Worksheet - Design Custom Sized Envelope

NOTE: Skip the "Fractional Equivalent" column until instructions are provided for this later in the procedure.

1 - In Table 1 on page 2, fill in the desired envelope height and width OR the page length and width that you plan to use. Since you already know these values, you can skip the calculation for these 2 values. For example, if you know that you are starting with a page size of 10 x 6, skip the page size calculations since these are already known values.

2 - Before filling in the rest of the table, perform the **Soft Limit** and **Hard Limit** checks in Table 2 as instructed on page 2.

3 - If you filled in the envelope size, do the calculations for the page length and width. If you filled in the page size, do the calculations for the envelope height and width.

4 - At this point you will have both the page size and envelope size written down in Table 1. You now need to decide whether or not you wish to perform "tweaking" of the page size.

What is Tweaking? When using imperial measurements (inches), measurements are typically made using 1/8, 1/16, 1/32, etc. increments. You can nudge or "tweak" the page size slightly so that the page size falls on a perfect increment of 8ths, 16ths, etc. while still ensuring that the envelope size does not shrink. The process of tweaking will slightly increase the height and / or width of the envelope but it will never shrink it. This will ensure that you can start your project with a page size that falls perfectly on a 16th, 32nd, etc. of an inch. If you are using metric measurements, then there is really no point to tweaking.

5 - Choose one:

No - I do not want to perform tweaking: Continue with step 6 below.

Yes - I would like to perform tweaking: Jump to page 3 and perform the steps there. When done, continue with step 6 below.

6 - Perform the remaining Table 1 calculations. Skip the "Fractional Equivalents" column for now. When done, continue to step 7.

7 - Once all the calculations in Table 1 have been completed, you can fill in the "Fractional Equivalents" column. Note that if you use metric values there is really no need to fill in this column. In that case you can simply skip to step 14.

Fractional Equivalents

8 - Decide what fractional value you want to use for your measurements. For example, do you want measurements to the nearest 1/16th of inch? If you performed tweaking then I would suggest using the same fractional value here.

9 - Perform the calculation 1/x where x is 16 for 16ths of an inch, 32 for 32nds, etc. In this example, let's assume you want calculations to the nearest 16th of an inch. So 1/16 is equal to 0.0625. Write down this number here: [ ]

Perform steps 10 - 13 for each value calculated in Table 1.

10 - Take the number for which we want to calculate the fractional equivalent and break it up into a whole number and a fractional portion. Take the fractional portion of the number and divide by the number you calculated in step 9. For example, if we have the number 1.55, then "1" is the whole number 0.55 is the fractional portion. Take the 0.55 and divide by 0.0625 to get 8.8.

11 - Round the number you calculated in step 10 up or down to the nearest whole number. In our example, 8.8 rounds up to 9. This means that 0.55 is closest to 9/16ths.

12 - Take the whole number and add the fraction you calculated in step 11. In this example our final result is 1 9/16. You can place this result in the "Fractional Equivalent" column.

13 - Repeat from step 10 for all values in Table 1.

14 - With Table 1 filled in, layout the position of the front face and bar on the envelope as shown in the illustration on page 2.

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Project Name:

Tweaking Enabled: ☐ Yes ☐ No

If enabled, enter units used (16ths, etc.):

Known and Calculated Parameters	Formula	Decimal Result	Fractional Equivalent
EH (Envelope Height)	PL x 0.3125		
EW (Envelope Width)	PW - (PL x 0.25)		
PL (Page Length)	EH / 0.3125		
PW (Page Width)	EW + (PL x 0.25)		
TFF (Top of Front Face)	PL x 0.1875		
BFF (Bottom of Front Face)	PL x 0.5		
LFF (Left of Front Face)	PL x 0.125		
RFF (Right of Front Face)	PW - (PL x 0.125)		
TB (Top of Bar)	PL x 0.875		
BB (Bottom of Bar)	PL x 0.9375		
LB (Left of Bar)	PL x 0.25		
RB (Right of Bar)	EW		
Height of Front Face	EH		
Width of Front Face	EW		
Height of Bar	BB - TB		
Width of Bar	RB - LB		

Table 1 - Initial Calculations

Instructions

1 - See page 1 for usage instructions

2 - After all calculations have been make, refer to Figure 1 to see an illustration of where the TOP, BOTTOM, LEFT, and RIGHT of the front face and rear bar are located. You can now layout the location of the front face and the bar in an application such as Microsoft Publisher. If you place text or graphics on the bar, place them upside down.

Limits (Use Table 2 Below)

Soft Limits: If you exceed this limit, flaps will overlap but envelope can still be folded.

Hard Limits: If you exceed this limit the envelope cannot be folded. The closer you get to this limit, the smaller the bar will be. At the limit, there will be no bar at all.

Instructions: Check either one of the 2 soft limits using the information that you already know, for example, the size of the envelope. If condition is true, then no need to check hard limits and all is good. If false, you have exceeded soft limits but that may still be okay if you don't exceed hard limits. In that case, check either hard limit. If condition is true, then you have not exceeded the hard limit and the envelope can still be folded but with overlapping flaps.

