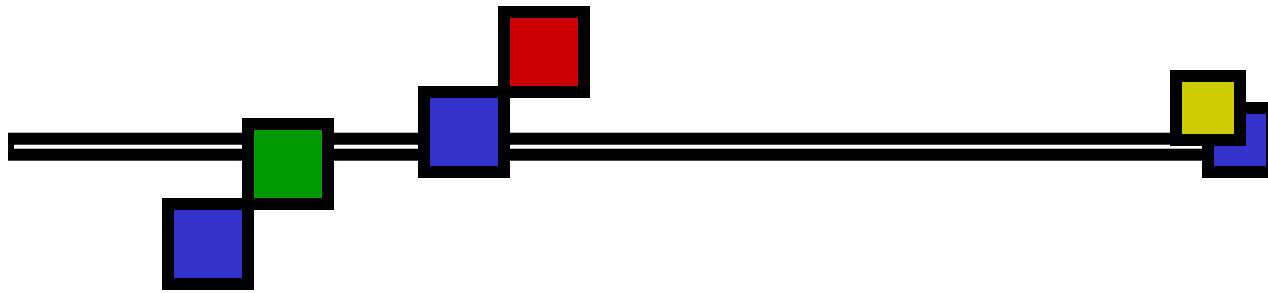


Meeting Expectations Relative to Apparel Product Standards and Specifications

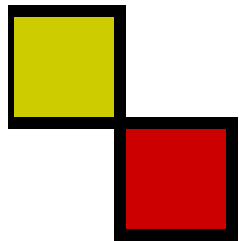


Gwendolyn S. O'Neal
University of North Carolina at Greensboro

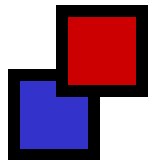


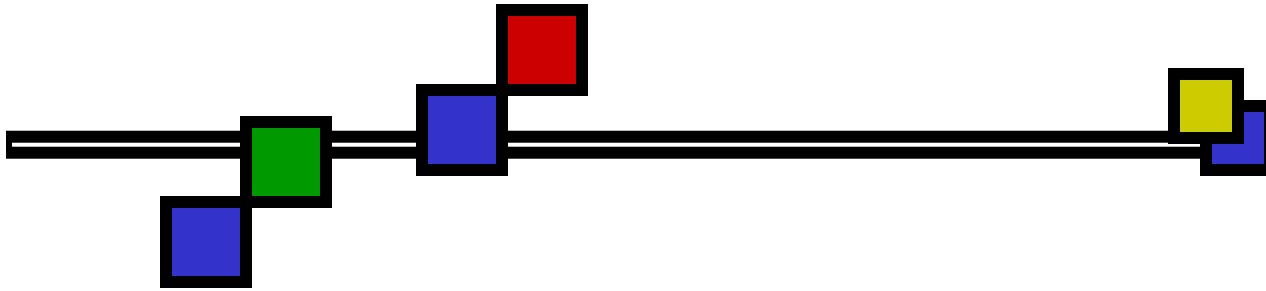


Expectations

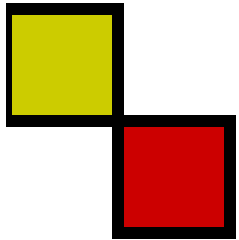


- To be competitive in the global apparel market one must be able to produce high quality products at low cost.
- To produce high quality, there must be the ability to interpret, understand, and produce products that meet expected standards and specifications.

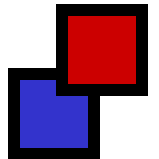


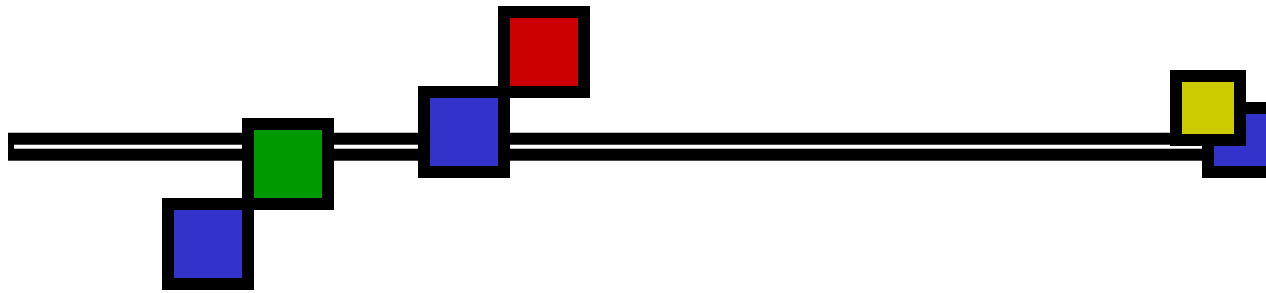


Standards and Specifications

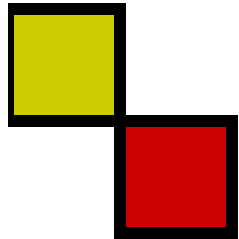


- **Standards** are a set of characteristics used for decision making in the development of product specifications.
- **Specifications** (specs) are written descriptions of material, dimensions, production procedures, and finishing instructions for the product

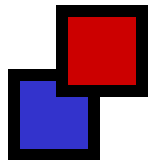


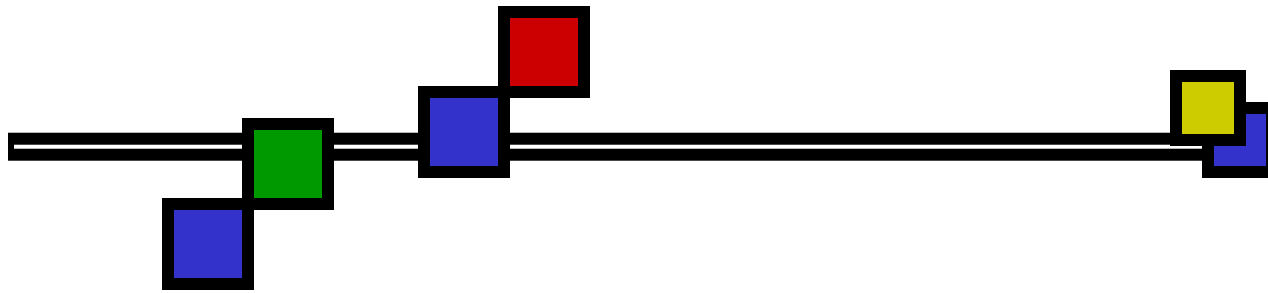


Standards

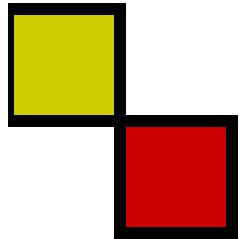


- Quality
- Size and Fit
- Performance

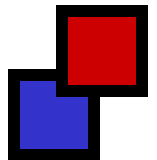


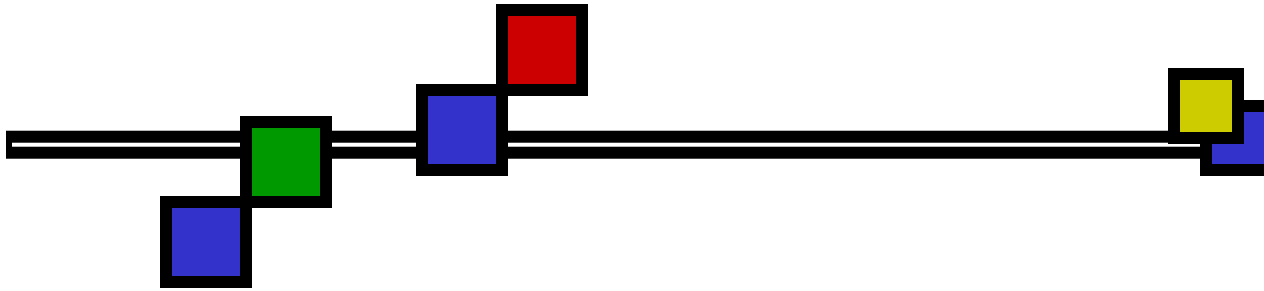


Quality Standards

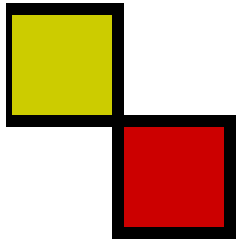


- Reflect the quality level the firm seeks to achieve
- Provides consistency between products and product lines.



