
Master Weaver Handbook

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Competency Profiles

Level 1
Level 2

Master Weaver Guidelines and Standards

Guidelines

Workbooks

Each student is encouraged to keep a workbook (notebook, sketchbook) which could include:

- the yarns sampled and used;
- calculations of warp and weft;
- sampling;
- exercises from the notes;
- size and tactile changes in finishing;
- ideas for future weaving, sources of ideas;
- suggestions for improvement in sett, beat, yarns, threading, treadling, tie-up, and tension.

Although this book will not be given a mark, it should be submitted to the marker, so that suggestions may be given to help the student make these workbooks more valuable as tools for future learning and record keeping.

Record Sheets

These are to be completed so that another weaver could take your record sheet and reproduce the design as you wove it. Sample copies are included in sections 11 and 12 of this handbook, and at the end of the modules for each level. Photocopy as needed.

All details (threading, treadling, drawdown, warp and weft yarns with 6" samples, source of notes, and so forth) must be filled in for each woven assignment. Make sure the record sheet and the assignment are attached or linked.

Presentation

Presentation is important. Weaving and notes should be arranged so as to arrive at the marker uncrushed and in good order. Assignment notes should be typed. Record sheets should be printed neatly. (This does not apply to the workbook)

Marks

The pass mark for this level is a C (62-66%). Marks may be withheld if a student is asked to re-do an assignment. This level must be completed and a passing grade received before moving on to Level II.

Standards

Size

It is important to be able to weave to size. Note the instructions for size on the assignment. Take careful measurements of your woven pieces to determine the amount of loom take-up and shrinkage. These should be recorded for future use in your workbook. The following measurements should be taken:

- with the work on the loom, still under tension;
- work off the loom, before finishing;
- after finishing, washing and/or steaming.

Threading

Warp threads must be entered correctly in heddles and dents, and follow the threading draft exactly. Errors in threading may result in the student being requested to re-do the assignment.

Treadling

Errors in treadling may result in the student being requested to re-do the assignment.

Warp

Sett: Thread, reed, and sleying must all harmonize to produce a fabric suited for the purpose intended, as stated in the assignment, or by the weaver.

Tension: To produce good weaving, the weaver must start with a good warp. Poor weaving can be done on a good warp, but good weaving cannot be done on a poorly wound warp. Warp tension should be even across the entire width of the warp.

Edges

Selvages should be even, without weft loops, or with the weft drawn in too tightly so that breakage occurs. Closer set edges and double threaded edges are not acceptable (except where instructed to do so in the assignment.)

Knots

Knots in either the warp or weft are not acceptable.

Weft Joinings, Turn-ins

All weft joinings should be neatly lapped or turned in to lie just inside the selvedge, long enough to be secured and clipped off close to the fabric. Weft splicing should be done at the selvedge.

Beat

Try for a consistent beat. Diagonals should be at the correct angle required for the technique or article. Squares should be square and 50/50 fabrics should have the same number of warp and weft ends in one inch.

Finishing

All samples should be carefully finished in keeping with the use of the finished article, for which the sample was made. Notes on the research needed to achieve this may be included on the record sheet, and notations made for future reference in the notebook.

Formatting and Style Guidelines Summary

All work presented in your assignments must be properly researched and provided with correct citations. Proper references and citations give credit for other people's ideas and provide the reader with the sources of the information used in the paper.

The citation and referencing system used by Olds College is the American Psychological Association (APA) Formatting and Style Guide. Olds College has summarized the APA formatting guidelines, which can be found online at:

http://www.oldscollege.ca/library/pdf/APA_Style.pdf.

This appendix provides a brief summary of the expected citation and referencing styles you should use in your assignments.

Citations

- In-Text Citations: When direct quotes are used within the text, the citation source (which includes the author, date, and page number) must be provided. For example: "If the project calls for knitting yarn it is best to aim at an almost balanced yarn as a very unbalanced yarn can cause the knitting to skew to one side" (Field, 1995, p. 27).
- Citations of Summaries or Paraphrases: When summarizing or paraphrasing information, the source must be provided. For example: According to Field (1995), balanced yarn should be used for a knitted garment.

A complete reference must appear in the reference list at the end of the paper, for both in-text citations and summaries.

References

A reference list should be provided at the end of the paper that gives the details needed to retrieve the source of the information used in the paper. The reference list should be put in alphabetical order, using the authors' last names. The following examples show the general format used for different sources of information.

Books

Author surname, First Initial. Second Initial. (Year). Book title: Subtitle. Place of Publication: Publisher.

