

copyfitting

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formulas & procedural explanations

Determining space required by a given body of text,
as well as making text fit a given space.

Or...

How to look like a genius designer and
save your colleagues and clients from themselves.

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DINOSAUR PUBLISHING • MONROE, LOUISIANA

copyfitting

To find the total lines of type to be set from a manuscript:

Divide the Manuscript character count by the characters-per-line of the desired type.

$$\text{manuscript} \div \text{ch. per line} = \text{total lines}$$

manuscript character count

The manuscript character count equals all characters, punctuation, numerals, and spaces in a given body of text. Manuscript character count can be obtained by multiplying the average characters-per-line in the manuscript, the average number of lines per page, and the number of pages in the manuscript.

characters-per-line

The number of typeset characters-per-line can be obtained by calculating an average for the number of characters in four or five lines of a sample of type set in the desired font, size, and line length.

or...

Multiply the "characters-per-pica" number for that particular type font by the line length in picas.

$$\text{ch. per pica} \times \text{line length} = \text{ch. per line}$$

For example:

If 10 point palatino has 2.67 characters-per-pica,

a 21 pica line length would contain 56.07 characters. **2.67 X 21 = 56.07**

Professional reference charts of characters-per-pica have been available in the past for commonly used text fonts.

However, since the advent of desktop publishing systems, the abundance of new look-alike fonts, and the relative tracking and kerning of each software system and version, it is probably safer to create your own reference list for type fonts you commonly use.

characters-per-pica

Characters-per-line counts can be divided by line length to produce characters-per-pica information.

ch. per line ÷ line length = ch. per pica

For example:

If a sample of type is found to have an average of 64.24 characters at a line length of 22 picas, it has 2.92 characters-per-pica.

$64.24 \div 22 = 2.92$ characters-per-pica

The neat thing about knowing characters-per-pica is that you can quickly calculate legible line length parameters for text types.

FASSETT'S THEOREM OF LEGIBLE LINE LENGTH

Line lengths that contain **45 to 65 characters** (characters include letters, numerals, punctuation, and spaces) are legible. Line lengths exceeding these limits challenge legibility.

This does not mean that 40 characters or 75 characters cannot be used, but should be more closely examined for legibility as well as aesthetics.

longest legible line length

65 characters divided by characters-per-pica of a particular font determines the longest desirable line length of that particular font, in picas.

65 characters ÷ ch. per pica = longest line length

For example: if our type has 2.92 characters in one pica.

$65 \div 2.92 = 22.26$ picas.

shortest legible line length

45 characters divided by characters-per-pica of a particular font determines the shortest desirable line length of that particular font, in picas.

45 characters ÷ ch. per pica = shortest line length

For example: if our type has 2.92 characters in one pica.

$$45 \div 2.92 = 15.41 \text{ picas.}$$

These line lengths could be rounded off to the nearest pica or half pica for ease of layout.

calculating total lines of type set from a manuscript.

We'll use a manuscript with 128,000 characters. and a 10 point type with 2.92 characters-per-pica. We have already determined that legible line lengths exist between 15.5 and 22.5 picas. Let's use a 20 pica line length.

ch. per pica X line length = ch. per line

$$2.92 \times 20 = 58.4 \text{ characters-per-line.}$$

Now divide Manuscript character count by characters-per-line of desired type.

manuscript ÷ ch. per line = total lines

$$128,000 \div 58.4 = 2191.7 \text{ lines of type.}$$

Round off to next line **2192**, since a portion of a line takes the same vertical space as a whole line.

galley depth

In the days of metal typesetting, type was cast from molten metal and ejected from the machine's mold into a tray called a galley. This seemingly endless column of type was theoretically as long as the particular manuscript until it was composed into pages. In the early days of computerized phototypesetting, the galley would be a strip of photo paper or film ejected in long rolls. These would be cut apart by a "paste-up" artist and composed into pages.

The galley depth is the total depth of the type set from a manuscript. This depth is usually given in picas or inches. Inches are predominantly used in the newspaper world where space is allotted and sold in inches.

Picas are usually easier for typographers since picas are the standard unit of measure and more easily broken into smaller units.

To calculate galley depth, multiply the total number of typeset lines by the line space required for the line. (type size plus additional leading in points).

total lines X line space = galley depth in points

If the type is 10/10, (10 point type set solid no additional leading), the total lines would be multiplied by a line space of 10. If the type is 10/11, (10 point type set with an additional 1 point leading), the total lines would be multiplied by a line space of 11.

In our sample: 2192 lines of 10/10 **2192 X 10 = 21920 points.**

galley depth in picas

Convert points to picas by dividing by 12.
Since there are twelve points per pica.

points ÷ 12 = picas

galley depth in inches

Convert picas to inches by dividing by 6.
Since there are six picas per inch.

picas ÷ 6 = inches

In our sample: 2192 lines of 10/10 = 21920 points

21920 ÷ 12 = 1826.6 picas. 1826.6 ÷ 6 = 304.4 inches.

If we add 1 point of leading: 2192 lines of 10/11 = 24112 points.

24112 ÷ 12 = 2009.3 picas. 2009.3 ÷ 6 = 334.8 inches.

An increase in galley depth of 30.4 inches.

If we add another 1 point of leading: 2192 lines of 10/12 = 2192 picas.
(each line of 12 is one pica, no conversion is necessary)

2192 ÷ 6 = 365.3 inches.

An increase in galley depth of another 30.5 inches.

if type doesn't fit!

If **type runs long**, the following solutions might be considered: less leading, smaller type size, longer line length, condensed type, change layout, request author edit.

Conversely **if type runs short**: more leading, larger type size, shorter line length, expanded type, change layout, enlarge heads/photos, use fillers/call-outs.

determining page layouts

Many factors, aesthetic/legibility/printing practicalities (such as quantity, press and paper), determine page size and margins.

Let's take a hypothetical page layout for our galley.

An 8.5" x 11" page is **51 picas x 66 picas**.

columns

We can easily guess that a two column layout will be the most practical for our **20 pica line lengths**. If we select a **2 pica gutter** to separate the columns, we have a horizontal requirement of 42 picas.

$20 + 20 + 2 = 42$ pica horizontal space

left and right margins

If we subtract 42 picas from our page width of 51 picas, we have 9 picas left for the outside left and right margins.

$51 - 42 = 9$ picas left for margins

$9 \text{ picas} \div 2 = 4.5$ picas for each margin.

Some binding situations may require inside margins to be larger.

top and bottom margins

Let's use a **5 pica margin at the top** of the page and a **6 pica margin at the bottom**.

This would easily accommodate any header, footer, or page number.

$66 - 5 - 6 = 55$ picas for column depth.

In our two column layout, this means

$55 + 55 = 110$ picas of type per page.

number of pages

galley depth in picas \div type per page in picas =
total pages

Our galley depth set 10/12 = 2192 picas.

2192 \div 110 = 19.9 pages.

consider signatures

Since the minimum signature size for publication would be four pages. The page total must be in multiples of four. Therefore 20 pages will probably not be enough.

We will certainly have headlines and most probably photos, graphics, call outs, side bars, and mastheads.

If we go to 24 pages and cannot fill them, we can use more leading, larger type size, shorter line length, expanded type, change layout, enlarge heads, photos, call-outs, or add fillers.

Or, we can keep 20 pages and consider less leading, smaller type size, longer line length, condensed type, change layout, or request an author edit.

In any event, copyfitting allows design control, and being in control is a very good feeling.



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