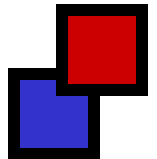


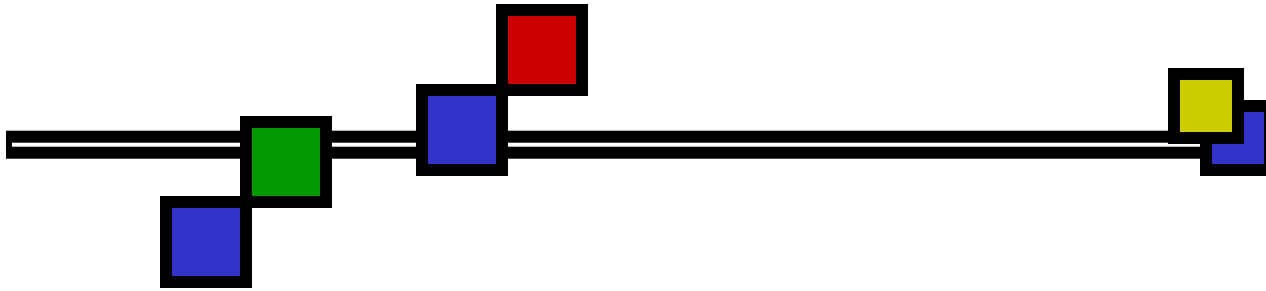
Quality Assurance



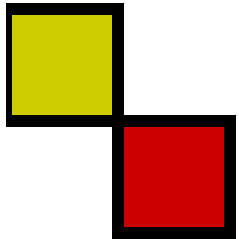
Involves

- conformity to standards and specifications that meet or exceed customer quality expectations. (Keiser & Garner, 2003, p. 326)
- Commitment to achieving a consistent quality product.
- Measures to prevent defects rather than detect them.

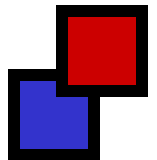


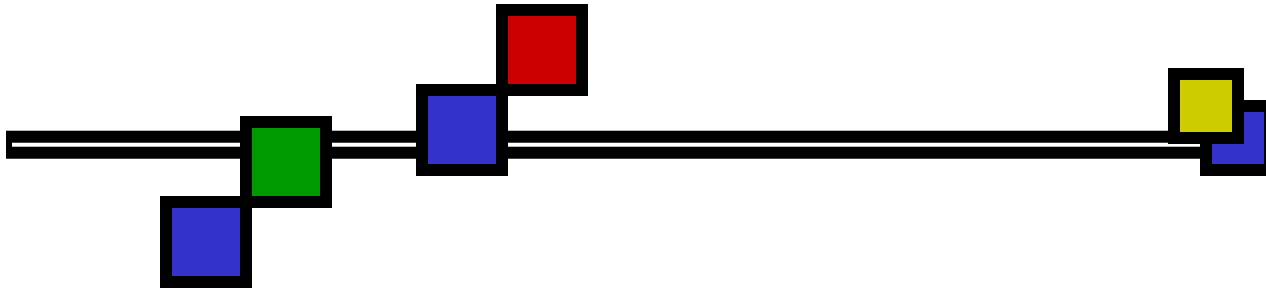


You Must

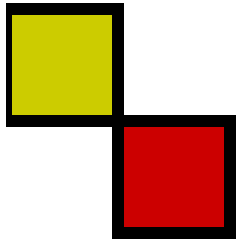


- Understand quality standards expected and how to meet them.
- Firms may have voluntary and/or mandatory standards.
- A mandatory standard -- The Consumer Product Safety Commission's (CPSC) requirement of conformance to specific criteria for flammability in fabrics used for infants' children's sleepwear.
- Size, fit and aesthetic standards are established by the firm. You must understand the language and measurement methods used (examples later).

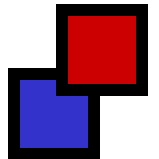


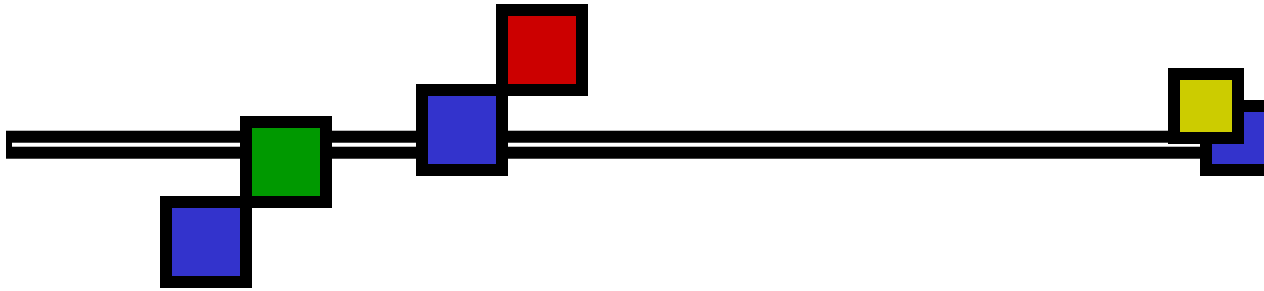


Size and Fit Standards

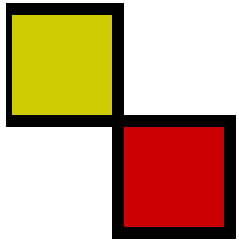


- Represented by basic pattern blocks
- Consistency among sizes
- Grade rules

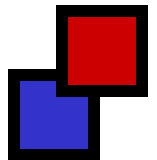
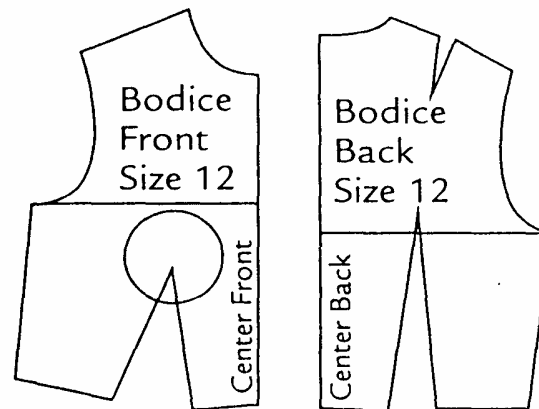




Basic Pattern Blocks



- Reflect sizing and fit standards in the sample size.