Fournier, N., & Fournier, J. (1995). *In sheep's clothing*. Loveland, CO: Interweave Press.

Journal or Magazine Article

Author Surname, First Initial. Second Initial. (Year). Article title: Subtitle. Journal Title, Volume (issue), page range.

Buchanan, R. (1999, Fall). Evaluating fibre diameter. *Spin Off*, pp. 23-24.

Web Sites

Author or Corporate Body. (Last update or copyright date; if not know, put n.d.). Title of specific document. Place of Publication: Name of Corporate Body or Publisher. (Do not repeat Corporate Body name if listed above.) Retrieved date the site was accessed from URL of specific document.

US Department of Agriculture. (1968). United States standards for grades of wool. Retrieved October 15, 2008, from: <http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELDEV3062803> .

University of Kentucky, College of Agriculture. (n.d.). No article name. Retrieved November 3, 2008, from: <http://www.uky.edu/Ag/AnimalSciences/index.html>.

Calculations and Formulas

Warp Calculations

Note: all measurements are in inches. Divide by 36 to get the total amount of warp in yards.
warp length:

$$\text{project length} + \text{fringe} + \text{take-up} + \text{shrinkage} + \text{loom waste} = \text{warp length}$$

number of warp ends:

$$(\text{project width} + \text{draw-in} + \text{shrinkage}) \times \text{ends per inch} = \text{number of warp ends}$$

total amount of warp:

$$\text{warp length} \times \text{number of warp ends} = \text{total warp in inches}$$

Weft Calculations

Note: all measurements are in inches. Divide by 36 to get the total amount of warp in yards.

length of one pick \times number of picks per inch \times length of project = amount of weft in inches

Percent Shrinkage Calculation of Finished Cloth

Size before finishing – size after finishing = n
 $(n \div \text{size before finishing}) \times 100 = \% \text{ shrinkage}$

Burn Test for Fibre Identification

- always test several strands;
- wait for the smell—wool smells like burning hair;
- this test does not work well on blends, for obvious reasons.

Performing a Burn Test

Watch what happens to the yarn sample as it approaches the flame (of a candle, match, or lighter) and while it is in the flame. Also note the odour and ash that it produces. Do the test twice to confirm the results and then compare the results to the burn chart below.

Fibre	Approaching Flame	In Flame	After
Cotton	does not pull away	burns and chars	afterglow
Linen	does not pull away	burns and chars	afterglow
Rayon (Viscose)	shrinks away	burns	continues to burn
Wool, Mohair	shrinks away	burns briefly and chars	self extinguishes
Silk	shrinks away	burns slowly	self extinguishes
Nylon	shrinks away, fuses	burns slowly and melts	usually self extinguishes
Polyester	shrinks away	burns slowly and melts	usually self extinguishes
Acrylic, Orlon	shrinks away, fuses	burns and melts	continues to burn
Rayon (Acetate)	shrinks away	burns and melts	continues to burn

Count Systems

Three systems of yarn count are currently in use: the fixed weight, the fixed length, and the Tex systems. The fixed weight can be used with British and American weights and systems. The fixed length system and the Tex system are based on metric weights and measures.

Count System for Wool

The count system is different for woollen spun and worsted spun yarns, but both are a fixed weight system.

Woollen Spun

There are several woollen count systems. The one used in North America is the Philadelphia (or American cut) count. The standard unit is called a cut and is 300 yds/lb. A #2 cut would contain 600 yards per pound.

Worsted Spun

The standard unit is expressed as the number of 560-yard lengths in a pound of wool. The finer the wool, the more yarn per pound and the higher the count.

For example, Size #12 has $560 \text{ yds/lb} \times 12 = 6720 \text{ yds/lb}$.

Worsted yarn is rarely sold as single units and the calculation needs to consider the ply.

For example, 2/12 worsted has $(560 \text{ yds/lb} \times 12) \div 2 = 3360 \text{ yds/lb}$.

Count System for Cotton and Spun Silk

The count system for cotton and spun silk is a fixed weight system. The standard unit for cotton and spun silk is 840 yards per pound for a size 1 cotton or spun silk yarn. The count is traditionally given as the first number in the descriptor for the yard. The second number is the ply. (For example, 8/2 cotton is 2 plies of size 8 yarn).

Calculation of the yardage per pound involves consideration of both the count and the ply:

$$840 \times \text{count} \div \text{ply} = \text{length in yards in 1 lb.}$$

NOTE: For cotton yarns, confusion arises because manufacturers and suppliers have not agreed on a convention for labelling the count. For example, 8/4 cotton is often referred to as 4/8. It means the same thing. There are four plies of #8 count cotton in the yarn. A rule of thumb is that the smaller number refers to the number of strands that are plied together to form the yarn, and the higher number refers to the thickness or count of the strands that are plied.

