Lindenmeyr Munroe

Estimator Information

The following reference tables are included in this section in the order listed:

Equivalent Weights

Metric Conversion Table

Paper Weight Reference Chart

Approximate Roll Weights

Paper Temperature Conditioning Chart

Lindenmeyr Munroe

Estimator Information

Equivalent Weights

Example : What is the equivalent weight of a **Sub 70 BOOK** in a **BOND** paper? Refer to **Sub 70** in the Book column. **Sub 70** in a **BOOK** paper is equivalent to **Sub 28 BOND** paper as indicated on the same line.

EQUIVALENTS	BOOK, 25 X 38	BOND, 17 X 22	COVER, 20 X 26	BRISTOL, 22.5 X 28.5	INDEX, 25.5 x 30.5
BOOK	**30**	12	16	20	25
	40	16	22	27	33
	45	18	25	30	37
	50	20	27	34	41
	55	22	30	37	45
	60	24	33	41	49
	65	26	36	44	53
	70	28	38	47	57
	75	30	41	51	61
	80	32	44	54	65
	90	36	49	61	74
	100	39	55	68	82
	120	47	66	81	98
BOND	33	**13**	18	22	27
	41	**16**	22	27	33
	51	**20**	28	34	42
	61	**24**	33	41	50
	71	**28**	39	48	58
	81	**32**	45	55	67
	91	**36**	50	62	75
	102	**40**	56	69	83
COVER	91	36	**50**	62	75
	100	40	**55**	68	82
	110	43	**60**	74	90
	119	47	**65**	80	97
	146	58	**80**	99	120
	164	65	**90**	111	135
	183	72	**100**	123	150
	238	94	**130**	160	194
BRISTOL	84	33	46	**57**	69
	99	39	54	**67**	81
	114	45	62	**77**	93
	119	47	65	**80**	97
	148	58	81	**100**	121
	178	70	97	**120**	146
INDEX	110	43	60	74	**90**
	134	53	74	91	**110**
	171	67	94	115	**140**
	208	82	114	140	**170**

Lindenmeyr Munroe

Estimator Information

Metric Conversion Table

Listed below is a conversion table showing metric weights in grams per square meter (g/m^2) for commonly used basis weights in American or English usage. **Note** that no basic size is necessary in describing the metric weight, but simply the weight in g/m^2. The United States is not at this moment officially on the metric system, but metric weights are currently in use elsewhere on the North American continent (Canada has already made the official conversion), and it is anticipated that over a period of the next few years metric weights will come into more common usage in the U.S. This simple table is provided as a familiarization device.

BOND 17X22	BOOK 25X38	COVER 20X26	BRISTOL, 23X35	BRISTOL $22^{1/2}X28^{1/2}$	INDEX $25^{1/2}X30^{1/2}$	TAG 24X36	METRIC WEIGHTS (g/m^2)
	20						30
9							34
	24						36
11							41
	30						44
13	33					30	49
	35						52
15							56
	40						59
16							60
	45					40	65
	50						67
20							74
						50	75
	60						81
24							89
						60	90
28	70						98
							104
							105
		40				70	108
32	80						114
							118
	90					80	120
36							130
							133
		50				90	135
	100						146
40				67			147
							148
							150
		60					162
					90	100	163
			100	80			175
		65					176
	120						178
		70					189
				90			197
					110		199

Lindenmeyr Munroe

Estimator Information

Metric Conversion Table (continued)

BOND 17X22	BOOK 25X38	COVER 20X26	BRISTOL, 23X35	BRISTOL $22^{1/2}$X$28^{1/2}$	INDEX $25^{1/2}$X$30^{1/2}$	TAG 24X36	METRIC WEIGHTS (g/m^2)
						125	203
		80					216
			125				218
				100			219
						150	244
					140		253
			150				262
				120			263
		100					270
						175	285
			175				306
				140	170		307
						200	325
			200				349
				160			351
		130					352
				180			395
					220		398
						250	407
				200			438

CONVERSION FORMULAS:

Given the metric weight (g/m2), convert to basis weight in pounds:

$$\frac{\text{Metric weight x Basis area in inches}}{1406.5} = \text{Basis weight in pounds}$$