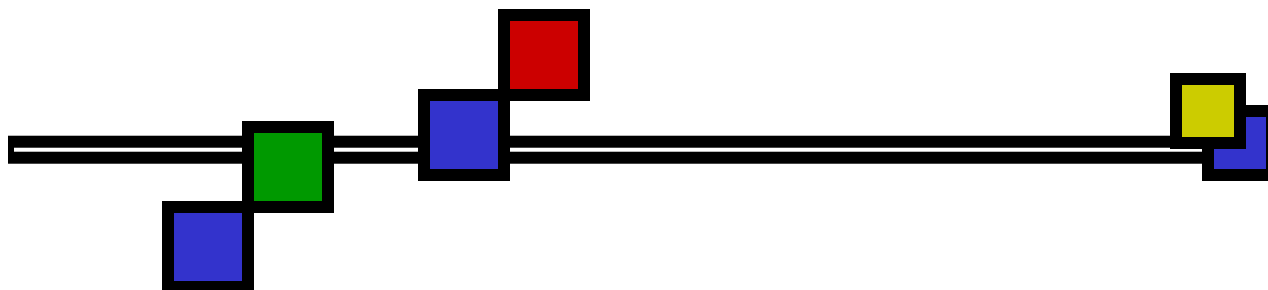


Size Standards

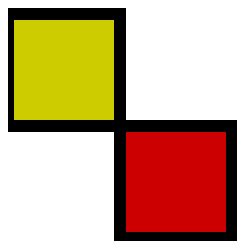
Size	2	4	6	8	10	12	14	16	18	20
Bust	32	33	34	35	36	37 $\frac{1}{2}$	39	40 $\frac{1}{2}$	42 $\frac{1}{2}$	44 $\frac{1}{2}$
Waist	24	25	26	27	28	29 $\frac{1}{2}$	31	32 $\frac{1}{2}$	34 $\frac{1}{2}$	36 $\frac{1}{2}$
High hip	31 $\frac{1}{2}$	32 $\frac{1}{2}$	33 $\frac{1}{2}$	34 $\frac{1}{2}$	35 $\frac{1}{2}$	37	38 $\frac{1}{2}$	40	42	44
Hip	34 $\frac{1}{2}$	35 $\frac{1}{2}$	36 $\frac{1}{2}$	37 $\frac{1}{2}$	38 $\frac{1}{2}$	40	41 $\frac{1}{2}$	43	45	47
Mid-neck	13	13 $\frac{1}{4}$	13 $\frac{1}{2}$	13 $\frac{3}{4}$	14	14 $\frac{3}{8}$	14 $\frac{3}{4}$	15 $\frac{1}{8}$	15 $\frac{5}{8}$	16 $\frac{1}{8}$
Neck base	13 $\frac{1}{2}$	13 $\frac{3}{4}$	14	14 $\frac{1}{4}$	14 $\frac{1}{2}$	14 $\frac{7}{8}$	15 $\frac{1}{4}$	15 $\frac{5}{8}$	16 $\frac{1}{8}$	16 $\frac{5}{8}$
Armscye	14 $\frac{1}{4}$	14 $\frac{5}{8}$	15	15 $\frac{3}{8}$	15 $\frac{3}{4}$	16 $\frac{3}{8}$	17	17 $\frac{5}{8}$	18 $\frac{3}{8}$	19 $\frac{1}{8}$
Upper arm	10	10 $\frac{1}{4}$	10 $\frac{1}{2}$	10 $\frac{3}{4}$	11	11 $\frac{3}{8}$	11 $\frac{3}{4}$	12 $\frac{1}{8}$	12 $\frac{3}{4}$	13 $\frac{3}{8}$
Elbow	9 $\frac{3}{8}$	9 $\frac{1}{2}$	9 $\frac{5}{8}$	9 $\frac{3}{4}$	9 $\frac{7}{8}$	10 $\frac{1}{8}$	10 $\frac{3}{8}$	10 $\frac{5}{8}$	11	11 $\frac{3}{8}$
Wrist	5 $\frac{5}{8}$	5 $\frac{3}{4}$	5 $\frac{7}{8}$	6	6 $\frac{1}{8}$	6 $\frac{1}{4}$	6 $\frac{3}{8}$	6 $\frac{1}{2}$	6 $\frac{5}{8}$	6 $\frac{3}{4}$
Thigh, max	19 $\frac{1}{2}$	20 $\frac{1}{4}$	21	21 $\frac{3}{4}$	22 $\frac{1}{2}$	23 $\frac{1}{2}$	24 $\frac{1}{2}$	25 $\frac{1}{2}$	26 $\frac{3}{4}$	28
Thigh, mid	18 $\frac{1}{4}$	18 $\frac{3}{4}$	19 $\frac{1}{4}$	19 $\frac{3}{4}$	20 $\frac{1}{4}$	21	21 $\frac{3}{4}$	22 $\frac{1}{2}$	23 $\frac{1}{2}$	24 $\frac{1}{2}$
Knee	13	13 $\frac{3}{8}$	13 $\frac{3}{4}$	14 $\frac{1}{8}$	14 $\frac{1}{2}$	15	15 $\frac{1}{2}$	16	16 $\frac{1}{2}$	17
Calf	12 $\frac{1}{2}$	12 $\frac{7}{8}$	13 $\frac{1}{4}$	13 $\frac{5}{8}$	14	14 $\frac{1}{2}$	15	15 $\frac{1}{2}$	16	16 $\frac{1}{2}$
Ankle	8 $\frac{3}{8}$	8 $\frac{5}{8}$	8 $\frac{7}{8}$	9 $\frac{1}{8}$	9 $\frac{3}{8}$	9 $\frac{5}{8}$	9 $\frac{7}{8}$	10 $\frac{1}{8}$	10 $\frac{3}{8}$	10 $\frac{5}{8}$
Vertical trunk	56	57 $\frac{1}{2}$	59	60 $\frac{1}{2}$	62	63 $\frac{1}{2}$	65	66 $\frac{1}{2}$	68	69 $\frac{1}{2}$
Total crotch	25	25 $\frac{3}{4}$	26 $\frac{1}{2}$	27 $\frac{1}{4}$	28	28 $\frac{3}{4}$	29 $\frac{1}{2}$	30 $\frac{1}{4}$	31	31 $\frac{3}{4}$

10

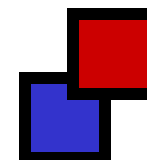


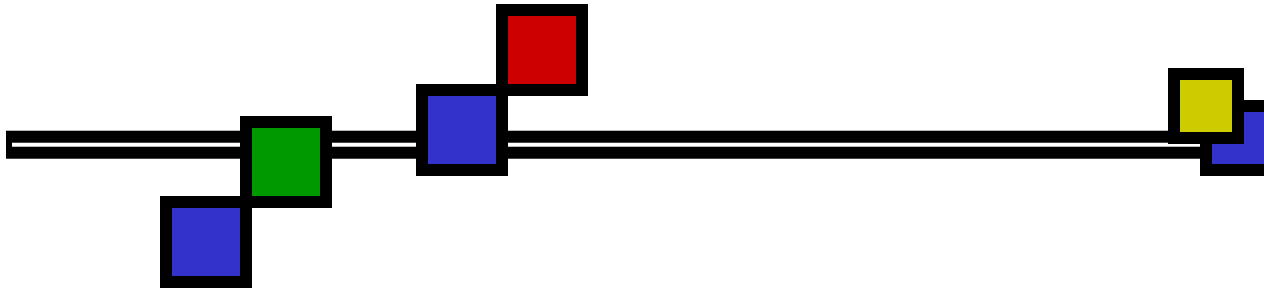


Grade Rules

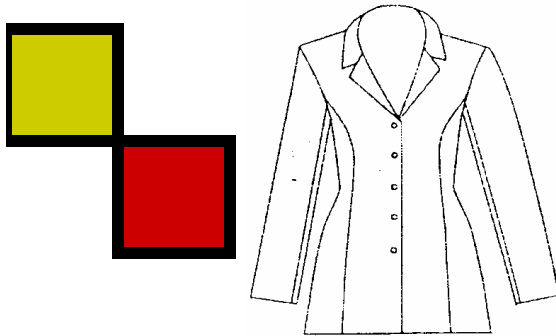


The amounts added (or subtracted) from each measurement as it changes from one size to the next.