Count System for Linen

The count system for linen is a fixed weight system. One lea linen contains 300 yards per pound. Six lea linen would contain 1800 yards per pound. If the linen is a plied yarn, the calculation of yardage also needs to consider the ply. For example, 10/2 linen has $(10 \times 300) \div 2 = 1500$ yards per pound.

Count System for Reeled Silk

The count system for reeled silk is a fixed length system. The length of the silk yarn stays the same at 450 meters, but the weight varies and is expressed in denier, a measurement used to describe the diameter of a strand of reeled silk. The coarser the yarn, the higher the denier count number becomes.

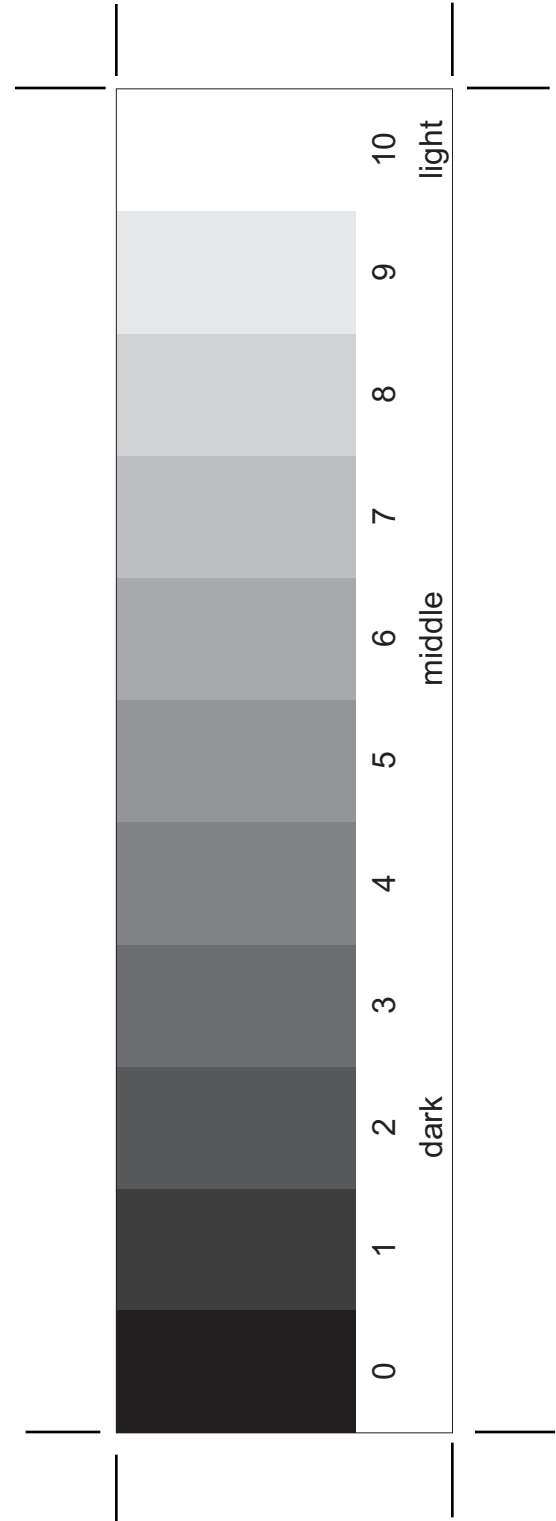
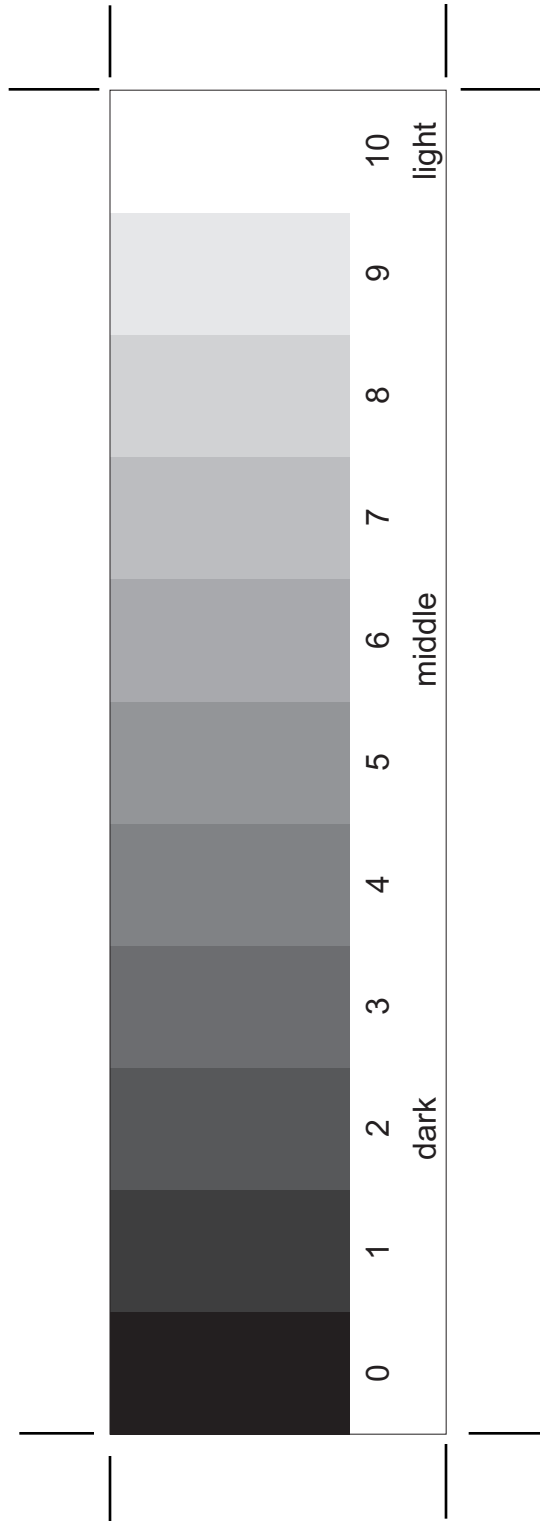
Tex System