Condition to Check	Formula	True / False
Envelope Size Soft Limt	EH <= (EW / 1.2)	
Envelope Size Hard Limt	EH <= (EW x 1.25)	
Page Size Soft Limt	PL <= (PW x 1.6)	
Page Size Hard Limt	PL <= (PW x 2)	

Table 2 - Soft and Hard Limits

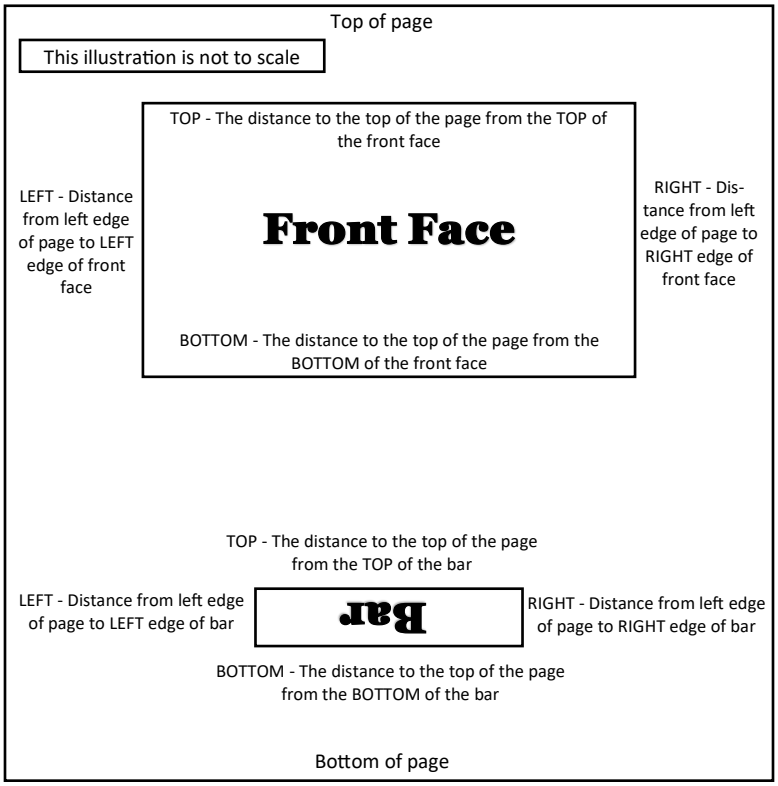

Figure 1

“Tweaking” the Page Size to the Nearest Fractional Value

Suppose that you are using imperial measuring units (inches) where values are typically measured in 1/8th, 1/16th, 1/32nd, etc. increments. If you want to adjust or “tweak” your page size to the nearest 1/8th, 1/16th, etc. for easier measuring, follow the steps below.

Copy the page length and width from page 2 to the boxes called “Original Page Length” and “Original Page Width” in Table 3 to the right.

Original Page Length	
Original Page Width	
New Page Length	
New Page Width	
Calculations to nearest	
Box 1	
Box 2	
Box 3	
Box 4	
Box 5	
Box 6	
Box 7	
Box 8	
Box 9	
Box 10	

Table 3

1 - Note the denominator of the fractional values you want to use in box 1. For example, for 1/16th inch increments, this would be “16”. For 1/32nd inch increments, this would be “32”, etc. Also place this number in the “Calculations to nearest” box. As an example, if you wanted to calculate to the nearest 16th of an inch, this would read “Calculations to nearest 16th”.

2 - Calculate 1 divided by the value in box 1 and write this in box 2.

3 - Divide the original page length by the value in box 2. Enter the result in box 3.

4 - If the value in box 3 is a whole number, skip to step 10.

5 - Take the part of box 3 after the decimal point and divide it by the number in box 2. If the result is not a whole number, tweak this up to the next highest whole number. Write the result in box 4. If the result is already a whole number, simply write the result in box 4.

6 - Divide box 4 by box 1 and write the value in box 5.

7 - Take the whole number portion of the original page length (ignore anything after the decimal point) and add the number in box 5 to this. Write the result in box 6. Also write this result in the New Page Length box.

8 - Calculate Box 6 minus the original page length. Multiply that result by 0.25. Write the result in box 7.

9 - Take the original page width and add the value in box 7. Write the result in box 8.

10 - If you arrived to this step by skipping here from step 4, then your new page length remains unchanged. Write the value for the original page length in the box called New Page Length. Otherwise, continue with step 11 below.

11 - Take the portion of box 8 after the decimal point and divide by the value in box 2. If the result is a whole number then the value you entered into box 8 is the new page width. Enter this value in the New Page Width box and skip to step 14. If the result is NOT a whole number, tweak the result up to next whole number. Write the result in box 9 and continue with step 12.

12 - Divide the value in box 9 by the value in box 1. Write the result in box 10.

13 - Take the whole number of the original page width (drop everything after the decimal point) and the value in box 10 to this. This is your new page width. Write this result in the New Page Width box.

14 - On page 2, cross out the page length and page width and write in the new page length and width that you calculated here.

15 - On page 2, cross out the envelope height and width and recalculate these using the new page length and width. You may find that the new envelope size is very slightly larger than the original size.

16 - Go back to page 1 and continue following the instructions starting with step 6.