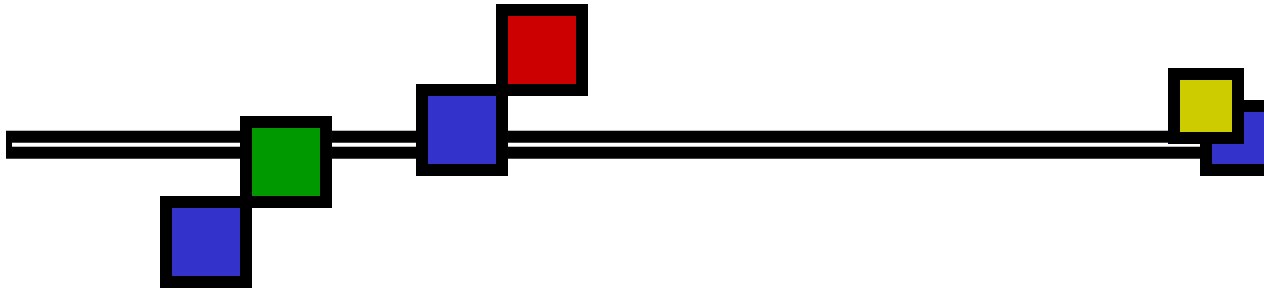




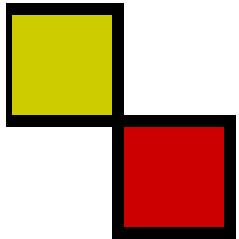
Graded Measurements (w/tolerance)



Description	Tol (+/-)	Size						
		6	8	10	12	14	16	18
Across shoulder	1/4	16 5/8	17	17 3/8	17 3/4	18 1/8	18 5/8	19 1/8
Bust, 1" below armscye	1/4	38 1/2	40	41 1/2	43	44 1/2	46 1/2	48 1/2
Sleeve length from shoulder	1/4	23 1/2	23 3/4	24	24 1/4	24 1/2	24 3/4	25
Armscye	1/4	20 3/8	21	21 5/8	22 1/4	22 7/8	23 5/8	24 3/8
Upper arm	1/4	14 1/4	14 3/4	15 1/4	15 3/4	16 1/4	16 7/8	17 1/2
Sweep - closed	1/8	42	43 1/2	45	46 1/2	48	50	52
Sleeve opening	1/8	11 1/2	11 3/4	11 3/4	12	12	12 1/4	12 1/4
CB length from CBN	1/8	29	29 1/4	29 1/2	29 3/4	30	30 1/4	30 1/2
CB length from HPS	1/8	29 1/2	29 3/4	30	30 1/4	30 1/2	30 3/4	31



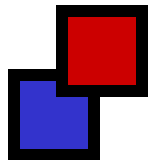
Fit

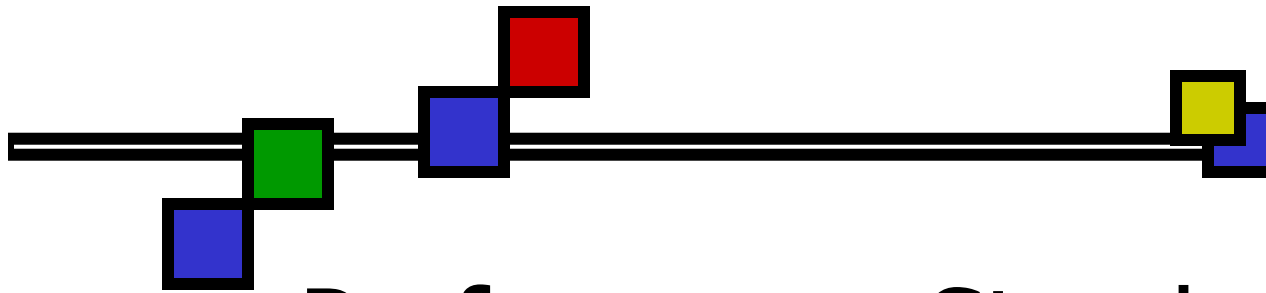


-- How a garment conforms to or differ from the body.

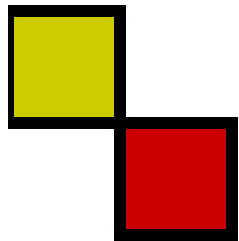
You must:

- Know how grain, set, line, balance and ease impact garment fit, and
- Be able to correct fit problems

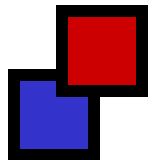


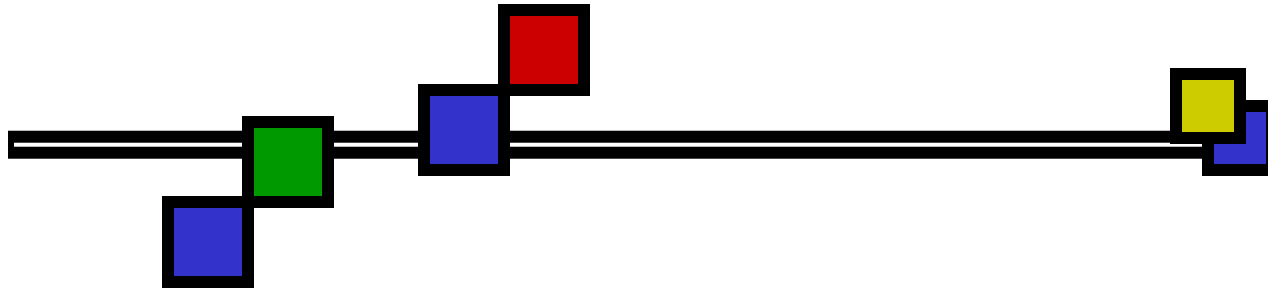


Performance Standards

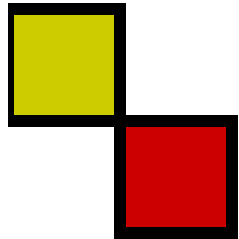


- Performance of materials
- Performance of finished product

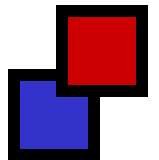


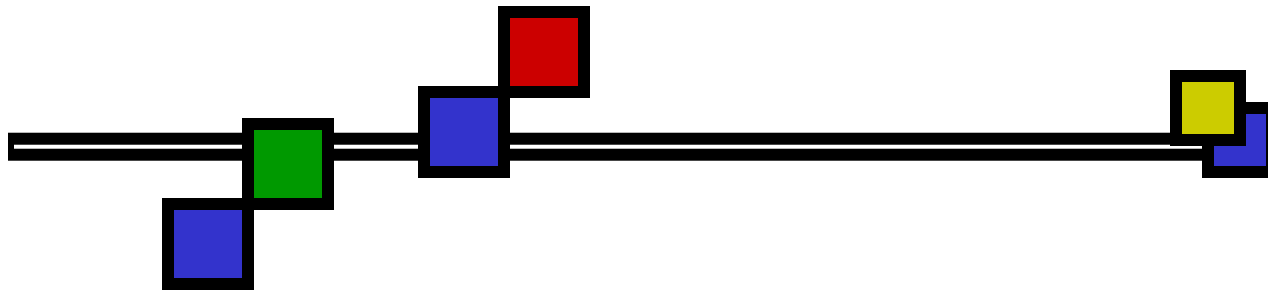


Specifications

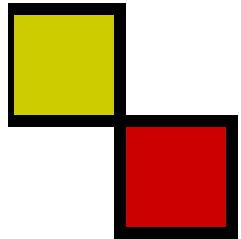


- serve as the basis for contracts between the firm and the suppliers.
- establish minimum requirements and allowed variance for acceptability.
- serve as a basis for evaluating the finished product and determining the degree of conformance (or lack of) to the firms expectations.

