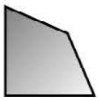
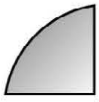
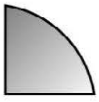
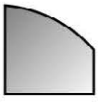
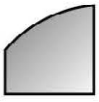
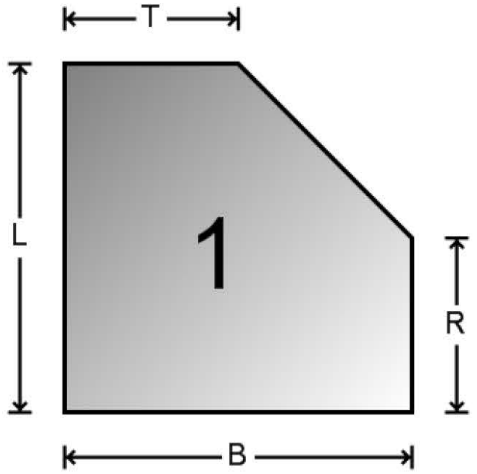
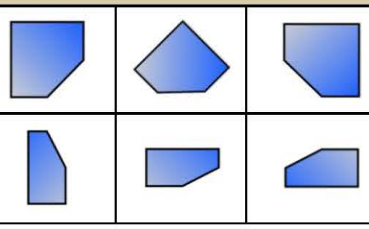
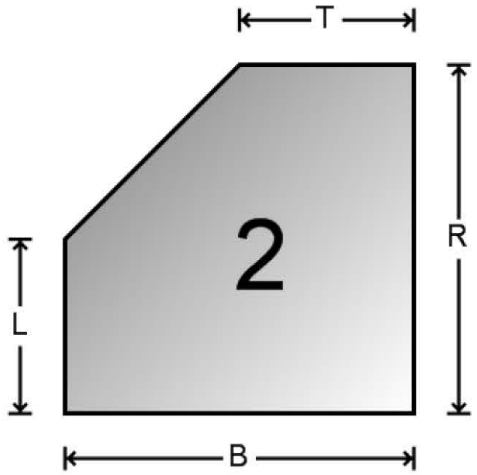
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	 17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	 66	 67	68	69	 70
 71	72								



Angled Trapezoid RH

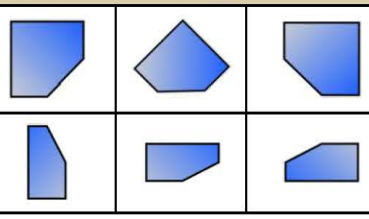
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

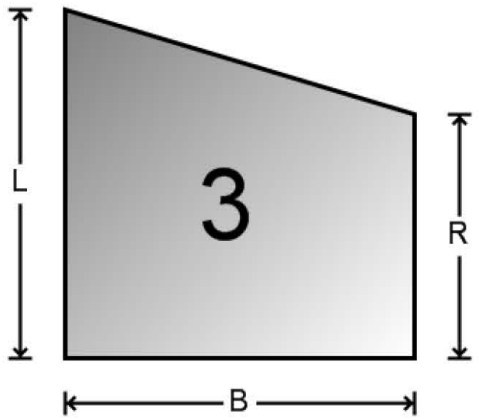
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Left = overall height



Angled Pentoid LH

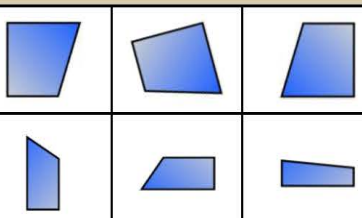
Dimensional Constraints	
Base:	Required
Left:	Less Than Right; Required
Right:	Required
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

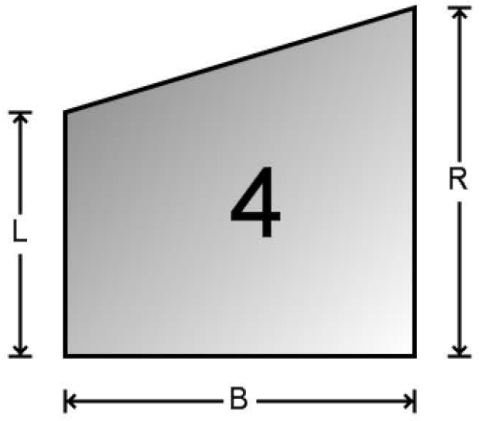
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Right = overall height



Trapezoid RH

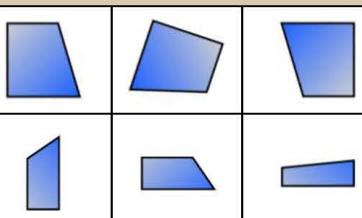
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	N/A
S1:	N/A
S2:	N/A

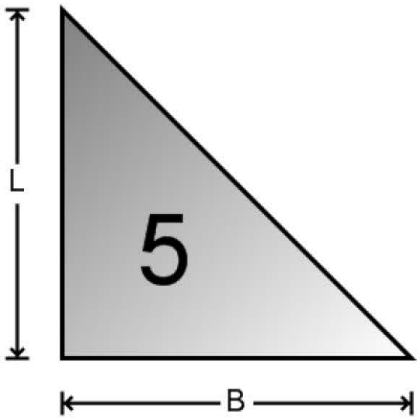
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Left = overall height



Trapezoid LH

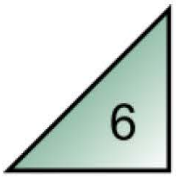
Dimensional Constraints	
Base:	Required
Left:	Less Than Right; Required
Right:	Required
Top:	N/A
S1:	N/A
S2:	N/A

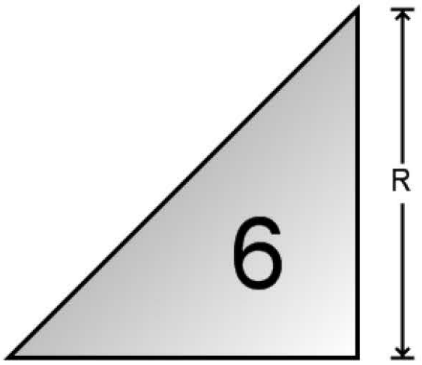
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Right = overall height



Right Triangle RH

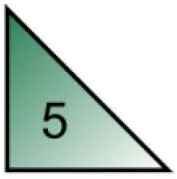
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	N/A
Top:	N/A
S1:	N/A
S2:	N/A

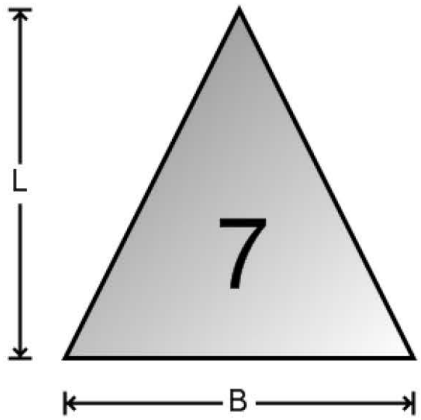
Mirror Image	Possible Configurations			Shape Notes
				• Base = overall width • Left = overall height



Right Triangle LH

Dimensional Constraints	
Base:	Required
Left:	N/A
Right:	Required
Top:	N/A
S1:	N/A
S2:	N/A

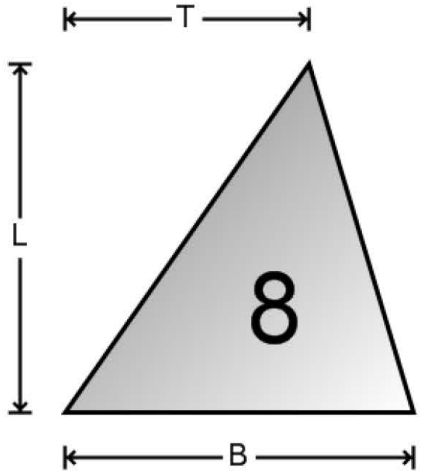
Mirror Image	Possible Configurations			Shape Notes
				• Base = overall width • Right = overall height