Given the basis weight in pounds, convert to metric weight:

$$\frac{\text{Basis weight pounds x } 1406.5}{\text{Basis area inches}} = g/m^2$$

Note: Round off results to closest even number

Lindenmeyr Munroe

Estimator Information

Special Size Weight Calculator – Paper Weight Reference Chart

To Determine the Weight Per Thousand (M) Sheets of a Special Size: Multiply the area of the special size (length x width) by the decimal shown in light face next to the desired Substance (Sub.) **Example:** A cover 20 x 40 - Sub 65. Multiply 20 x 40 x .25 (the decimal listed in the Cover column next to Sub 65). The weight per thousand (M) sheets of 20 x 40 - Sub 65 is 200M. There may be a slight variation in poundage resulting from individual mill customs.

For Quick Weight Comparisons: Papers of different types on any given horizontal line are generally similar in weight.
Example: How does a Sub 65 cover compare in weight to a book paper? Locate Sub 65 in the Column. Read across.
Sub 65 cover (.25) is slightly lighter in weight than a Sub 120 book paper (.2526)

BOND, LEDGER		BOOK, TEXT		COVER		BRISTOL		BRISTOL		INDEX		TAG	
	BASIS		BASIS		BASIS		BASIS		BASIS		BASIS		BASIS
SUB	17X22	SUB	25X38	SUB	20X26	SUB	23X35	SUB	$22^{1/2}X28^{1/2}$	SUB	$25^{1/2}X30^{1/2}$	SUB	24X36
8	.0428	20	.0421										
9	.0481												
		24	.0505										
10	.0535	25	.0526										
11	.0588	27	.0568										
12	.0642	30	.0632										
13	.0695	33	.0695										
		35	.0737										
15	.0802												
16	.0856	40	.0842										
		45	.0947										
20	.1070	50	.1053										
24	.1283	60	.1263										
28	.1497	70	.1474	40	.1538			57	.1778				
32	.1711	80	.1684	45	.1730								
36	.1925	90	.1895	50	.1923								
40	.2138	100	.2105					67	.2090				
44	.2352			60	.2308			80	.2489	90	.2314	100	.2315
		120	.2526	65	.2500	100	.2484	82.5	.2573				
		140	.2947					90	.2807	110	.2829	125	.2894
		150	.3158	80	.3077	125	.3106	100	.3119				
				94	.3615								
				100	.3846	150	.3727	120	.3743	140	.3600	150	.3472
				110	.4231	175	.4348	140	.4366	170	.4372	175	.4051
				130	.5000	200	.4969	160	.4990			200	.4630
								180	.5614	220	.5657	250	.5787
						225	.6211	200	.6238				

Lindenmeyr Munroe

Estimator Information

Approximate Roll Weights & Linear Feet in a Roll (3" O.D. Core)

ROLL DIAMETER	ROLL WEIGHT PER INCH OF WIDTH							
	BOND	MIMEO	DUPLICATOR	LEDGER	SAFETY	OFFSET	COVER	INDEX
10"	1.71	1.45	2.14	2.14	2.25	1.96	1.59	2.17
12"	2.58	2.17	3.25	3.25	3.33	2.93	2.37	3.27
14"	3.61	3	4.52	4.52	4.62	4.12	3.36	4.53
16"	4.89	4.03	6	6	6.16	5.43	4.44	6.09
18"	6.17	5.18	7.72	7.72	7.7	6.94	5.64	7.79
20"	7.7	6.29	9.62	9.62	9.7	8.64	7	9.55
22"	9.37	7.83	11.8	11.8	11.63	10.46	8.52	11.59
24"	11.29	9.37	13.86	13.86	14.01	12.58	10.29	13.97
26"	13.21	10.78	16.42	16.42	16.56	14.86	12.09	16.68
28"	15.27	12.57	19	10	19.25	17.13	14.04	19.23
30"	17.71	14.5	21.94	21.94	22.02	19.4	16.29	22.11
32"	20.27	16.55	25.28	25.28	25.1	22.44	18.39	25.17
34"	22.84	19	28.23	28.23	28.49	25.32	20.79	28.56
36"	25.4	21.3	31.82	31.82	31.88	28.35	23.19	31.95

WEIGHT

Example: A 20" diameter roll of Bond weight 77 lbs. For each 10 inches of width.