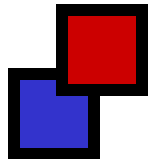




Specification package



- Production pattern
- Fit specification
- Construction specifications
- Fabric and findings identification and specifications



Production Pattern

Style # 6484 Description: Pleat-front slacks

Created: 6/6/06

Division: Career

Merchandiser: O'Neal

Size Cat.: Misses

Designer: Bell

Due Date: 9/6/06

Size range: 6-18

Tech Designer: Smith

Ship Date:

Sample size: 8

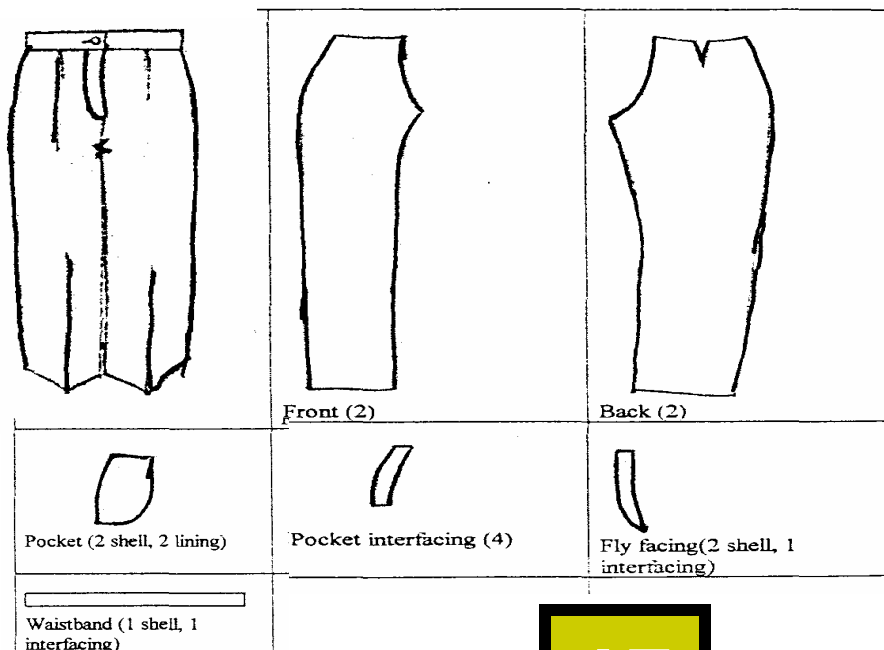
Brand: Beautiful

Vendor: _____

Season: Fall

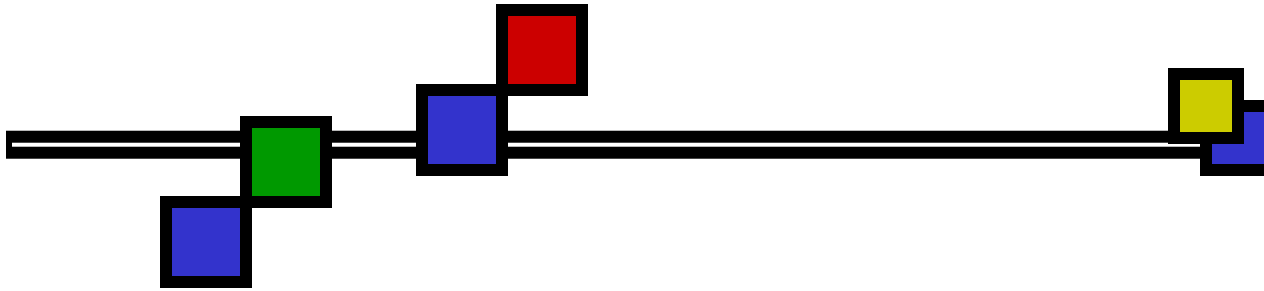
Fabric: Poly/Rayon/Twill

Color: black, gray, eggplant

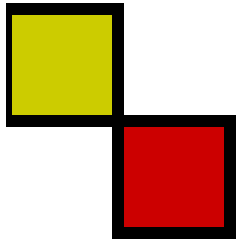


17



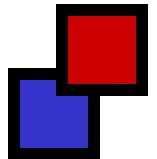


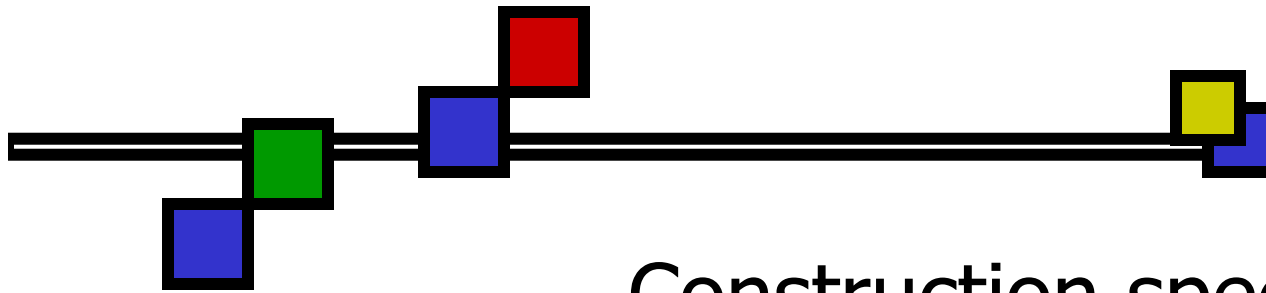
Fit — (Based on garment measurement)



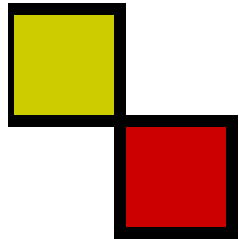
$$\text{Body Measurements} + \text{Wearing Ease} + \text{Design Ease} = \text{Fashion Silhouette}$$

Description (Ease allowance at bust)	Fitted	Semi-Fitted	Loose-Fitting	Very Loose Fitting
Jacket	3 3/4 - 4 1/4"	3 3/8 - 5 3/4"	5 7/8 - 10"	Over 10"





Construction specifications



Assembly overview:

Pre-assembly – Interfacing to waistband, right front fly facing, and to pocket and pocket linings.

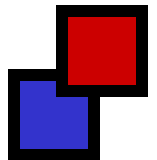
Component assembly – Darts in back, tucks in front, right fly facing, pocket to backs, pocket lining to fronts.

Final assembly and finishing – Seams, zipper application, waistband, hems, button and buttonhole.

Finish pressing.

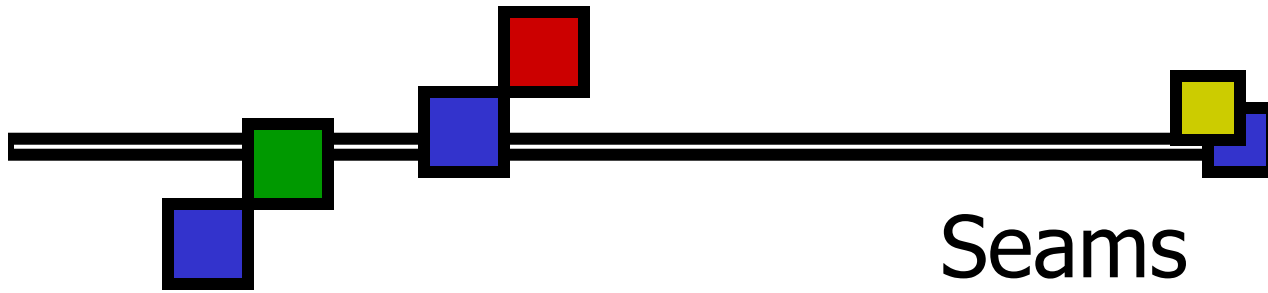
Machine stitching – 10-12 spi

Seam allowance – ½ inch throughout



Construction specifications

Task	Stitch & Seam	Notes
Apply fusible interfacings to waistband, Right fly facing, pocket, pocket lining		R & L pockets
Finish edges fly facings	503 EFd	
Finish edges of crotch seams	503 EFd	
Back darts	301 SSa	
Fly facing to R front	301 SSa	
Pockets to backs	301 SSa	R & L
Pockets linings to fronts	301 SSa	
In-seams	515 SSa	
Side seams	515 SSa	
Complete pocket bags	515 SSa	
Crotch seam	301 SSa	
Apply left fly facing during zipper application	301 LSah	
Apply right front fly	301 SSa	
Complete zipper with J-stitch to R front	301 SSak	
Apply waistband, inserting front tucks	301 SSa	
Finish waistband, inserting labels at CB	301BSo	
Buttonhole	404	Bar tack both ends
Button applied	101	
Hem	EFa306	1 ½ inch finished
Finish pressing		Set leg creases