Isosceles Triangle

Dimensional Constraints	
Base:	Required
Left:	Required
Right:	N/A
Top:	N/A
S1:	N/A
S2:	N/A

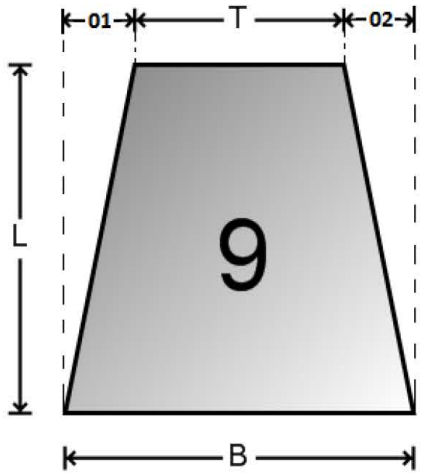
Possible Configurations	Shape Notes
	• Base = overall width • Left = overall height • Center Point or Isosceles Triangle



Acute Triangle

Dimensional Constraints	
Base:	Required
Left:	Required
Right:	N/A
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

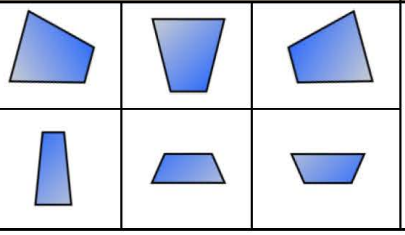
Possible Configurations	Shape Notes
	• Base = overall width • Left = overall height



Equal Trap

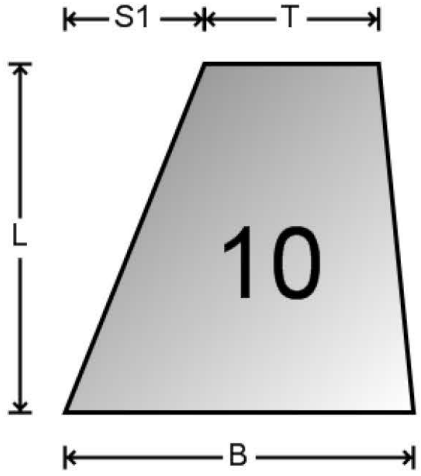
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	N/A
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

Possible Configurations



Shape Notes

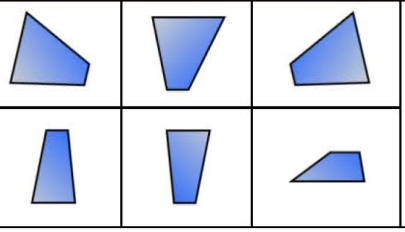
- Base = overall width
- Left = overall height
- Offsets 01 and 02 must be equal



Trap

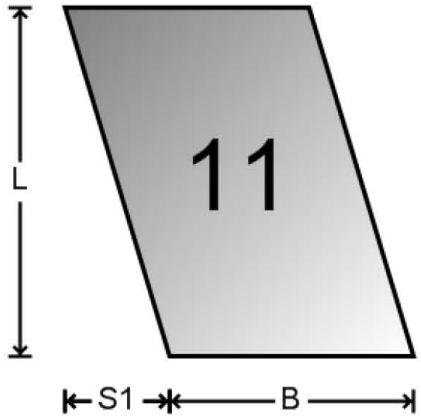
Dimensional Constraints	
Base:	Greater Than S1 + Top; Rqrd
Left:	Required
Right:	N/A
Top:	Required
S1:	Required
S2:	N/A

Possible Configurations



Shape Notes

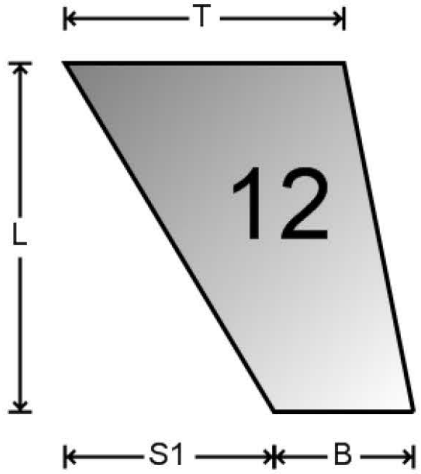
- Base = overall width
- Left = overall height



Parallelogram LH

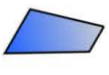
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	N/A
Top:	N/A
S1:	Required
S2:	N/A

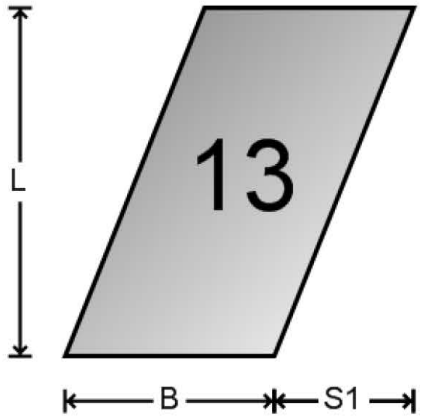
Mirror Image	Possible Configurations	Shape Notes
		• S1 + Base = overall width • Left = overall height



Unequal Trap LH

Dimensional Constraints	
Base:	Required
Left:	Required
Right:	N/A
Top:	Less Than Base + S1; Required
S1:	Required
S2:	N/A

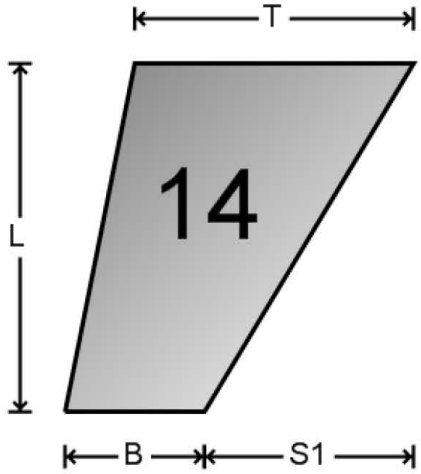
Mirror Image	Possible Configurations	Shape Notes
		• S1 + Base = overall width • Left = overall height



Parallelogram RH

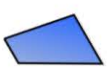
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	N/A
Top:	N/A
S1:	Required
S2:	N/A

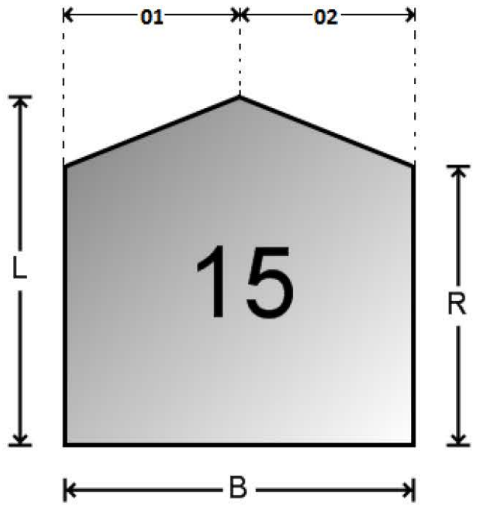
Mirror Image	Possible Configurations	Shape Notes
		• Base + S1 = overall width • Left = overall height



Unequal Trap RH

Dimensional Constraints	
Base:	Required
Left:	Required
Right:	N/A
Top:	Less Than Base + S1; Required
S1:	Required
S2:	N/A

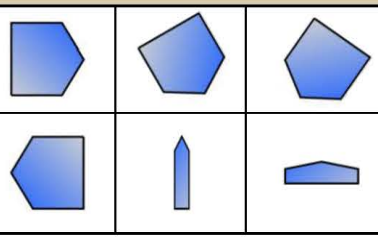
Mirror Image	Possible Configurations	Shape Notes
		• Base + S1 = overall width • Left = overall height