LINEAR FEET

To calculate length of roll, use the following formula for Bond, Duplicator, Ledger, and Safety:

$$\text{Length (feet)} = \frac{\text{Weight per Inch}}{\text{Substance Weight}} \times 15{,}583$$

Example: Given a 26" diameter roll of 20 lb. Duplicator then the

$$\text{Length (feet)} = \frac{16.42 \text{ lb./inch}}{20 \text{ lb.}} \times 15{,}583 \text{ or } 12{,}794 \text{ feet}$$

To calculate the length of roll, use the following formulas for Offset, Cover, or Index:

OFFSET:

$$\text{Length (feet)} = \frac{\text{Weight per Inch} \times 39{,}583}{\text{Substance Weight}}$$

COVER:

$$\text{Length (feet)} = \frac{\text{Weight per Inch} \times 21{,}667}{\text{Substance Weight}}$$

INDEX:

$$\text{Length (feet)} = \frac{\text{Weight per Inch} \times 32{,}406}{\text{Substance Weight}}$$

Lindenmeyr Munroe

Estimator Information

Paper Temperature Conditioning Chart

Coated paper requires conditioning, particularly in cold weather. Unwrapping paper while cold and allowing it to stand in the pressroom "will very quickly develop a bad case of waviness because its low temperature chills the air immediately surrounding the pile and raises the relative humidity to approximately the saturation point, or 100 per cent. Under these conditions, the edges of the sheet may pick up 10 to 12 per cent of moisture before the pilke warms up. As the temperature of the pile rises, this excess of moisture will be partially given off, but in the process the moisture content of the paper at the edges will follow the desorption curve and will not return to the same moisture content as the rest of the sheet. While the waviness may be reduced somewhat, it will not disappear." – (Lithographic Technical Foundation Bulletin 8).

The cubic feet per skid is the length x width x height, all in inches, and dividing the total by 17728. The temperature difference is determined by noting the outdoor temperature at the time the paper arrives and the temperature of the pressroom. The number of hours indicated in the chart is the time the paper should remain in its original wrapping unopened to come into balance with the pressroom temperature.

	TEMPERATURE DIFFERENCE							
	10°	15°	20°	25°	30°	40°	50°	60°
6 cu.ft.	5 hrs.	9 hrs.	12 hrs.	15 hrs.	18 hrs.	25 hrs.	35 hrs.	54 hrs.
12 cu. ft.	8 hrs.	14 hrs.	19 hrs.	22 hrs.	27 hrs.	38 hrs.	51 hrs.	78 hrs.
24 cu. ft.	11 hrs.	16 hrs.	23 hrs.	28 hrs.	35 hrs.	48 hrs.	67 hrs.	100 hrs.
48 cu.ft.	14 hrs.	19 hrs.	26 hrs.	32 hrs.	38 hrs.	54 hrs.	75 hrs.	109 hrs.
96 cu. ft.	15 hrs.	20 hrs.	27 hrs.	34 hrs.	41 hrs.	57 hrs.	79 hrs.	115 hrs.

Lindenmeyr Munroe

Estimator Information

Paper Thickness By Grade

Since Printing Production cannot be intelligently evaluated without due consideration to the caliper (thickness) of the grade to be printed, we list below excerpts from PIA Production PAR System of Production Control. The thicknesses shown are approximate. Paper thickness will vary from mill to mill.

