

Demystify MYSTERY YARNS

with an easy-to-make
yarn balance

Weavers have long been lucky to have available the McMorran yarn balance to determine the yards per pound of an unknown yarn. To use the balance, you fold a piece of yarn over the triangular cutout with equal yarn length on both sides (see Photo a; for fine yarns note that the balance must be at the edge of a table or counter so the length of yarn can hang freely). Then you trim the ends until the balance becomes horizontal (Photo b). Next, you measure the length of the trimmed strand in inches and multiply by 100. The result is the number of yards in one pound (8" or 800 yards per pound for our yarn; see Photo e).

The equation that is the basis for how the balance works looks like this (if you are not fascinated by math, skip to "Making your own balance"):

$$\frac{1}{3,600} \times 3,600 = 1$$

1/3,600 represents the weight (in pounds) of the triangle that is missing from the balance. It also represents the



Christina Hammel
of Southampton,
Massachusetts, teaches
workshops and is the
Director of Weaving at
the Hill Institute.

weight of the yarn that is responsible for bringing the arm into balance. The yarn's length (in inches) equals the amount found in 1/3,600th of a pound.

When that yarn's length is multiplied by 3,600, the result is the number of inches in one pound of that yarn. The inches per pound are then divided by 36 to find the yards per pound. For an 8" strand, for example, $8" \times 3,600$ divided by 36 (inches per yd) = 8×100 or 800 yards per pound. Users are therefore instructed simply to multiply the yarn's length by 100 to find the yards per pound.

Making your own balance

The bamboo skewer (or wooden dowel) balance works on the same principle as the McMorran Balance with only a slight difference. Start with a #12 Extra Thick Bamboo Skewer sold in grocery stores (trim off the pointed ends, leaving it about 11" long) or use hardwood dowels, $\frac{3}{16}$ " in diameter by 12" long, sold in craft stores.

Fold a 12" piece of yarn (such as 5/2 pearl cotton) in half and tie the ends in an overhand knot. At the looped end, form a lark's head knot and slip it around the bamboo skewer; see Photo c. Position the lark's head knot at the center so that the bamboo skewer rests in a horizontal position when you hold onto the knotted end. Glue lark's head in place.

So you have boxes of mystery yarn that came with the loom you just bought for a bargain price. And you've long been amassing unknown cones from guild auctions, yarn trades, and the occasional garage sale. How to use them? Many projects in Handwoven (and ideas of your own) call for using a variety of specific yarns you don't have. Or, a project calls for a certain yarn in green, but you have an unknown green yarn—can you substitute? If only you knew the yards per pound of the yarn on your mystery cone! If you did, you'd also be able to figure out how many yards there are.

CHRISTINA HAMMEL

Now, instead of removing a triangular piece equaling 1/3,600th of a pound at one end of the skewer, add a piece of yarn that weighs 1/3,600th of a pound (the control yarn). To determine the amount of a control yarn to add, multiply the yards per pound of that yarn by 36 to get the number of inches per pound and then divide by 3,600: for 5/2 cotton at 2,100 yards per pound, for example, there are 75,600"/pound, so a piece measuring 21" should be used:

$$\frac{1}{3,600} \times 75,600" = 21"$$

You can use 5/2 cotton or determine the appropriate length for another yarn.

Using the skewer balance

To determine the yards per pound of an unknown yarn using the bamboo skewer balance, start by taping a pencil or another skewer onto a flat surface such as a table or a countertop with at least half of the pencil extending out from the surface so the balance can move freely (Photo d).

Slide the loop of yarn at the center of the balance over the pencil. Fold the control yarn in half and form a lark's head knot at the center. Slip this knot around the bamboo skewer and position about 1" from one of the ends. At the same distance from the other end, attach a long piece of the unknown yarn. (You can use