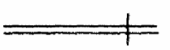
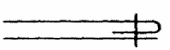
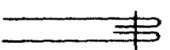
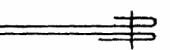
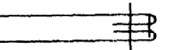
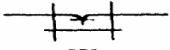

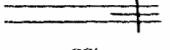
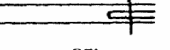
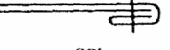
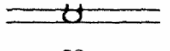
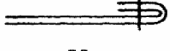
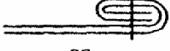
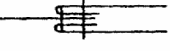
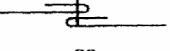

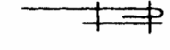
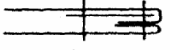
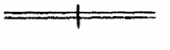
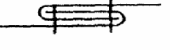
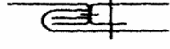


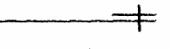
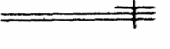
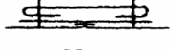
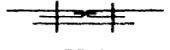
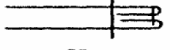
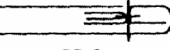
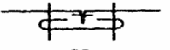
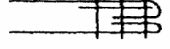
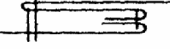
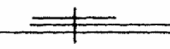
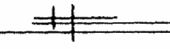



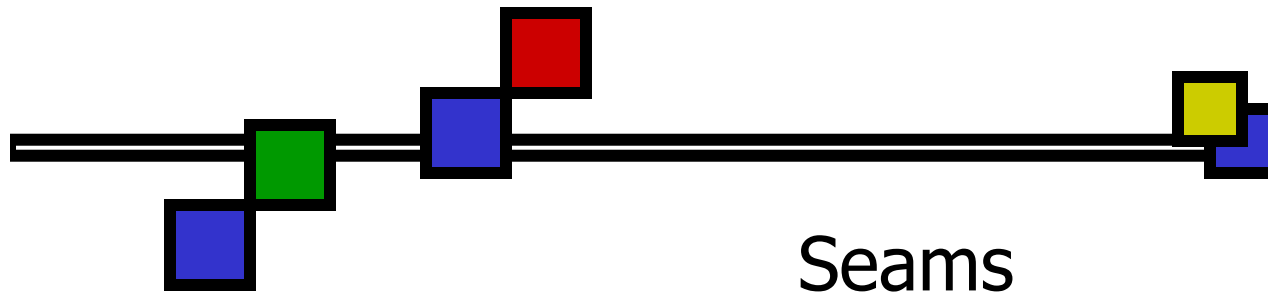
Seams

Appendix: Index of Commercial Seams by Class

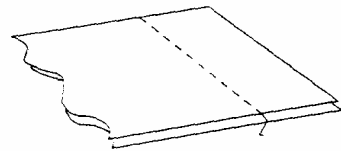
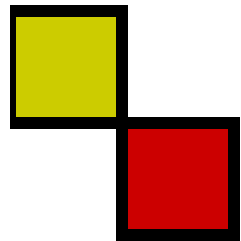
Schematic Index of Seams and Stitchings in Alphabetical Order by Class

Seam Class SS (Superimposed)

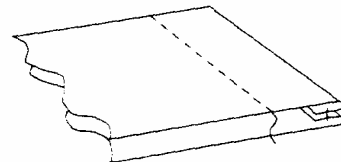
 SSa	 SSb	 SSc	 SSd	 SSe
 SSf	 SSg	 SSj	 SSk	 SSl
 SSm	 SSn	 SSp	 SSq	 SSr
 SSs	 SSt	 SSu	 SSv	 SSw
 SSx	 SSy	 SSz	 SSaa	 SSab
 SSac	 SSad	 SSae	 SSaf	 SSag
 SSah	 SSaj	 SSak	 SSal	 SSam



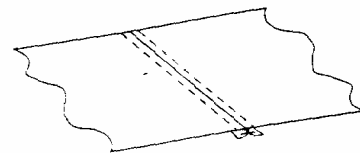
Seams



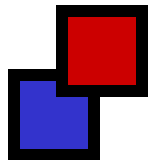
SSa
Most common seam. Usually finished on cut edge with serging, or pressed open (busted).



SSae
Commonly known as a French Seam. Done in 2 steps: first an SSa and then folded to inside and top-stitched. Seen on edges of collars.



SSh
A 2-step seam. Very narrow SSa is pressed open and restitched with a cover stitch. Seen on sweat-shirts.

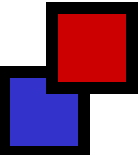




Materials Specification



Style # 2883	Description: Classic Suit	
Division: Suits/career	Merchandiser:	Created Date: 5/15/06
Size Category: Miss	Designer: O'Neal	Modified:
Size Range: 6-18	Tech Designer:	Due Date: 7/25/06
Sample Size: 8	Brand: Awesome W	Ship Date:
Season: Fall	Fabric Category: Poly/Rayon Twill	Vendor
Estimate: \$129	Colors: espresso; eggplant, sand	Page 4 of 8



Materials (Fabric and Findings)

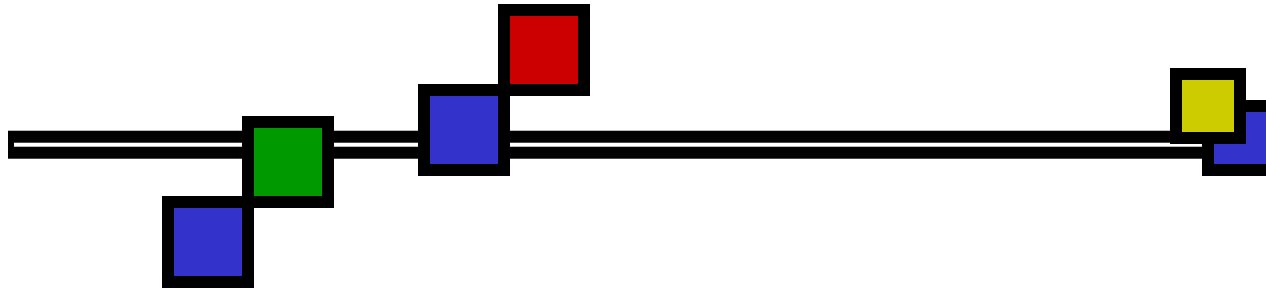
C	Description	Vendor/ Item #	Use	Material	Width/ size	Unit	Qty
F	Poly/Rayon Gab	ITG 9763	Shell	Poly/Rayon 70/30	62"	yd	3.3
F	Lining	DuPont 3303	Lining	Polyester Lining	59"	yd	1.96
F	Interfacing	Avery 9601	Fusible/ Interfacing	Polyester	48"	yd	1.29
T	Flat shank buttons	Fastener 4220-43		Resin	24L	ea	6
T	Shoulder Pads	Homewood F 1-2		Form	9X5	pair	1
T	Thread	American 1022-DTM		90/10 Cotton/ Poly		ea	1
T	Label-woven	Avery 3660- 4A		100% Nylon			
O	Hanger-clear	Global	Packing	Plastic	16"	ea	1
O	Plastic Bag	American 116-023	Packing	Plastic	21x5x00	ft	1