GRADE	BASIS	AVERAGE THICKNESS
BOND	9	0.002
17 x 22	13	0.0025
	16	0.003
	20	0.004
	24	0.0045
BRISTOL - SMOOTH	821/2	0.00675
$22^{1/2}$ x $28^{1/2}$	90	0.00775
	100	0.00875
	120	0.01025
	140	0.01225
	160	0.01425
	180	0.0165
	200	0.0175
23 x 35	100	0.00675
	110	0.00775
	125	0.00875
	150	0.01025
	175	0.01225
	200	0.01425
	225	0.01625
	250	0.0175
BRISTOL - ANTIQUE	90	0.0095
$22^{1/2}$ x $28^{1/2}$	100	0.0105
	120	0.0125
	140	0.0145
	160	0.017
	180	0.019
	200	0.02
23 x 35	110	0.0095
	125	0.0105
	150	0.0125
	175	0.0145
	200	0.017
	225	0.019
	250	0.02
BRISTOL - VELLUM	57	0.0077
25 x 38	67	0.009
	80	0.0103
	100	0.0126
COATED BOOK	60	0.003
25 X 38	70	0.0035
	80	0.004
	100	0.0055
	120	0.006
COATED COVER	50	0.005
20 x 26	60	0.006
	65	0.0065
	80	0.008
	100	0.01

GRADE	BASIS	AVERAGE THICKNESS
COVER - ANTIQUE	50	0.007
20 x 26	65	0.009
	80	0.0105
	100	0.0135
	130	0.018
EGGSHELL	50	0.0045
25 X 38	60	0.005
	70	0.006
	80	0.0065
ENGLISH FINISH	45	0.0025
25 x 38	50	0.0035
	60	0.004
	70	0.0045
INDEX	90	0.007
$25^{1/2}$ X $3^{1/2}$	110	0.0085
	125	0.00875
	140	0.0115
	170	0.014
	220	0.0175
LEDGER	24	0.004
17 x 22	28	0.005
	32	0.00525
	36	0.00575
	40	0.0065
	44	0.007
OFFSET	50	0.004
25 x 38	60	0.0045
	70	0.005
	75	0.0074
	80	0.006
	100	0.0075
	120	0.009
SUPER	50	0.0025
25 X 38	60	0.003
	70	0.004
TAG	80	0.006
24 x 36	100	0.0075
	125	0.009
	150	0.011
	175	0.0125
	200	0.015
	250	0.018
	300	0.0225
TEXT	60	0.0045
24 x 38	70	0.0065
	80	0.007
VELLUM	20	0.004
	24	0.005
	28	0.006
	32	0.0065
	36	0.0075
	40	0.0085

Lindenmeyr Munroe

Estimator Information

Pages Per Inch: Instructions

To make four thicknesses, or eight pages, fold a sheet of paper twice. With a micrometer/caliper, read the thickness of four sheets in points or thousandths of an inch. In the column headed "pages per inch," you will find the number of pages per inch. These will correspond to the micrometer reading.

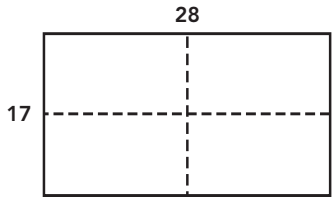
CALIPER FOUR SHEETS	PAGES PER INCH	CALIPER FOUR SHEETS	PAGES PER INCH	CALIPER FOUR SHEETS	PAGES PER INCH
8.8	910	18	444	29	276
8.9	900	18.5	432	29.5	272
9	888	19	420	30	266
9.4	850	19.5	410	30.5	262
9.5	842	20	400	31	258
10	800	20.5	390	31.5	254
10.5	762	20.6	397	32	250
11	726	20.7	386	32.5	246
11.1	720	21	380	33	242
11.5	696	21.5	372	33.5	238
12	666	22	364	34	234
12.2	656	22.5	356	34.5	232
12.3	650	23	348	35	228
12.5	640	23.5	340	35.5	224
13	614	24	332	36	222
13.4	596	24.5	326	36.5	218
13.5	592	25	320	37	216
14	570	25.5	414	37.5	212
14.5	552	26	308	38	210
15	532	26.2	318	38.5	208
15.5	516	26.5	302	39	204
16	500	27	296	39.5	202
16.5	484	27.5	290	40	200
17	470	28	286		
17.5	456	28.5	280		

