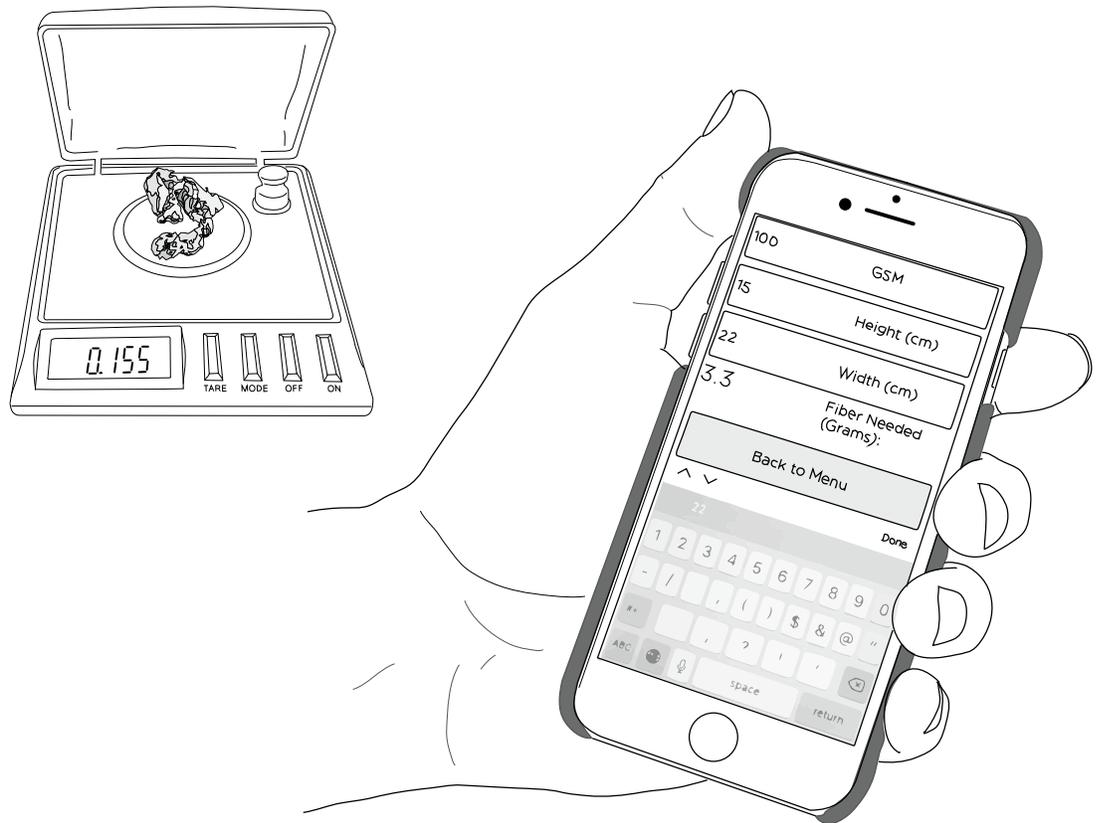


Determinate Hand Papermaking

III

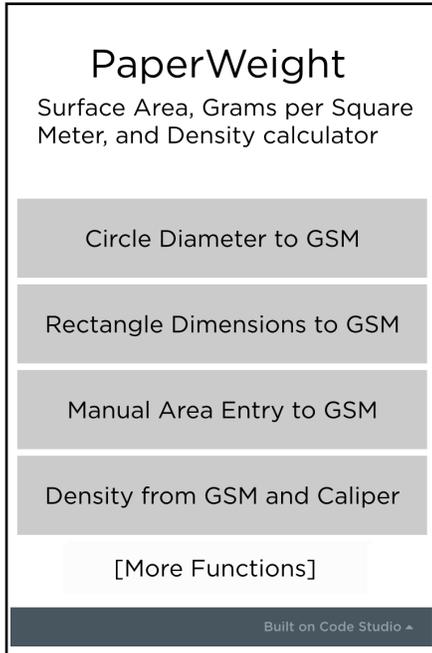
Describing the weight of paper in grams per square meter