Pentoid

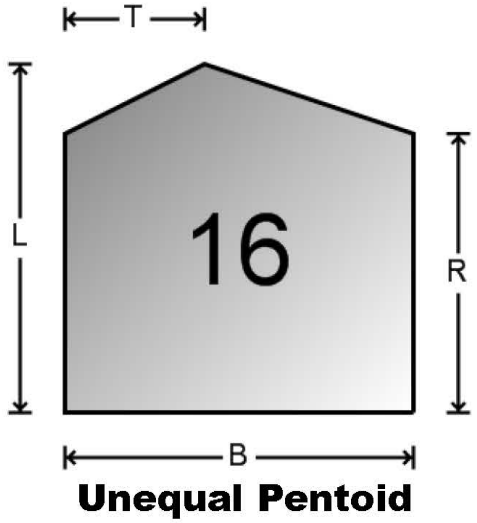
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	N/A
S1:	N/A
S2:	N/A

Possible Configurations



Shape Notes

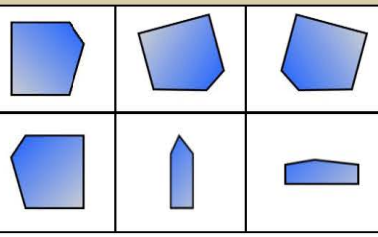
- Offsets must be equal (01 and 02 = ½ the Base)
- Base = overall width
- Left = overall height



Unequal Pentoid

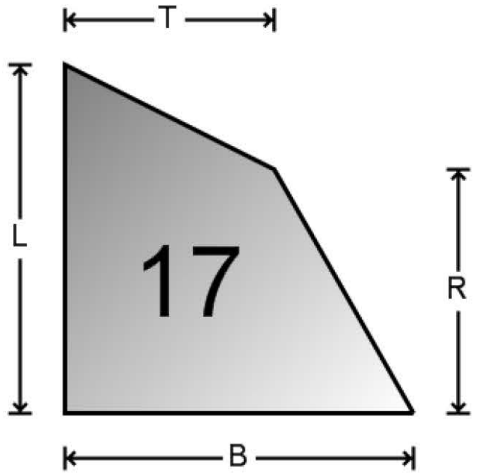
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

Possible Configurations



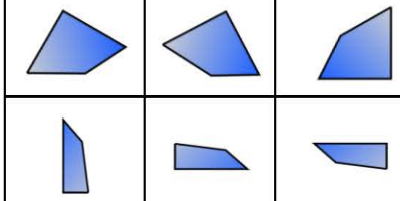
Shape Notes

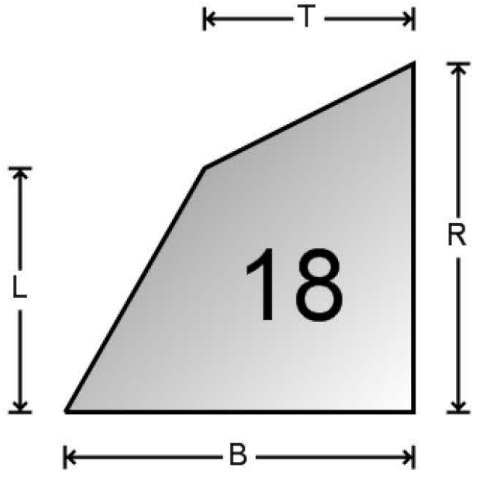
- Base = overall width
- Left = overall height



Custom Trap

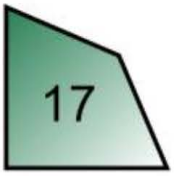
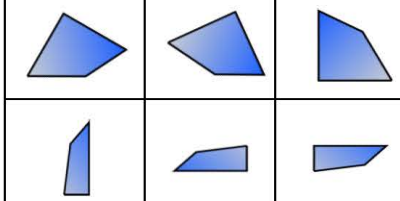
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

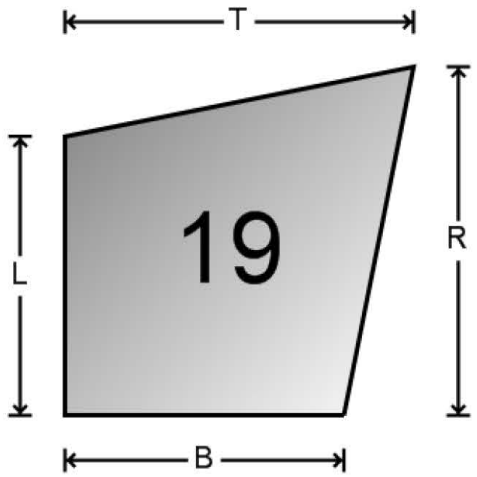
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Left = overall height



Custom Trap

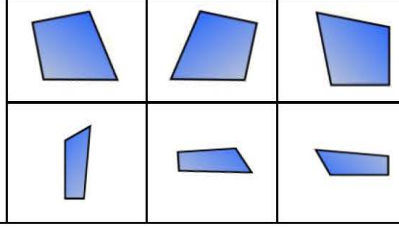
Dimensional Constraints	
Base:	Required
Left:	Less Than Right; Required
Right:	Required
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

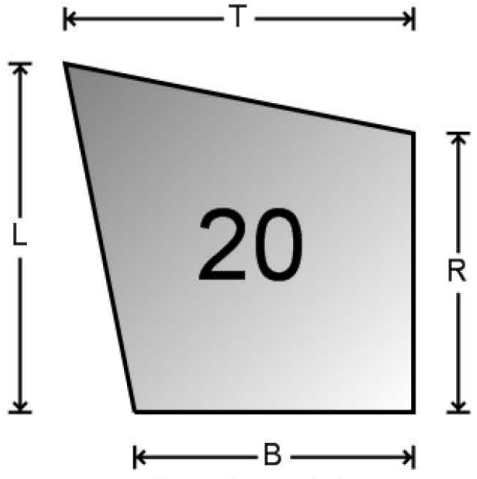
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Right = overall height



Custom Trap

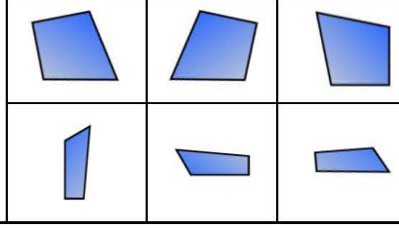
Dimensional Constraints	
Base:	Required
Left:	Less Than Right; Required
Right:	Required
Top:	Greater Than Base; Required
S1:	N/A
S2:	N/A

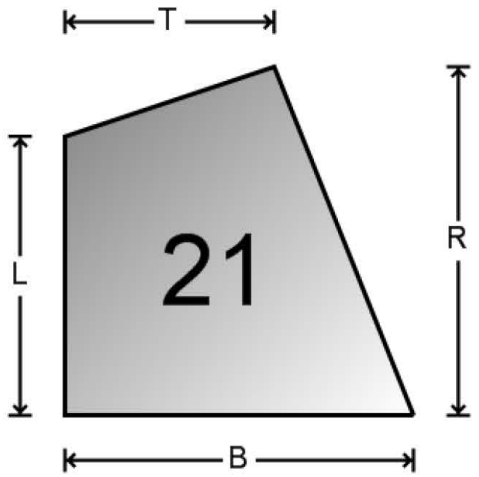
Mirror Image	Possible Configurations	Shape Notes
		• Top = overall width • Right = overall height



Custom Trap

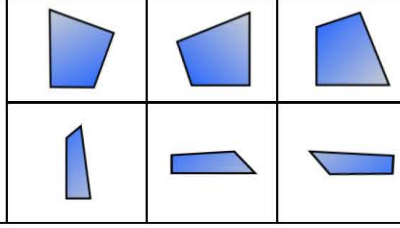
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	Greater Than Base; Required
S1:	N/A
S2:	N/A