Label Specifications

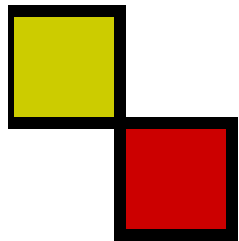
DESIGN DETAILS	Tops	Style #: LU0252W
Label:	Women's Tops Loop Label Reference #: 7176205 Supplier: Paxar HK Color: For Dark Colors Placement: Four-Side Sew. ¼" Down from Center Back Neck Seam	
Hangtag:	Women's Hangtag For Shirts Reference #: 7447724 Supplier: Paxar HK Color: Multi Colored Placement: Safety Pin to Bottom of Armhole	
Country of Origin:	Quality: Same quality of Main Label Dimensions: 1" Long x ½" Wide Placement: Sewn Into Bottom Edge of Main Label- Centered under Main Label Maker: Please Print Care Instructions Appropriate for the Fabric you are developing **Label should also include Trilingual Fabric Content & Country of Origin & Style #	
Care Label:	Printed Paper Care Label. White Ground with Black Wording Dimensions: 1-3/4" Long x ½" Wide Placement: Sewn Into Side Seam Maker: Please Print Care Instructions Appropriate for the Fabric you are developing	
UPC Ticket:	UPC Ticket for Shirts Reference #B221 Supplier: Soabar Placement: To be attached with a 5" Swiftach through the country of origin label. **When packed the UPC Ticket must hang out side of the garment for scanning in DC**	
Closure:	-16L Khaki Mock Horn Button (4-Hole) Placement: Placket, Pocket Flaps & Cuffs -12L Khaki Mock Horn Button (4-Hole) Placement: Button-down collar	

Shipping Details

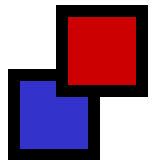
SHIPPING DETAILS	SHIP TO:
<p>PROTO SAMPLES/ PRELINE SAMPLES/MODEL SAMPLES/REFERENCE YARDAGE:</p> <ul style="list-style-type: none"> • Proto Samples: Protos must be sent in similar fabric and color w/ all embellishments included • PRELINE SAMPLES: Send Two (2) pieces sizes Medium to • MODEL SAMPLES: Send One piece Size XS, S & L to • REFERENCE YARDAGE: Send ¼ yard to 	
<p>SWATCH YARDAGE:</p>	
<p>SALES SAMPLE INFO:</p> <ul style="list-style-type: none"> • Sales Samples are hanging on 17" Hanger. • Ship 7 dozen Size Medium to the El Paso, D.C. • 	
<p>BULK PACKING INFO:</p> <ul style="list-style-type: none"> • 1/12 Solid, Hanging • 17" Black hangers w/ size clips, Evergreen Reference # 467 • UPC ticket required. 	

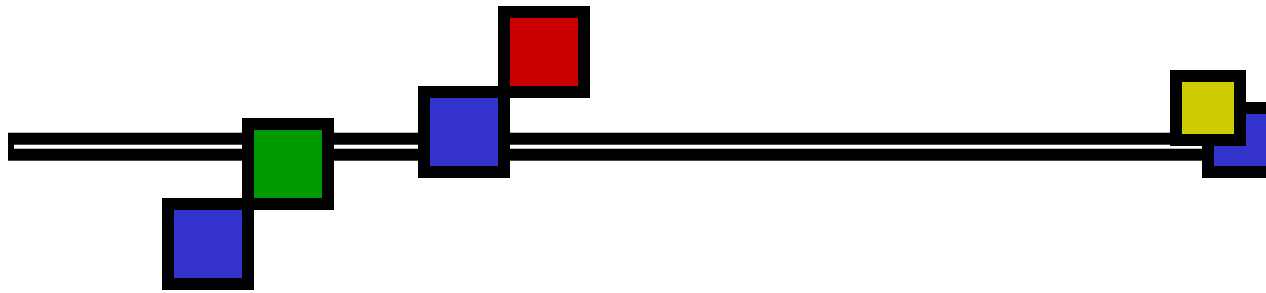


Open Specs

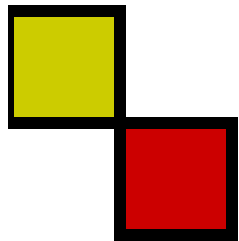


allow for flexibility on the part of the producer

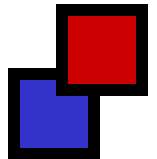




Closed specs

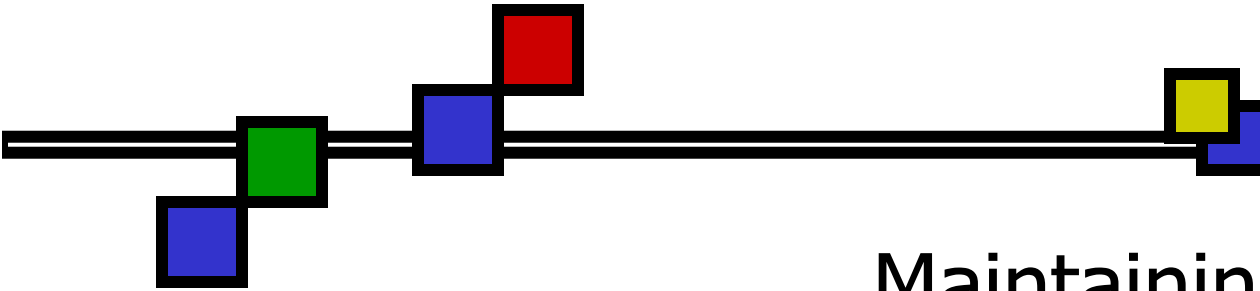


Limit flexibility in the use of materials and methods of production but ensure the consistency of final product.

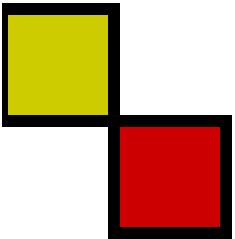


Quality Assurance Standards

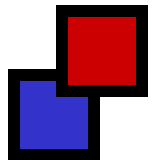
TEST METHOD	TEST DESCRIPTION	STANDARD REQUIRED
FABRICS (Shell, Interfacing, and Lining)		
AATCC 150 (Modified 3 home launderings)	Dimensional Stability	+/- 2% During press; Class 4
AATCC 150 (Modified 3 home launderings)	Colorfastness to Laundering Color change Staining	Class 3 Class 4.5
AATCC 8, 116	Colorfastness to Crocking Before wash After wash	3 dry; 2 wet 4 dry; 3 wet
METAL FINDINGS (Buckles, snaps, zippers)		
ASTM D5035	Strength Attachment Pull apart (snap) Push together (snap)	15 lbs. minimum, 10 seconds 4 lbs. minimum, 10 lbs. maximum 8 lbs. maximum
AATCC 150 (Modified 3 home launderings)	Colorfastness to Laundering Enamel Coated Metal	Class 5; no chipping Class 5
AATCC 150	Rusting	Not acceptable
TRIM AND DECORATION		



Maintaining Quality



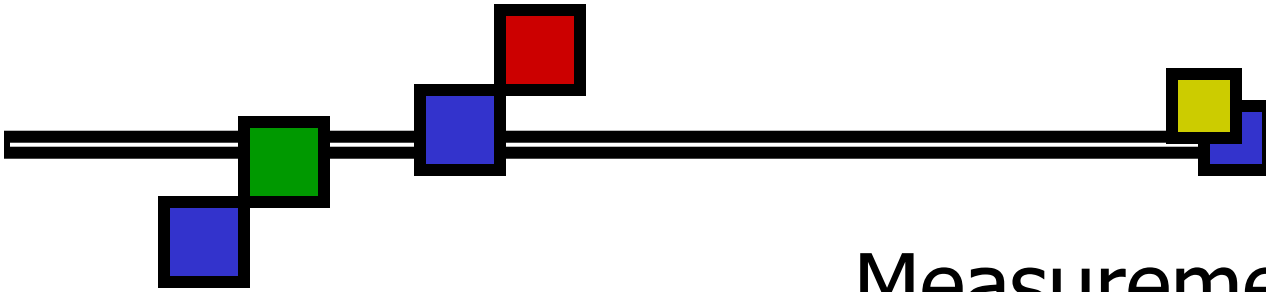
- There must be a system in place to assure that products produced meet quality standards.
- Use of spec sheets is the norm
- Check sample garment measurements against the measurement specification sheet
- Be sure that key points of measurement conform to the original concept.