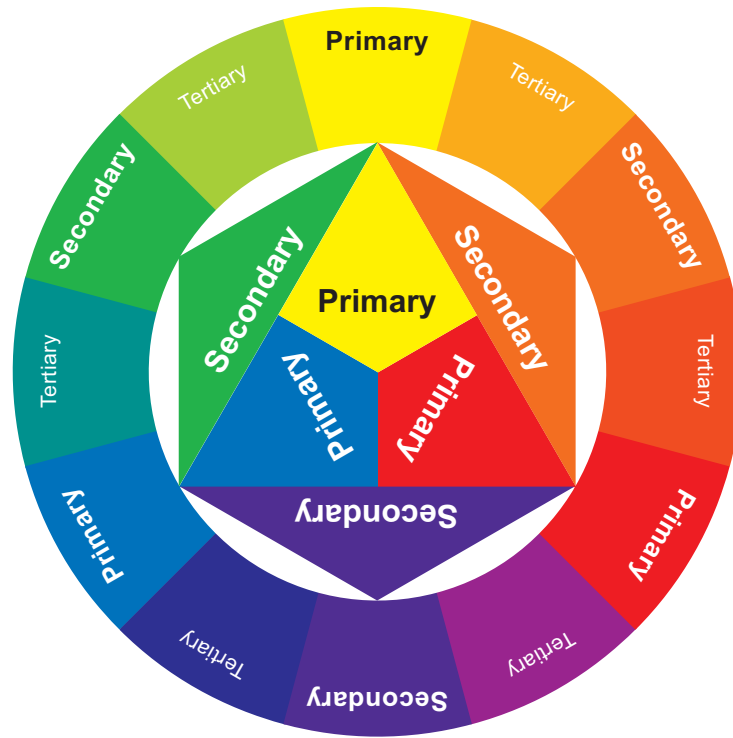
Tex is an international system of yarn numbering that applies to all types of yarns, regardless of the method of production. Tex is defined as the mass in grams per 1000 m (1 km) of yarn. For example, if 1000 m (1 km) of yarn weighs 20 grams, the Tex number is 20.

References:

Black, M.E. (1980, 1994). *The Key to Weaving*. U.S.A.: Macmillan Publishing.