Lindenmeyr Munroe

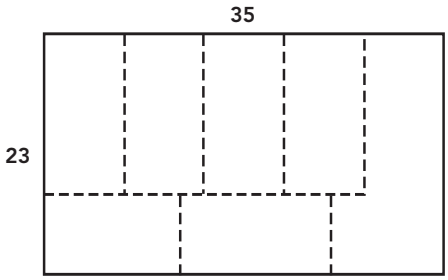
Estimator Information

Optimal Cut

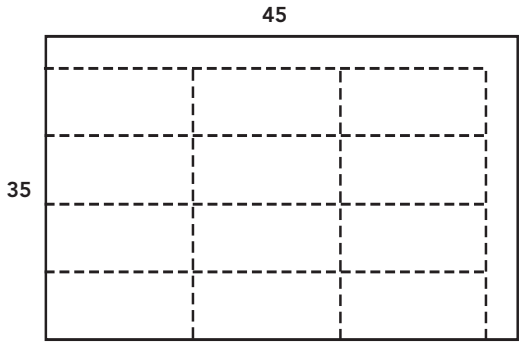
Number of $8^{1/2}$ x 14 sheets in large sheet.



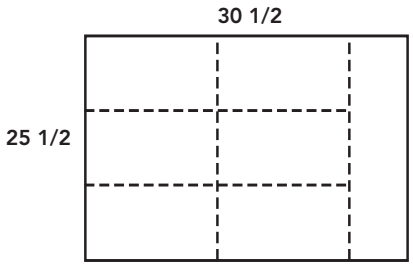
4 Out: Grain Long



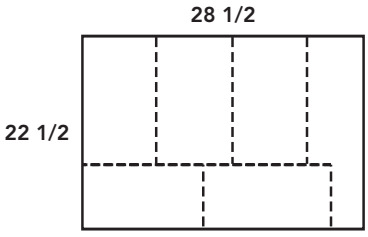
6 Out: Grain Short



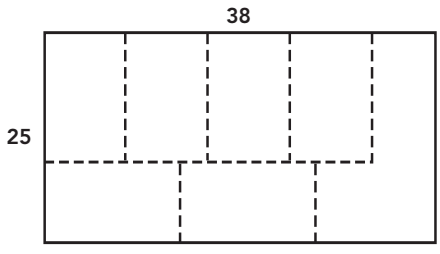
12 Out: Grain Long



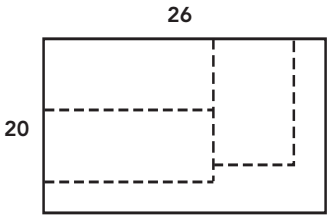
6 Out: Grain Short



5 Out: Mixed Grain



6 Out: Grain Short

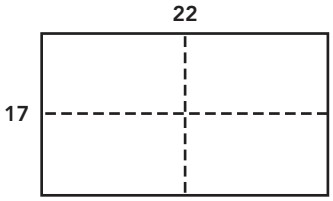


5 Out: Mixed Grain

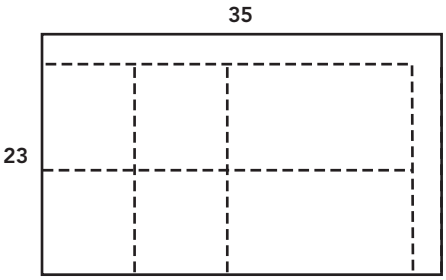
Lindenmeyr Munroe

Estimator Information

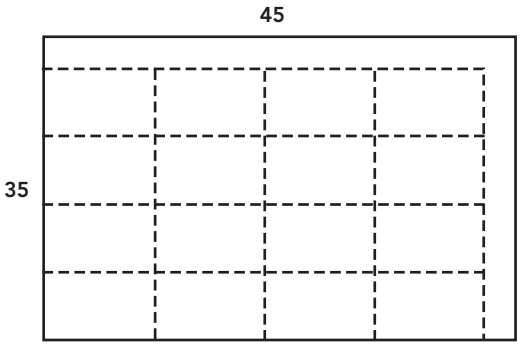
Number of $8^{1/2}$ x 11 sheets in large sheet.