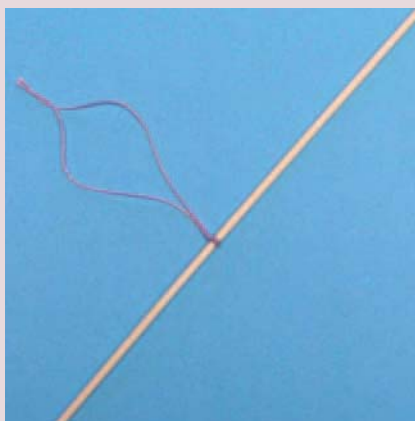
YARN BALANCE AT-A-GLANCE



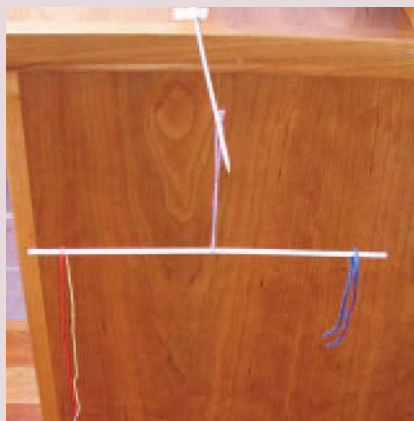
a. Place a strand of the unknown yarn in the triangle of the balance (let the yarn hang off the edge of table or counter).



b. Trim off small pieces of the yarn until the balance swings to become horizontal.



c. Attach a cord to the center of the skewer with a lark's head knot.



d. Place the control yarn on one side, the unknown on the other; trim until balanced.



e. Measure the trimmed yarn.

Yards to the unit

Cotton, Tencel, rayon	840
Spun silk (English system)	840
Spun silk (French system)	496.5 ¹
Wool (worsted)	560
Wool (woolen, Philadelphia system)	300 ²
Wool (woolen, American system)	1,600
Linen (hemp, jute, and ramie)	300 ³

¹ reached this number by converting 1,000 meters in one kilogram to yards in one pound.

² Davison's *A Handweaver's Pattern Book* lists 300. Elizabeth's Fiber & Yarn Store gives 256.

³ also from Elizabeth's Fiber & Yarn Store.

Resources

Davison, Marguerite Porter. *A Handweaver's Pattern Book*. Swarthmore, Pennsylvania: Marguerite P. Davison, 1977, p. ix.

Grandor Industries (McMorran Balance), 1613 Baccharis Ave., Carlsbad, CA 92009, (760) 929-8581, egdjackson@webtv.net.

Griswold, Alice. *Weaving Solutions: Shortcuts, Tips and Ideas for the Handweaver*. Milan: A & G Publications, 2000.

Ligon, Linda, and Marilyn Murphy, eds. *The Weaver's Companion*. Loveland, Colorado: Interweave Press, 2001.

Osterkamp, Peggy. "Table of Base Counts of Threads." *Winding a Warp and Using a Paddle. New Guide to Weaving Number 1*. Sausalito, California: Lease Sticks Press, 2005. pp. 113-114.

a lark's head to secure this yarn, too, to prevent the yarn from sliding off the end of the skewer.) Trim off the ends of the unknown yarn until the balance comes to rest in a horizontal position as in Photo d. Pull the trimmed yarn off the end of the skewer, measure its length in inches as before (Photo e), and multiply this number by 100. The answer is the number of yards per pound.

Other applications

Once you know the yards per pound of the unknown yarn, you can figure out the yarn's size (3/2 cotton, 8/2 wool, etc.). You'll need some additional information: yarn type, yards to the unit, and the number of plies. What is meant by "yards to the unit"? Every type of yarn (cotton, wool, linen, etc.) has a unit of measurement per pound. Cotton yarn is

measured according to the number of 840-yard hanks that weigh one pound (see the Yards to the Unit chart).

For example, a singles No. 1 cotton yarn (1/1 cotton; the top number is the size and the bottom number is the ply) has 840 yards per pound. 10/2 cotton is ten times finer so it has ten times the yards per pound (840 × 10), but since it is 2-ply it reaches one pound twice as quickly (divide 8,400 by 2 = 4,200 yd/lb).

If you have an unknown 2-ply cotton yarn that you have determined with the balance is 1,250 yd/lb, use this formula to determine its size:

$$\text{yd/lb} = \frac{\text{size} \times \text{yd to the unit}}{\text{ply}}$$

or

$$\text{size} = \frac{\text{yd/lb} \times \text{ply}}{\text{yd to the unit}} \quad \text{size} = \frac{1,250 \times 2}{840}$$

$$\text{size} = 2.97 \text{ or } 3/2 \text{ cotton}$$