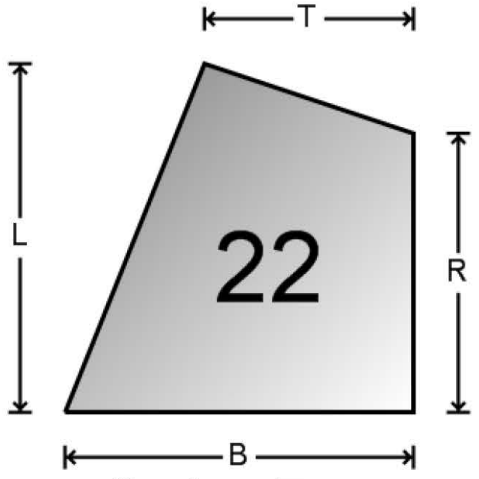
Mirror Image	Possible Configurations	Shape Notes
		• Top = overall width • Left = overall height



Custom Trap

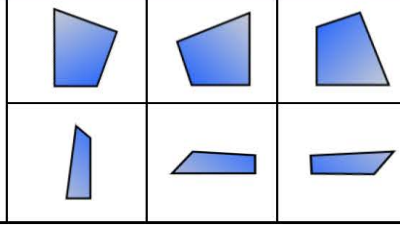
Dimensional Constraints	
Base:	Required
Left:	Less Than Right; Required
Right:	Required
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

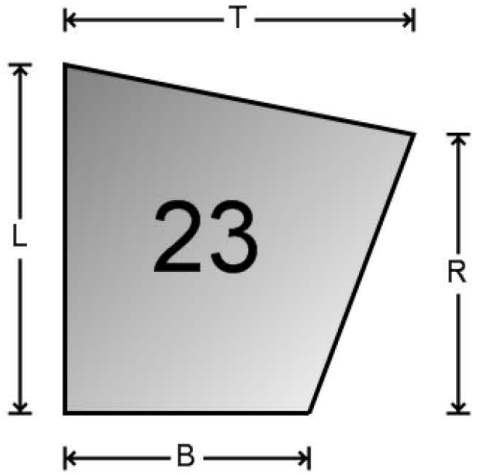
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Right = overall height



Custom Trap

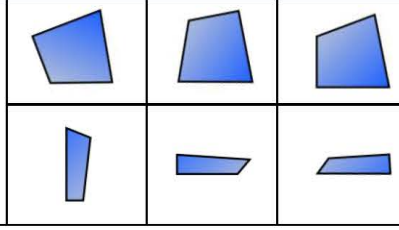
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

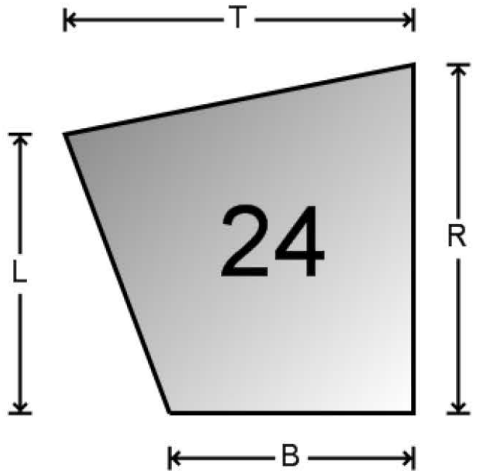
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Left = overall height



Custom Trap

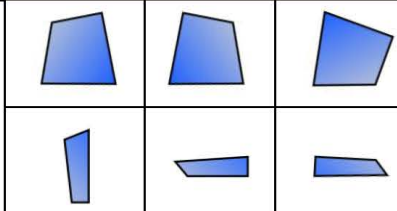
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	Greater Than Base; Required
S1:	N/A
S2:	N/A

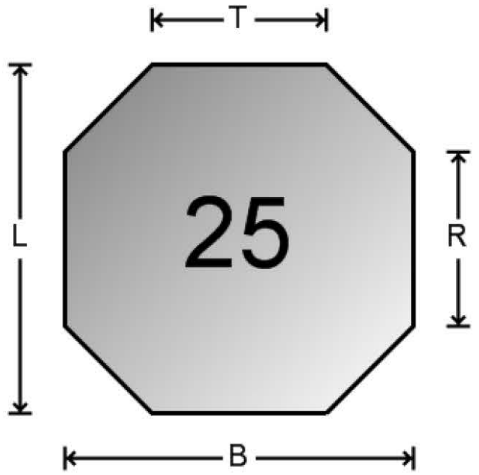
Mirror Image	Possible Configurations	Shape Notes
		• Top = overall width • Left = overall height



Custom Trap

Dimensional Constraints	
Base:	Required
Left:	Less Than Right; Required
Right:	Required
Top:	Greater Than Base; Required
S1:	N/A
S2:	N/A

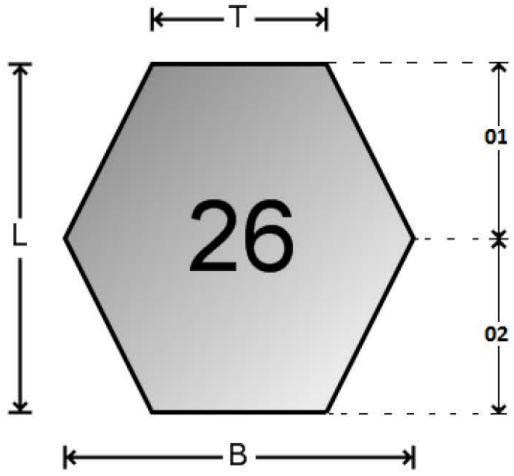
Mirror Image	Possible Configurations	Shape Notes
		• Top = overall width • Right = overall height



Octagon

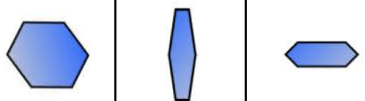
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

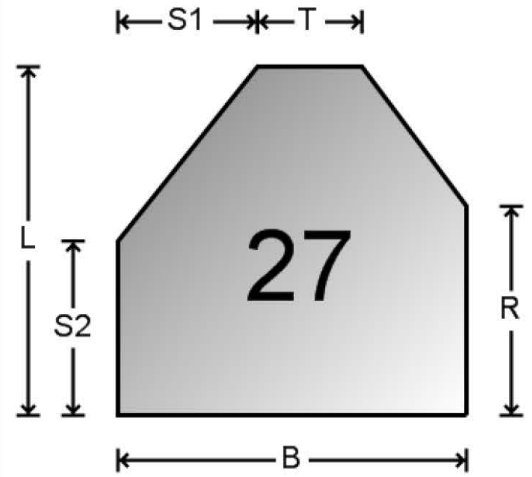
Possible Configurations	Shape Notes
	• Base = overall width • Left = overall height



Hexagon

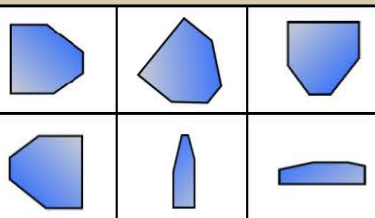
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	N/A
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

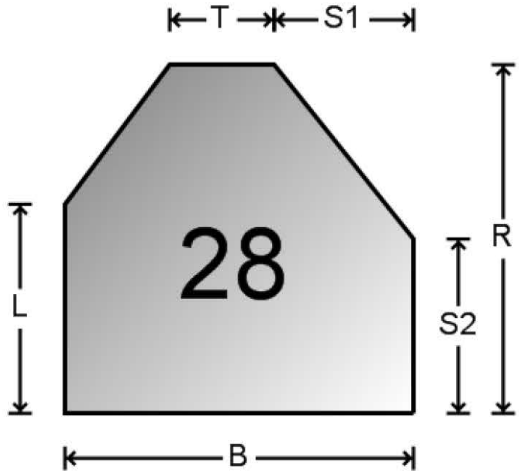
Possible Configurations	Shape Notes
	• Base = overall width • Left = overall height • Offsets must be equal (01 and 02 = ½ the Left)



Custom Hexagon

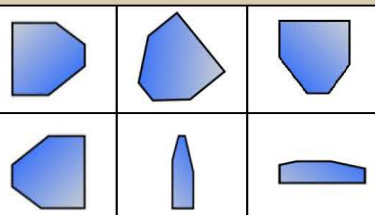
Dimensional Constraints	
Base:	Greater Than Top + S1; Rqrd
Left:	Greater Than Right; Required
Right:	Greater Than or Equal to S2; Rq
Top:	Required
S1:	Required
S2:	Required