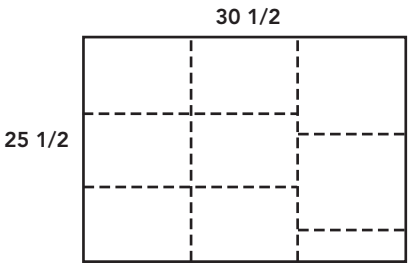
4 Out: Grain Long



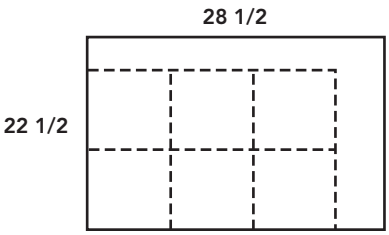
8 Out: Grain Short



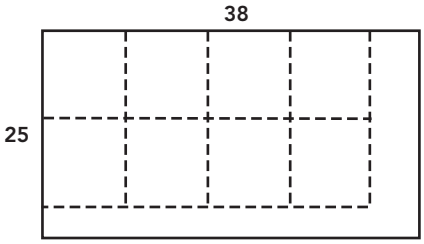
16 Out: Grain Long



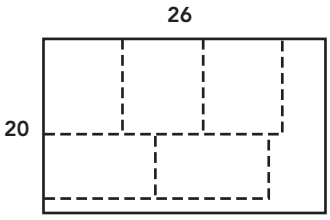
6 Out: Mixed Grain



6 Out: Grain Short



8 Out: Grain Short



5 Out: Mixed Grain

Lindenmeyr Munroe

Estimator Information

Cutting Chart

This chart represents the maximum number of pieces obtainable from a specific size using combination cuts.
Your actual results may be different if you specify grain direction.

PARENT SHEET SIZE	FINISHED SHEET SIZE										
	3" X 5"	4" X 6"	5" X 8"	7 1/4" X 10 1/2"	8" X 10 1/2"	8 1/2" X 11"	8 1/2" X 14"	9" X 12"	10" X 14"	11" X 17"	12" X 18"
8 1/2" X 11"	5	3	2	1	1	1	•	•	•	•	•
8 1/2" X 14"	6	4	2	1	1	1	•	•	•	•	•
9" X 11"	6	3	2	1	1	1	•	•	•	•	•
11" X 17"	10	6	4	2	2	2	1	1	1	1	•
12" X 18"	12	8	4	2	2	2	1	2	1	1	1
12 3/8" X 18 1/8"	12	8	4	2	2	2	1	2	1	1	1
12 1/2" X 19"	12	8	4	2	2	2	1	2	1	1	1
14" X 20"	16	10	4	2	2	2	2	2	2	1	1
17" X 22"	21	14	8	4	4	4	2	2	2	2	1
17" X 28"	27	18	10	4	4	4	4	3	2	2	1
17 1/2" X 22 1/2"	21	14	8	5	4	4	3	2	2	2	1
19" X 24"	28	18	9	5	5	4	3	4	2	2	2
19" X 25"	32	18	10	5	5	4	3	4	2	2	2
20" X 26"	32	20	12	5	5	5	3	4	3	2	2
22" X 28"	39	25	12	6	6	6	4	5	4	3	2
22" X 34"	44	29	16	9	8	8	4	5	4	4	2
22 1/2" X 28 1/2"	39	25	12	6	6	6	5	5	4	3	2
22 1/2" X 34 1/2"	44	28	16	9	8	8	6	5	4	4	2
22 1/2" X 35"	49	29	18	9	8	8	6	5	4	4	2
23" X 29"	41	25	14	8	8	6	5	5	4	3	2
23" X 35"	51	29	18	9	8	8	6	5	4	4	2
24" X 36"	56	36	21	9	9	8	6	8	5	4	4
25" X 38"	61	36	23	10	9	8	6	8	5	4	4
25 1/2" X 30 1/2"	50	30	18	8	8	8	6	6	5	3	3
25 1/2" X 38"	61	36	23	10	9	8	7	8	5	4	4
26" X 38"	61	36	23	10	9	8	7	8	5	4	4
26" X 40"	65	40	25	11	11	10	7	8	6	4	4
26 1/2" X 40"	65	40	25	11	11	10	7	8	6	4	4
28" X 40"	72	46	25	11	11	10	8	9	8	4	4
28" X 44"	77	51	40	12	12	12	10	9	8	6	4
28 1/2" X 34 1/2"	61	39	20	9	9	9	8	8	6	5	3
35" X 45"	105	62	36	18	16	16	12	13	9	8	4