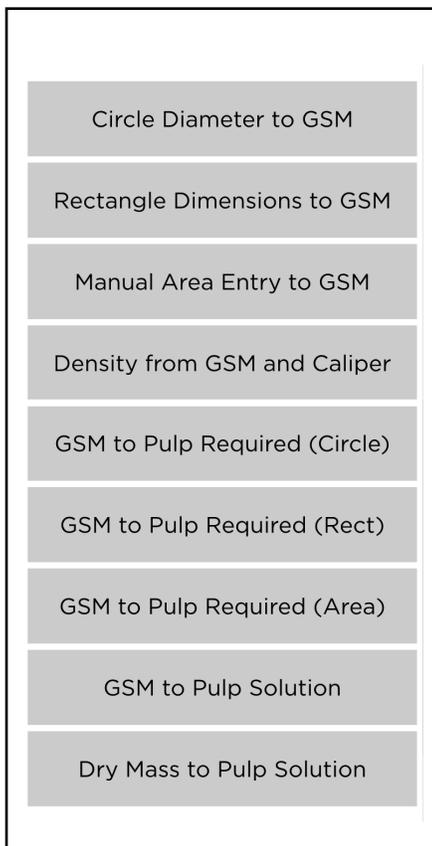
Text and illustrations by
Donald Farnsworth
2017

Describing the weight of paper in grams per square meter

PaperWeight



PaperWeight Menus



Having the ability to determine the “weight” of a sheet of paper gives us the data necessary to calculate the pulp needed for the creation of a paper of the same weight. For example, in the case of a paper conservator wishing to make paper for an infill, knowing the weight of the document to be repaired is critical to determining the quantity of dried fiber necessary to form a matching sheet.

GSM: Paper weight in the metric system is expressed in **grams per square meter** (gsm or g/m^2): that is, if any given sheet could theoretically be enlarged to a 1 x 1 meter size without changing other variables such as density, what would it weigh?

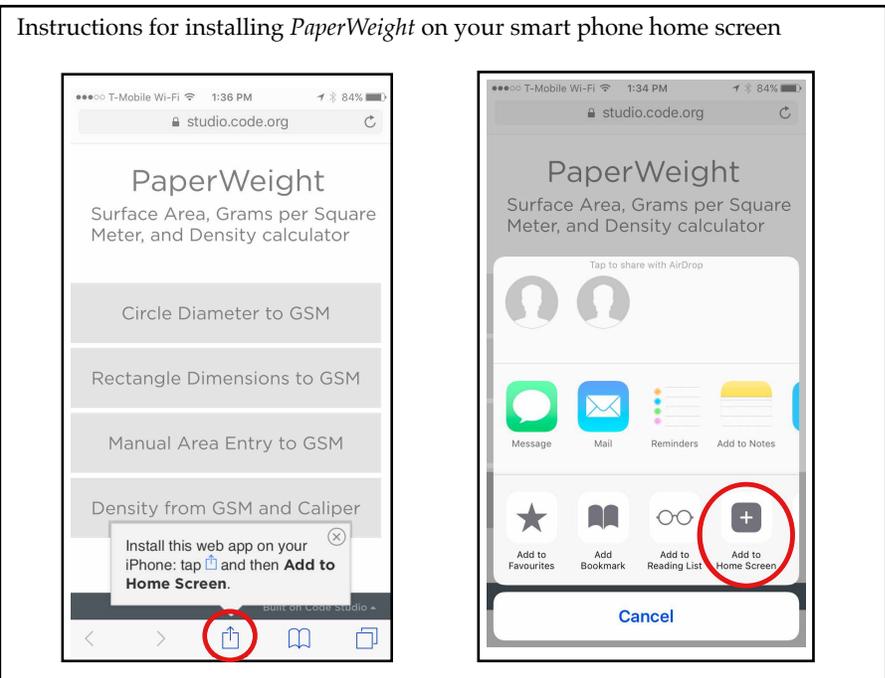
To find the gsm (g/m^2) of a rectangular sheet, use this straightforward equation:

$$(\text{mass (g)} \times 10,000) \div \text{sq cm} = \text{gsm}$$

PaperWeight: We have created a free web-based app called *PaperWeight* to make calculation of gsm and density fast and easy. (The app was made using the open-source code.org, with coding help from Jordan Grelling).