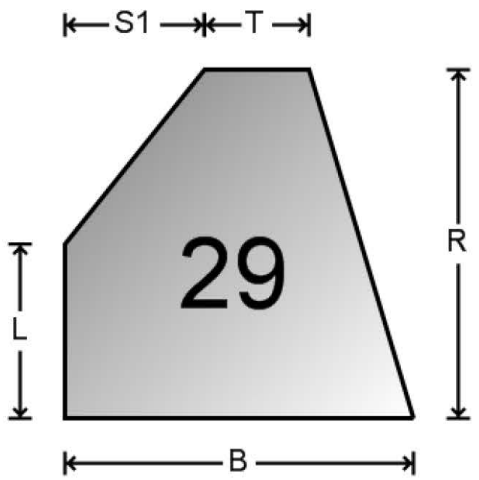
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Left = overall height



Custom Hexagon

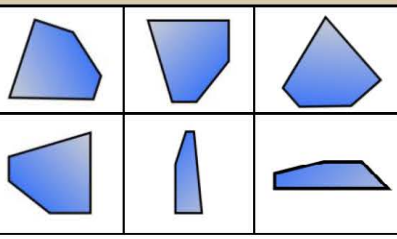
Dimensional Constraints	
Base:	Greater Than Top + S1; Rqrd
Left:	Greater Than or Equal to S2; Rq
Right:	Greater Than Left; Required
Top:	Required
S1:	Required
S2:	Required

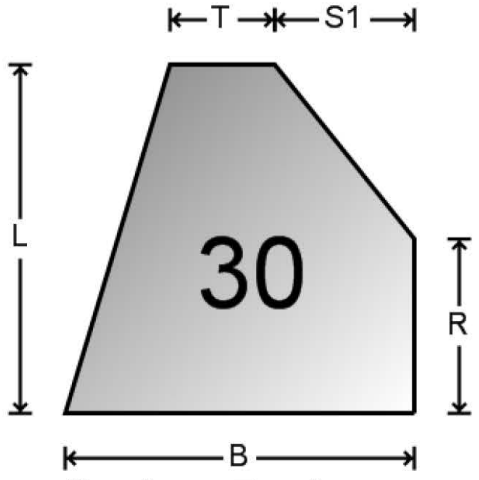
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Right = overall height



Custom Pentagon

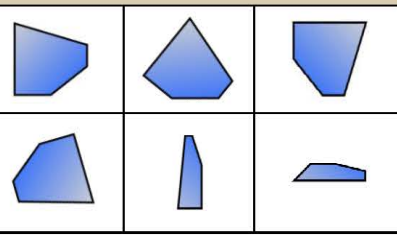
Dimensional Constraints	
Base:	Greater Than Top + S1; Rqrd
Left:	Less Then Right; Required
Right:	Required
Top:	Required
S1:	Required
S2:	N/A

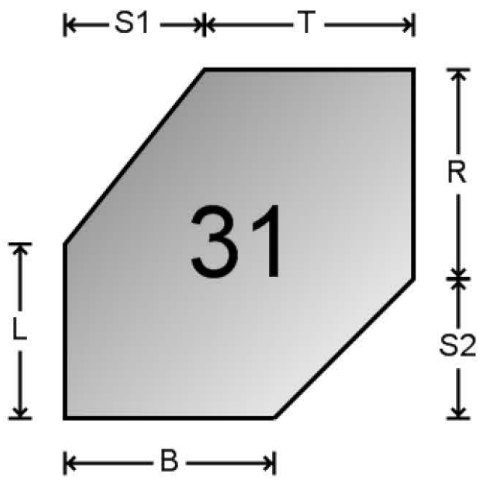
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Right = overall height



Custom Pentagon

Dimensional Constraints	
Base:	Greater Than Top + S1; Rqrd
Left:	Required
Right:	Less Than Left; Required
Top:	Required
S1:	Required
S2:	N/A

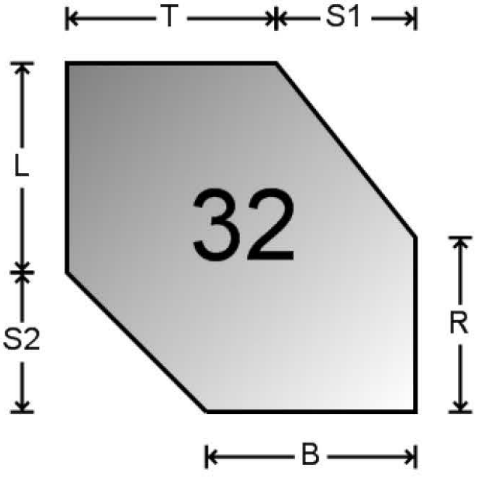
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Left = overall height



Custom Hexagon

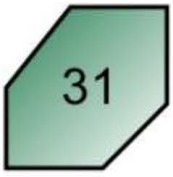
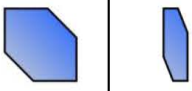
Dimensional Constraints	
Base:	Less Than Top + S1; Required
Left:	Less Than Right + S2; Required
Right:	Required
Top:	Required
S1:	Required
S2:	Required

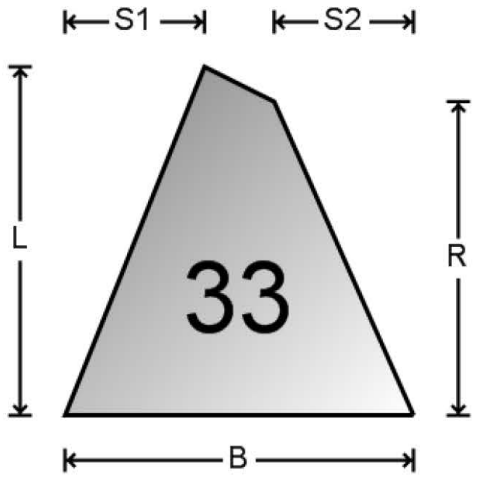
Mirror Image	Possible Configurations	Shape Notes
		• S1 + Top = overall width • Right + S2 = overall height



Custom Hexagon

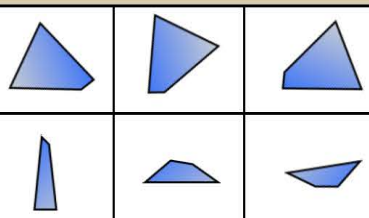
Dimensional Constraints	
Base:	Less Than Top + S1; Required
Left:	Required
Right:	Less Than Left + S2; Required
Top:	Required
S1:	Required
S2:	Required

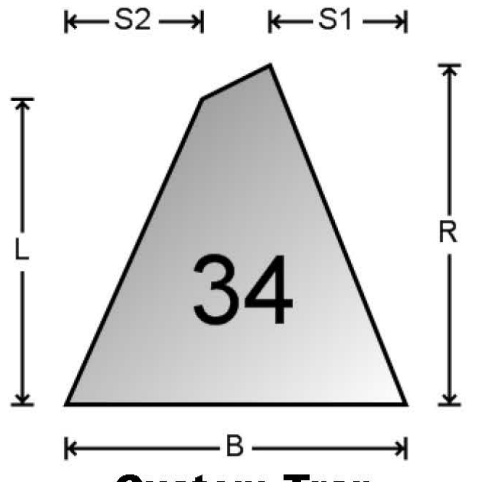
Mirror Image	Possible Configurations	Shape Notes
		• Top + S1 = overall width • Left + S2 = overall height



Custom Trap

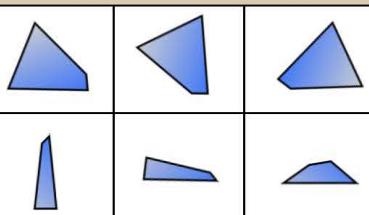
Dimensional Constraints	
Base:	Greater Than S1 + S2; Required
Left:	Required
Right:	Less Than Left; Required
Top:	N/A
S1:	Required
S2:	Required