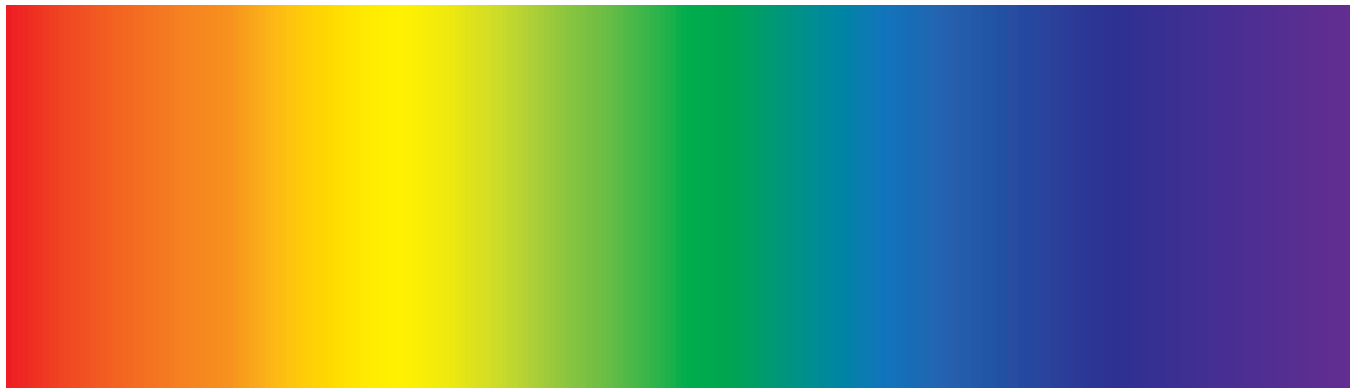
Roth, B.G., & Schulz, C. (1983). *The New Handbook of Timesaving Tables for Weavers, Spinners, and Dyers*. U.S.A.: Authors.





A 12-step colour wheel.

Source: Courtesy of Olds College.



A colour spectrum in its natural order: red, orange, yellow, green, blue, indigo, and purple.

Source: Courtesy of Olds College

Reed Substitution Chart

Courtesy of: Lignon, L., & Murphy, M. (2001). The weaver's companion. Loveland, CO: Interweave Press.

Note: reed sizes are in ends per inch

Sley in Reed	5	6	8	10	12	15	16	18
0-0-1	2	2	3	3	4	5	5	6
0-1	2.5	3	4	5	6	7.5	8	9
0-1-1	3	4	5	7	8	10	11	12
0-1-1-1	4	4.5	6	7.5	9	11.5	12	13.5
1	5	6	8	10	12	15	16	18
1-1-1-2	6	7.5	10	12.5	15	19	20	22.5
1-1-2	7	8	11	13	16	20	21	24
1-2	7.5	9	12	15	18	22.5	24	27
1-2-2	8	10	13	17	20	25	27	30
1-2-2-2	9	10.5	14	17.5	21	26	28	31.5
2	10	12	16	20	24	30	32	36
2-2-2-3	11	13.5	18	22.5	27	34	36	40.5
2-2-3	12	14	19	23	28	35	37	42
2-3	12.5	15	20	25	30	37.5	40	45
2-3-3	13	16	21	27	32	40	43	48
2-3-3-3	14	16.5	22	27.5	33	41	44	49.5
3	15	18	24	30	36	45	48	54
3-3-3-4	16	19.5	26	32.5	39	49	52	58.5
3-3-4	17	20	27	33	40	50	53	60
3-4	17.5	21	28	35	42	52.5	56	63
3-4-4	18	22	29	37	44	55	59	66
4	20	24	32	40	48	60	64	72
4-4-5	22	26	35	43	52	65	69	78
4-5-5	23	28	37	47	56	70	75	84
5	25	30	40	50	60	75	80	90

Metric/Imperial Conversion Charts

Length

Metric Units:	millimetre (mm)
	centimeter (cm) = 10 mm
	metre (m) = 100 cm
	kilometre (km) = 1000 m
Imperial Units:	inch (in)
	foot (ft) = 12 in
	yard (yd) = 3 ft
	mile (mi) = 1.609 km, 1609.3 m

Common Conversions

Metric		Imperial
1 mm	=	.03937 in
1 cm (10 mm)	=	0.3937 in
1 m (100 cm)	=	1.0936 yd
1 km (1000 m)	=	.6214 mi
Imperial		Metric
1 in	=	2.54 cm
1 ft (12 in)	=	0.3048 m (30.48 cm)
1 yd (3 ft)	=	0.9144 m (91.44 cm)
1 mi (1760 yd)	=	1.6093 km

Converting Inches (in) to Millimetres (mm)

For cm equivalent, multiply mm by 10

Imperial (in)		Metric (mm)
1/16	=	1.58
1/8	=	3.17
3/16	=	4.76
1/4	=	6.35
3/8	=	9.52

1/2	=	12.70
3/4	=	1.905
1	=	25.4
12	=	304.8

Diameter

Imperial (in)		Metric (mm)
1/25	=	1.0
1/30	=	0.848
1/35	=	0.725
1/40	=	0.635

Area

Metric Units: square millimetres (mm²)
square centimetres (cm²) = 100 mm²
square metres (m²) = 10,000 cm²