Access the app on your desktop or mobile browser: <http://bit.do/paperweight>

Simply enter the variables of mass, height & width (or in the case of circular paper, mass & diameter) and the *PaperWeight* app calculates the corresponding gsm. In the **GSM to Pulp Required** menu, enter the variables of gsm and dimensions to calculate the required quantity (mass) of raw material (fiber) needed to make the specified weight sheet.



PaperWeight examples:

<p>Circle Diameter to GSM</p> <p>.183 Mass (grams)</p> <p>5.7 Diameter (cm)</p> <p>71.715 Grams per Square Meter</p> <p>Back to Menu</p> <p> &  = gsm</p>	<p>Rectangle Dimensions to GSM</p> <p>1.6 Mass (grams)</p> <p>15 Height (cm)</p> <p>10 Width (cm)</p> <p>106.667 Grams per Square Meter</p> <p>Back to Menu</p> <p> &  = gsm</p>	<p>Manual Area Entry to GSM</p> <p>1.8 Mass (grams)</p> <p>144 Surface Area (sq. cm)</p> <p>125 Grams per Square Meter:</p> <p>Back to Menu</p> <p> &  = gsm</p>	<p>Density from GSM and Caliper</p> <p>89 Calculated GSM</p> <p>22 Caliper Reading (microns)</p> <p>Submit Value Values: 22</p> <p>4.045 Density (g/L)</p> <p>Back to Menu</p>
<p>Enter mass, diameter to find gsm</p>	<p>Enter mass, height & width to find gsm</p>	<p>Enter mass & surface area to find gsm</p>	<p>Enter gsm & caliper to find density</p>
<p>GSM to Pulp Required (Circle)</p> <p>82 GSM</p> <p>5.7 Diameter (cm)</p> <p>0.209 Fiber Needed (grams):</p> <p>Back to Menu</p> <p>gsm &  = </p>	<p>GSM to Pulp Required (Rect)</p> <p>85 GSM</p> <p>14 Height (cm)</p> <p>10 Width (cm)</p> <p>1.19 Fiber Needed (Grams):</p> <p>Back to Menu</p> <p>gsm &  = </p>	<p>GSM to Pulp Required (Area)</p> <p>90 GSM</p> <p>180 Surface Area (sq. cm)</p> <p>1.62 Fiber Needed (grams):</p> <p>Back to Menu</p> <p>gsm &  = </p>	<p>GSM to Pulp Solution</p> <p>120 GSM</p> <p>1 Deckle Depth (cm)</p> <p>12 Pulp Solution Concentration (g/L):</p> <p>Back to Menu</p> <p>gsm = </p>
<p>Enter gsm, diameter to find grams of dry pulp required for the given gsm</p>	<p>Enter gsm, height & width to find grams of dry pulp required for the given gsm</p>	<p>Enter gsm & surface area to find pulp needed</p>	<p>Enter gsm & deckle depth to find pulp concentration</p>

<http://bit.do/paperweight>

Supplies & fiber: Carriage House Paper, Brooklyn NY
www.carriagehousepaper.com

Supplies & fiber: Twinrocker, Indiana
www.twinrockerhandmadepaper.com

Evolon (polyester/polyamide microfiber material): Atlantic Papers, Ivyland, PA
www.atlanticpapers.com

Churro felt: Lana Dura
www.lanadura.com

Small mould, pressing block, burnishers: Miguel Mendoza / M Squared Fine
Woodworking, Oakland, CA
Miguel.msquared@gmail.com, (510) 832-2822

Breather Mesh: <http://veneersupplies.com>

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