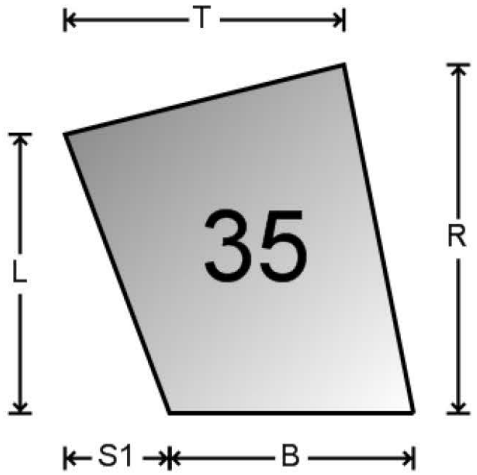
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Left = overall height



Custom Trap

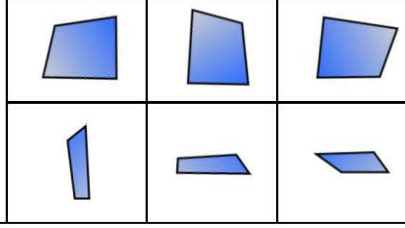
Dimensional Constraints	
Base:	Greater Than S1 + S2; Required
Left:	Less Than Right; Required
Right:	Required
Top:	N/A
S1:	Required
S2:	Required

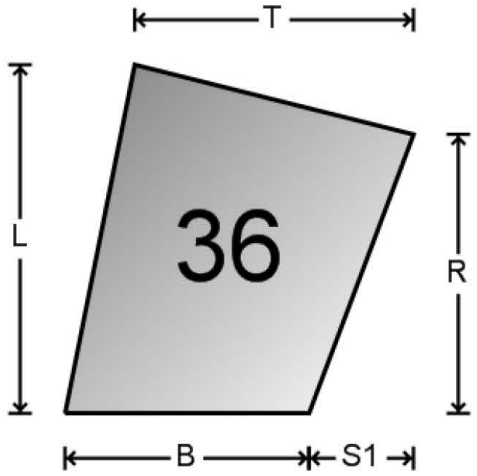
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Right = overall height



Custom Trap

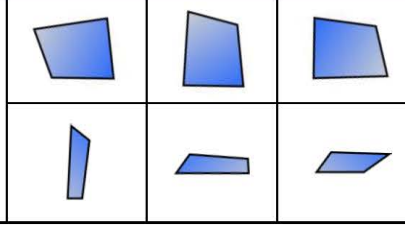
Dimensional Constraints	
Base:	Required
Left:	Less Than Right; Required
Right:	Required
Top:	Less Than Base + S1; Required
S1:	Required
S2:	N/A

Mirror Image	Possible Configurations	Shape Notes
		• Base + S1 = overall width • Right = overall height

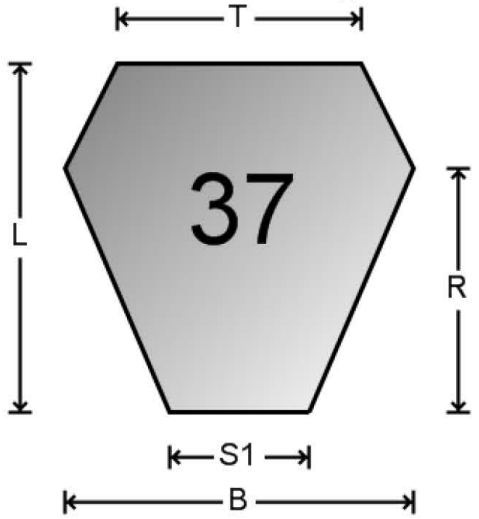


Custom Trap

Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	Less Than Base + S1; Required
S1:	Required
S2:	N/A

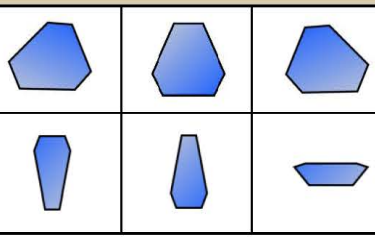
Mirror Image	Possible Configurations	Shape Notes
		• Base + S1 = overall width • Left = overall height

Custom Hexagon



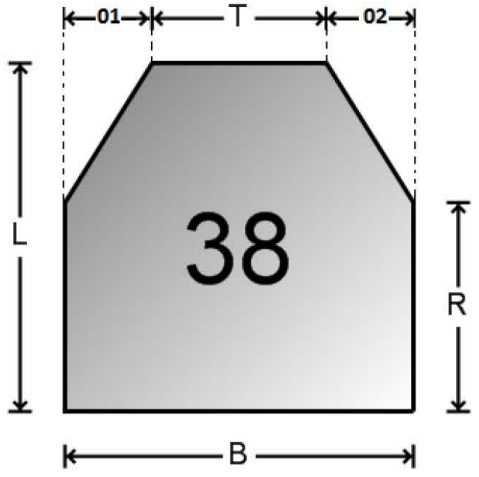
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Then Left; Required
Top:	Less Than Base; Required
S1:	Less Than Base; Required
S2:	N/A

Possible Configurations



Shape Notes

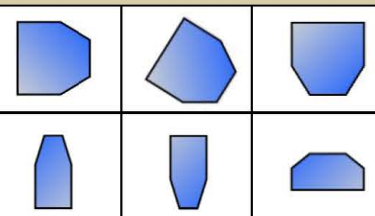
- Base = overall width
- Left = overall height



Custom Hexagon

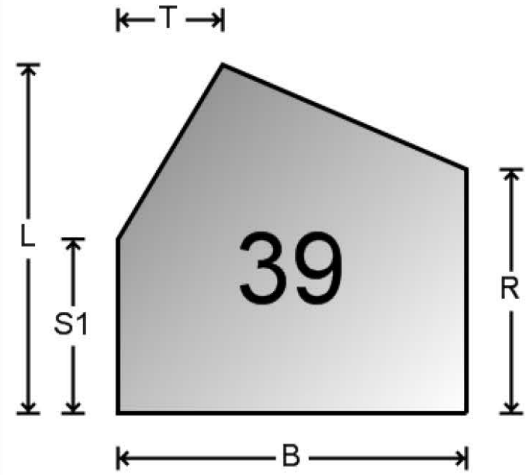
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

Possible Configurations



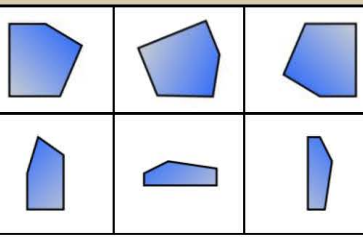
Shape Notes

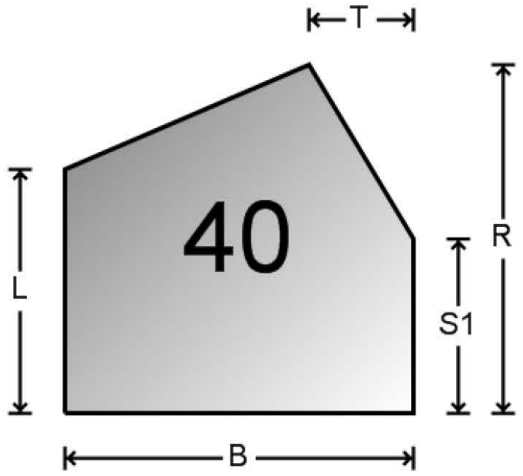
- Base = overall width
- Left = overall height
- Offsets 01 and 02 must be equal



Custom Pentagon

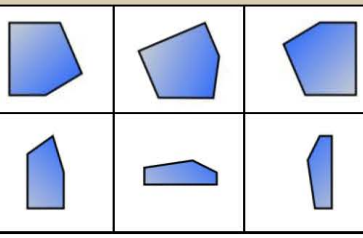
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	Less Than Base; Required
S1:	Less Than Right; Required
S2:	N/A

