matrix} \right) + LD * \left(1 + \frac{\begin{matrix} (Inlaws*0.3)+ \\ (Divorcing*0.6)+ \\ (Ill*0.5)+(Died*0.2)+ \\ (Long Distance*.25)+ \\ (MonthsPassed*0.2)+ \\ (Toddlers*0.1) \end{matrix}}{3} \right) \right) / 4}{2} + 1$$

$$\text{White Wine Bottles} = \frac{SD * \left(\begin{array}{c} 2.25 + (\text{Inlaws} * 0.3) + \\ (\text{Divorcing} * 0.6) + \\ (\text{Ill} * 0.5) + \\ (\text{Died} * 0.2) + \\ (\text{Long Distance} * .25) + \\ (\text{MonthsPassed} * 0.2) + \\ (\text{Toddlers} * 0.1) \end{array} \right) + LD * \left(1 + \frac{\begin{array}{c} (\text{Inlaws} * 0.3) + \\ (\text{Divorcing} * 0.6) + \\ (\text{Ill} * 0.5) + (\text{Died} * 0.2) + \\ (\text{Long Distance} * .25) + \\ (\text{MonthsPassed} * 0.2) + \\ (\text{Toddlers} * 0.1) \end{array}}{3} \right)}{2} \Bigg/ 4 + 1$$

4. Conclusion

When in doubt, round up.