Imperial Units: square inch (in²)
square foot (ft²)
square yard (yd²)

Conversions

Metric		Imperial
1 cm ² (100 mm ²)	=	0.1550 in ²
1 m ² (10,000 cm ²)	=	1.1960 yd ² (10.764 ft ² , 1,550 in ²)
Imperial		Metric
1 in ²	=	6.4515 cm ² (64.515 mm ²)
1 ft ² (144 in ²)	=	0.0929 m ² (92.9 cm ² , 929.0 mm ²)
1 yd ² (9 ft ² , 1296 in ²)	=	0.8361 m ² (8361 cm ² , 83610 mm ²)

Volume

Metric Units:	cubic centimetre (cm ³) (solid)	millilitre (ml) (liquid)
	cubic decimetre (dm ³) (solid)	litre (l) (liquid)
	cubic metre (m ³) (solid)	hectolitre (hl) (liquid)
Imperial Units:	cubic inches (in ³) (solid)	teaspoon (tsp)
& USA	cubic feet (ft ³) (solid)	tablespoon (tbsp)
	fluid ounce (fl oz) (liquid)	cup
	pint (pt) (liquid)	ounce (oz)
	quart (qt) (liquid)	
	gallon (gal) (liquid)	

Common Conversions

Metric		Imperial
1 cm ³	=	0.0610 in ³
1 dm ³ (1,000 cm ³)	=	0.0353 ft ³
1 m ³ (1,000 dm ³)	=	1.3080 yd ³
1 l (1,000 ml)	=	1.76 pt
1 hl (100 l)	=	21.997 gal
Imperial		Metric
1 in ³	=	16.3867 cm ³
1 ft ³ (1,728 in ³)	=	0.0283 m ³
1 fl oz	=	28.413 ml
1 pt (20 fl oz)	=	0.56831 l
1 qt (2 pt)	=	1.136 l
1 gal	=	4.5461 l
USA Measure		Metric
1 fl oz		
(1.0408 Imp. fl oz)	=	29.574 ml
1 pt (16 fl oz)		
(0.8327 Imp. fl oz)	=	0.4731 l

1 gal
(0.8327 Imp. gal) = 3.7854 l

Common Liquid Volume Equivalents

(Metric unless otherwise noted)

Metric		Metric
1/4 cup	=	60 ml
1/3 cup	=	75 ml
1/2 cup	=	125 ml
2/3 cup	=	150 ml
1 cup	=	250 ml
1 pt (Imp)	=	568.26 ml
1 qt (Imp)	=	1136.5 ml
1 US qt	=	0.946 litre

From Your Kitchen

Metric		Metric
1 tsp	=	5 ml
3 tsp	=	1 tbsp
1 tbsp	=	15 ml
16 tbsp	=	1 cup
1 cup	=	250 ml
2.5 cups	=	1 pt

Mass (weight)

Metric Units: milligram (mg) = 0.001 grams
gram (g) = 1,000,000 mg
kilogram (kg) = 1,000 g

Imperial Units: grain
 ounce (oz) = 437.5 grains
 pound (lb) = 16 oz
 stone = 14 lb
 hundredweight (cwt) = 112 lb

Common Conversions

Metric		Imperial
1 mg	=	0.0154 grain
1 g	=	0.0353 oz
1 kg	=	2.2046 lb
Imperial		Metric
1 oz	=	28.35 g
1 lb	=	0.4536 kg (453.6 g)
1 stone	=	6.3503 kg
1 cwt	=	50.802 kg

Converting Ounces to Grams and Grams to Ounces

Imperial (oz)		Metric (g)
1/4	=	7.09
1/2	=	14.17
3/4	=	21.26
1	=	28.35
Metric (g)		Imperial (oz)
1	=	1/28
2	=	1/14
5	=	1/5
10	=	1/3
20	=	2/3

Temperature

Metric Units: Celsius degrees ($^{\circ}\text{C}$)

Imperial Unit: Fahrenheit degrees ($^{\circ}\text{F}$)

Conversion Formulas

- Celsius degrees to Fahrenheit degrees, multiply Celsius temperature by 1.8 or $9/5$, then add 32
- Fahrenheit degrees to Celsius degrees, subtract 32 from the Fahrenheit temperature, then multiply by 0.5556 or $5/9$