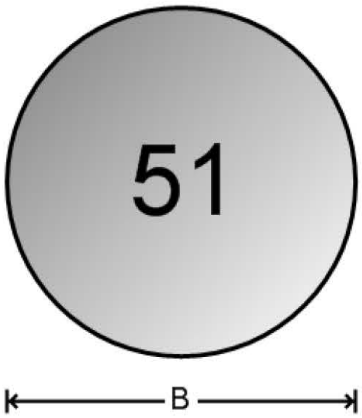
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Left = overall height



Custom Pentagon

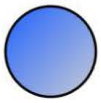
Dimensional Constraints	
Base:	Required
Left:	Less Than Right; Required
Right:	Required
Top:	Less Than Base; Required
S1:	Less Than Left; Required
S2:	N/A

Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Right = overall height

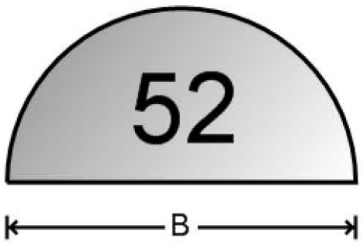


Circle

Dimensional Constraints	
Base:	Required
Left:	N/A
Right:	N/A
Top:	N/A
S1:	N/A
S2:	N/A

Possible Configurations	Shape Notes
	• Base = overall width • Base = overall height • Shape is a perfect circle

***Height must be exactly 1/2 of Base**

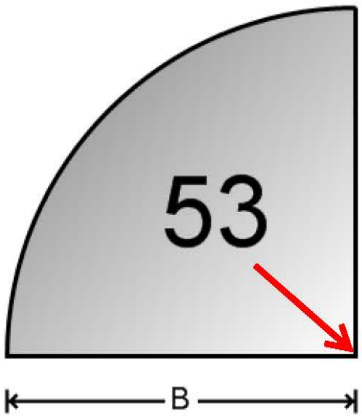


True Half Round

Dimensional Constraints	
Base:	Required
Left:	N/A
Right:	N/A
Top:	N/A
S1:	N/A
S2:	N/A

Possible Configurations	Shape Notes
	• Base = overall width • ½ Base = overall height • Shape is a perfect half-round

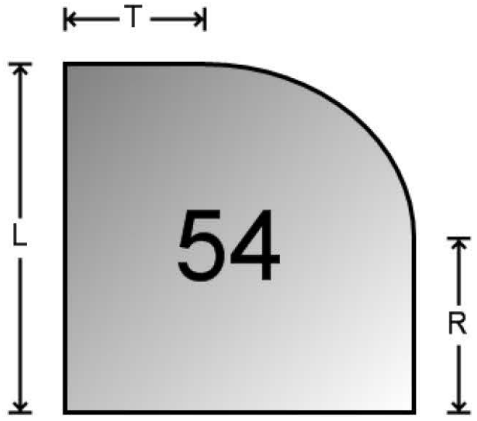
*Angle, Base, & Height must be the same



True Quarter Round

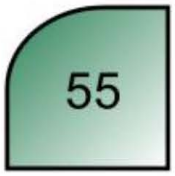
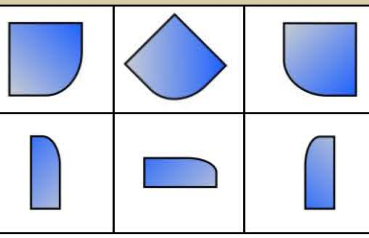
Dimensional Constraints	
Base:	Required
Left:	N/A
Right:	N/A
Top:	N/A
S1:	N/A
S2:	N/A

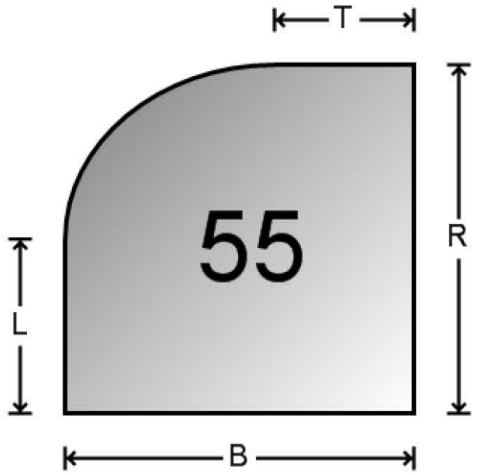
Possible Configurations	Shape Notes
	• Base = overall width • Base = overall height • Shape is a perfect quarter-round



Custom Curve

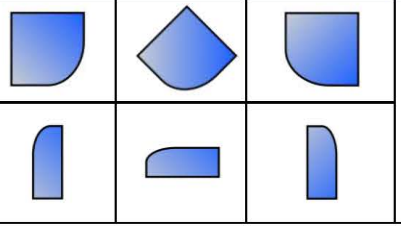
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Then Left; Required
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

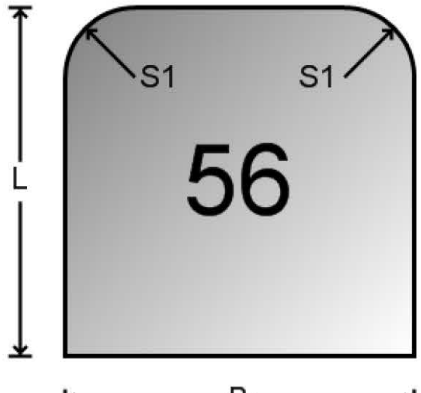
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Left = overall height • The following equation must be satisfied: • L − R = B − T



Custom Curve

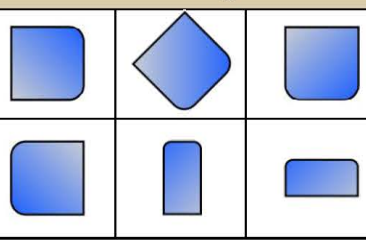
Dimensional Constraints	
Base:	Required
Left:	Less Than Right; Required
Right:	Required
Top:	Less Than Base; Required
S1:	N/A
S2:	N/A

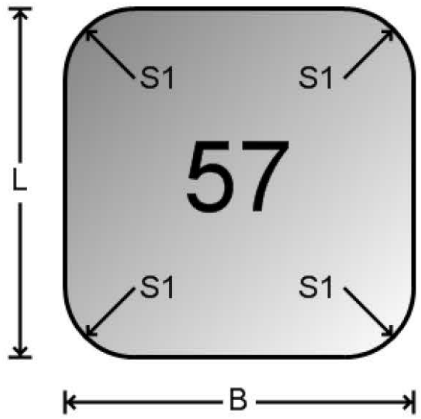
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Right = overall height • The following equation must be satisfied: • R – L = B – T



Custom Curve

Dimensional Constraints	
Base:	Required
Left:	Greater Than S1; Required
Right:	N/A
Top:	N/A
S1:	2 * S1 Less Than Base; Required
S2:	N/A

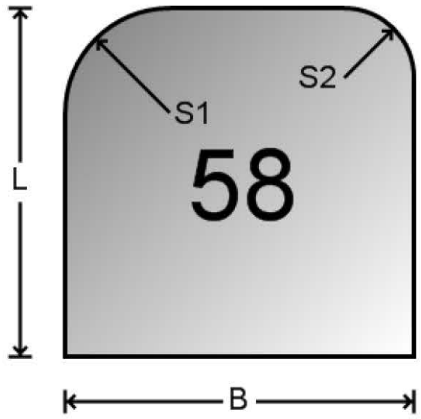
Possible Configurations	Shape Notes
	• Base = overall width • Left = overall height



Custom Curve

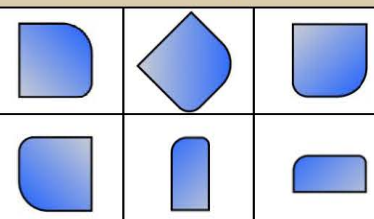
Dimensional Constraints	
Base:	Required
Left:	Greater Than 2 * S1; Required
Right:	N/A
Top:	N/A
S1:	2 * S1 Less Than Base; Required
S2:	N/A