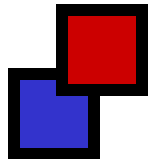
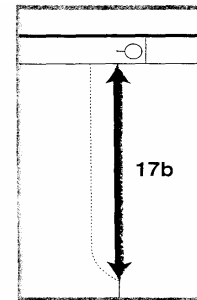
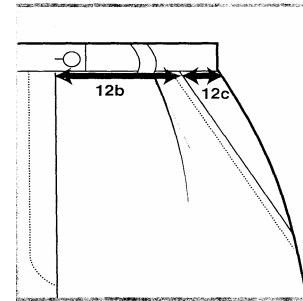
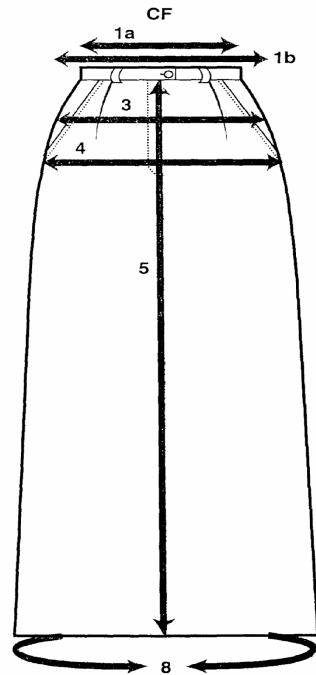
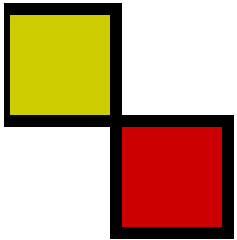
Spec Sheet

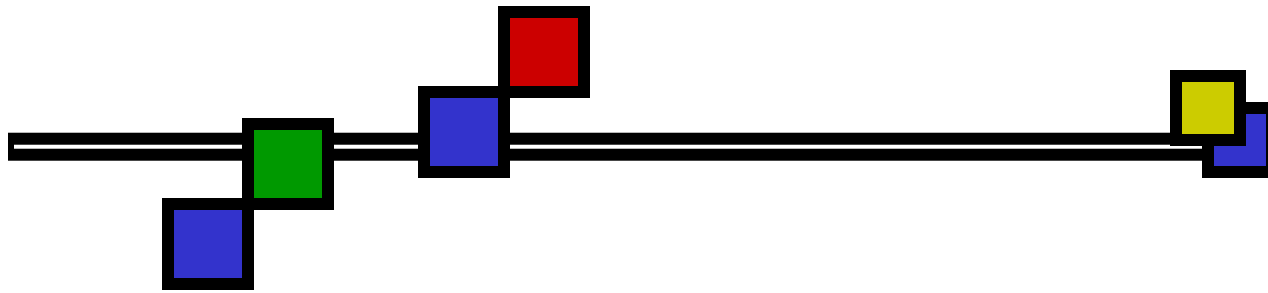
Skirt Spec Sheet

DATE	SEASON	STYLE DESCRIPTION	SIZE
NAME		DESCRIPTION	
FABRICATION		LABEL	
TRIMMINGS		SKETCH	
ACCESSORIES			
	FRONT	BACK	TM
1 WAIST CIRCUMFERENCE			
a. Relaxed			
b. Extended			
2 WAISTBAND - HEIGHT			
3 HIGH HIP (4" from waist)			
4 LOW HIP (7" from waist)			
5 CENTER FRONT - LENGTH			
6 CENTER BACK - LENGTH			
7 SIDE SEAM			
8 SWEEP			
9 SLIT			
a. Length			
b. Depth			
10 DART PLACEMENT			
a. CF			
b. CB			
11 DART			
a. Length			
b. Depth			
12 POCKET PLACEMENT			
a. Waist to top pocket edge			
b. CF to pocket edge (top/bottom)			
c. Side seam to pocket edge (top/bottom)			
d. CB to pocket edge (top/bottom)			
13 POCKET - WIDTH			
14 POCKET - LENGTH			
15 PLEAT PLACEMENT (distance from CF)			
16 PLEAT - DEPTH			
17 ZIPPER PLACKET			
a. Width			
b. Length			
18 BELT LOOP PLACEMENT			
a. Distance from CF			
b. Distance from CB			
c. Distance from SS			
19 BELT LOOPS - WIDTH			
20 BELT LOOPS - LENGTH			
21 BUTTON PLACEMENT			
22 HEM - DEPTH			
REMARKS/OTHER SPECS/STITCHING			
total measurement (TM)			
high point of shoulder (HPS)			
center front (CF), center back (CB)			
total measurement (TM), high point of shoulder (HPS), center front (CF), center back (CB), side seam (SS)			

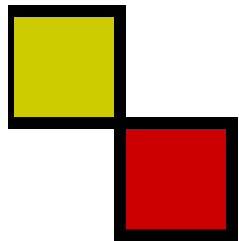


Measurement Points

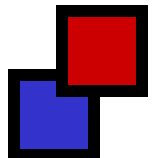


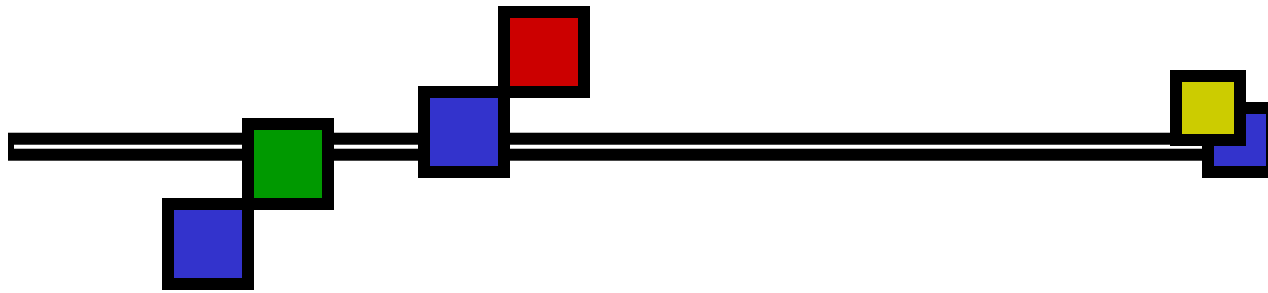


Quality Assurance

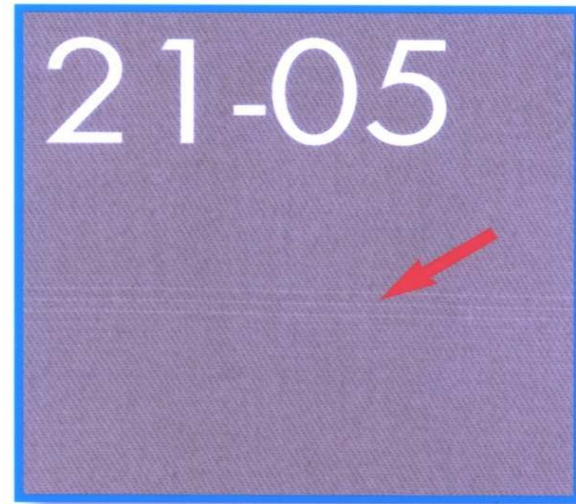
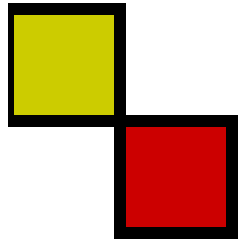


uneven filling

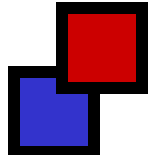




Quality Assurance

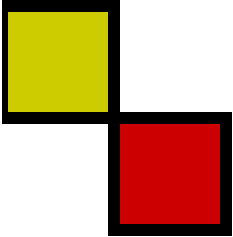


set mark / loom stop





References

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- Bryant, M. W. & DeMers, D. (2002). *The Spec Manual*. New York: Fairchild Publications, Inc.
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