Common Temperature Conversions

Metric		Imperial
100 $^{\circ}\text{C}$	=	212 $^{\circ}\text{F}$ Boiling Point
80 $^{\circ}\text{C}$	=	176 $^{\circ}\text{F}$
40 $^{\circ}\text{C}$	=	104 $^{\circ}\text{F}$
21 $^{\circ}\text{C}$	=	70 $^{\circ}\text{F}$ Average Room
10 $^{\circ}\text{C}$	=	33.8 $^{\circ}\text{F}$
0 $^{\circ}\text{C}$	=	32 $^{\circ}\text{F}$ Freezing

Websites: see: <http://www.metric-conversions.org/> and <http://www.almanac.com>

Record Sheet

Candidate's Name: _____ Module: _____ Date: _____

Notes from Draft obtained from: _____

Sett (ends per inch): _____ # of ends in warp: _____ Length of warp: _____

Materials

Fibre: _____ Size: _____ Amount required: _____

Source: _____ Sample Attached: _____

Warp: _____ Pattern Weft: _____

Tabby Weft: _____

Beat Technique used: _____

Aim (weft face, warp face, 50/50, or other): _____

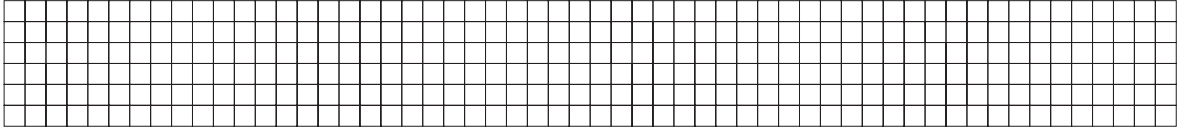
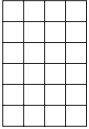
Size Details:	Under Tension	Off Loom	Finished
Length:			
Width:			

Finishing Method Used: _____

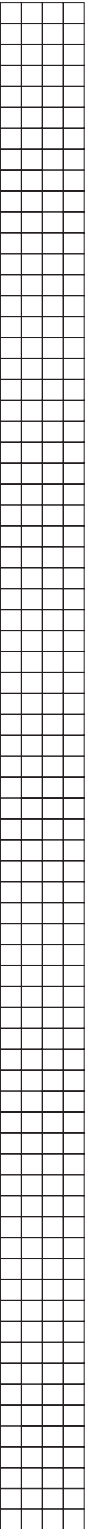
Additional Notes: _____

TREADLING

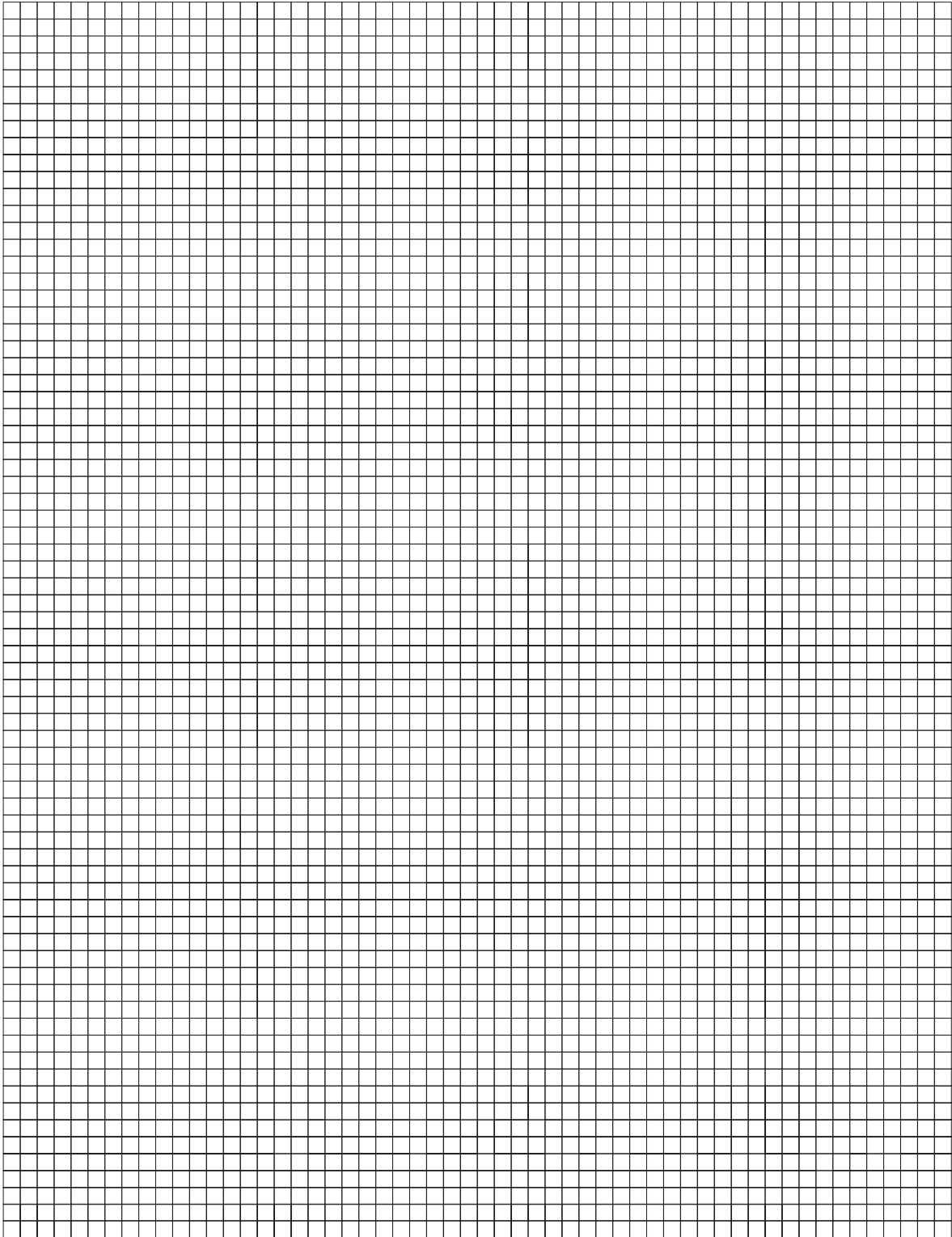
TIE-UP



THREADING



DRAWDOWN



Competency Profile Master Weavers – Level 1

Identify the Basic Components of Weaving.	Describe the purpose of weaving.	A1	Describe the basic principles of weaving.	A2	Identify the parts of a four-shaft loom.	A3	Describe basic weaving tools and techniques.	A4
	Describe basic weave interlacements.	A5						
Construct a Textile from a Weaving Draft.	Describe the process of creating a draft.	B1	Construct woollen samples on the loom from the weaving drafts.	B2				
	Describe the properties and characteristics of wool.	C1	Produce woven woollen samples in one type of yarn for each group of samples.	C2				
Design a Woven Project.	Describe design and colour considerations for woven projects.	D1	Plan a wool project.	D2				
	Use warp measuring equipment.	E1	Warp loom using selected methods.	E2	Transcribe draft to loom set-up.	E3	Prepare the shuttle.	E4
Identify Procedure of Weaving Process.	Develop a weaving rhythm.	E5	Demonstrate the procedures to begin weaving.	E6	Apply finishing technique.	E7	Describe common weaving and equipment problems.	E8
	Demonstrate ability to communicate ideas using Selected Communication Methods.	F1	Demonstrate ability to communicate visually.	F2	Demonstrate ability to communicate through written word.	F3	Demonstrate competency, through the following means, to keep detailed records of each woven project.	F4

Competency Profile

Master Weavers – Level 2

<p>Demonstrate a Knowledge of Looms and Loom Function.</p>	<p>Describe the history of selected looms.</p>	<p>Demonstrate loom maintenance procedures.</p>	<p>Warp loom using selected front to back method.</p>	
<p>Apply the Properties and Characteristics of Cotton to Woven Samples.</p>	<p>Describe the properties and characteristics of cotton.</p>	<p>Describe the care and finishing of cotton.</p>	<p>Produce woven cotton samples.</p>	
<p>Execute a Double Weave Project.</p>	<p>Describe the characteristics of double weave.</p>	<p>Plan a double weave project.</p>	<p>Weave double weave samples.</p>	
<p>Execute a Twill Weave Project.</p>	<p>Describe the characteristics of twills.</p>	<p>Plan a twill weave project.</p>	<p>Weave twill samples.</p>	
<p>Execute an Overshot Weave Project.</p>	<p>Describe the characteristics of overshot.</p>	<p>Explain the structure of overshot.</p>	<p>Plan an overshot weave project.</p>	<p>Weave overshot samples.</p>
<p>Apply Finishing Techniques.</p>	<p>Demonstrate on-loom finishing techniques.</p>	<p>Demonstrate off-loom finishing techniques.</p>		
<p>Demonstrate Ability to Present Ideas using Selected Communication Methods.</p>	<p>Demonstrate ability to communicate orally.</p>	<p>Demonstrate ability to communicate visually.</p>	<p>Demonstrate ability to communicate through the written word.</p>	