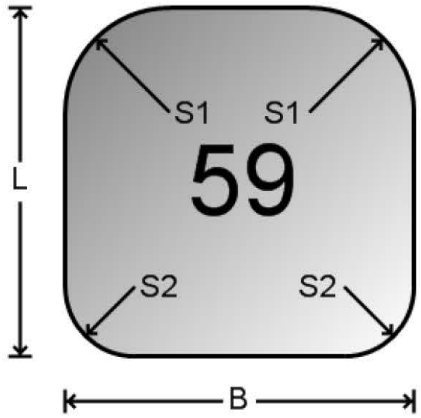
Possible Configurations	Shape Notes
	• Base = overall width • Left = overall height



Custom Curve

Dimensional Constraints	
Base:	Greater Than S1 + S2; Required
Left:	Required
Right:	N/A
Top:	N/A
S1:	Less Than Left; Required
S2:	Less Than Left; Required

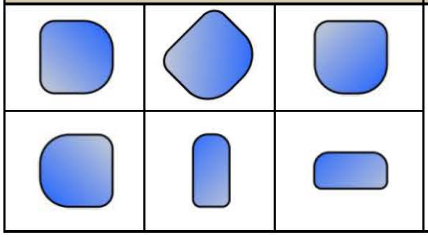
Possible Configurations	Shape Notes
	• Base = overall width • Left = overall height



Custom Curve

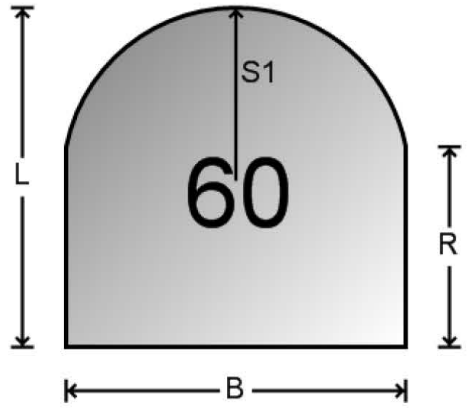
Dimensional Constraints	
Base:	Required
Left:	Greater Than S1 + S2; Required
Right:	N/A
Top:	N/A
S1:	2 * S1 Less Than Base; Required
S2:	2 * S2 Less Than Base; Required

Possible Configurations



Shape Notes

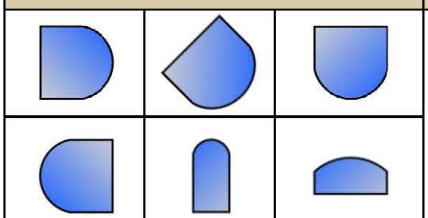
- Base = overall width
- Left = overall height



Extended Leg Segment

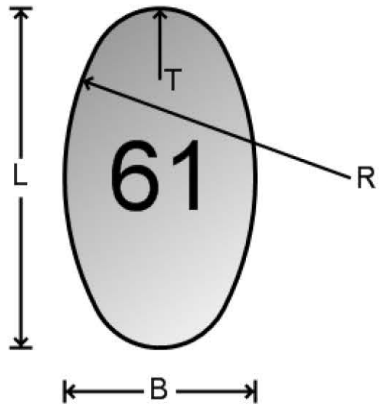
Dimensional Constraints	
Base:	Less Than 2 * S1; Required
Left:	Less Than Right + S1; Required
Right:	Less Than Left (Optional)
Top:	N/A
S1:	Required
S2:	N/A

Possible Configurations



Shape Notes

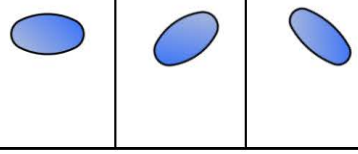
- (Base is zero) $B = SQR(4 * (2 * S1 * (L - R) - (L_R)^2))$
- (S1 is zero) $S1 = \frac{B^2}{4} + \frac{(L-R)^2}{2*(L-R)}$
- (Left is zero) $L = Part\ 1 - Part\ 2$
  - Part 1 = $S1 + R$; Part 2 = $.5 * SQR(4 * (S1 + R)^2 - (B^2 + 4 * R^2 + 8 * S1 * R))$
- (Right is zero) $R = Part\ 1 + L - S1$
  - Part 1 = $.5 * SQR(4 * (S1 - L)^2 - (B^2 + 4 * L^2 - 8 * S1 * L))$
- Base = overall width; Left = overall height



Oval

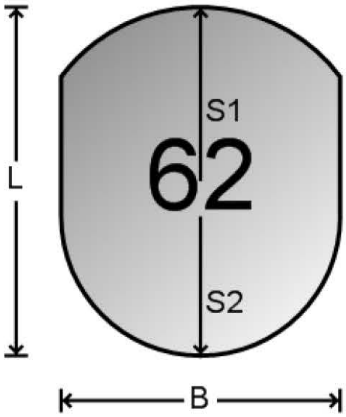
Dimensional Constraints	
Base:	Less Than 2 * Right; Required
Left:	Required
Right:	Greater Than Top; Required
Top:	Less Than ½ * Base; Required
S1:	N/A
S2:	N/A

Possible Configurations



Shape Notes

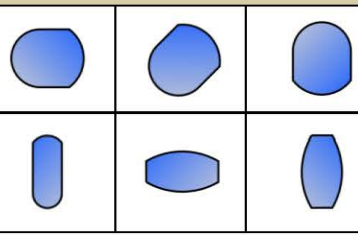
- Base = overall width; Left = overall height
- The overall height (L) can be found using the following equation:
  - $L = 2 * \left[\sqrt{(R-T)^2 - \left(R - \frac{B}{2}\right)^2} + T\right]$
- The overall Base can be found using the following equation:
  - $B = 2 * \left[R - \sqrt{((R-T)^2 - \left(\frac{L}{2} - T\right)^2)}\right]$



Custom Curve

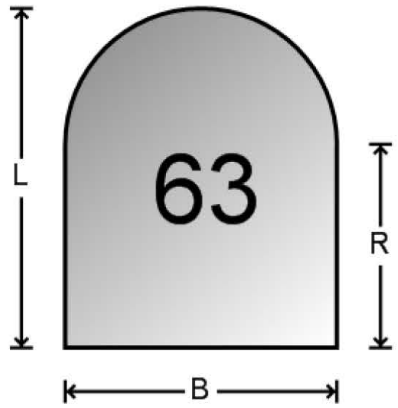
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	N/A
Top:	N/A
S1:	2*S1 >= Base; Required
S2:	2*S2 >= Base; Required

Possible Configurations



Shape Notes

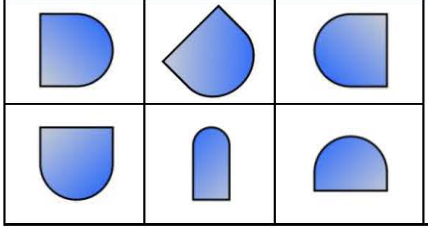
- Base = overall width
- Left = overall height



Extended Half Round

Dimensional Constraints	
Base:	Required
Left:	Greater Than ½ * Base; Rqrd
Right:	Less Than Left (Optional)
Top:	N/A
S1:	N/A
S2:	N/A

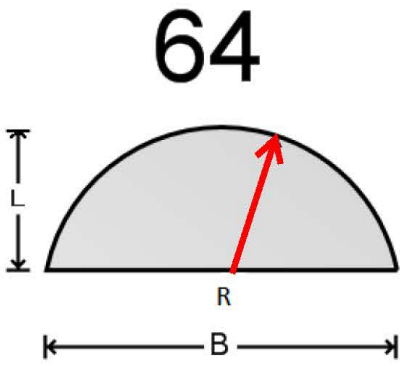
Possible Configurations



Shape Notes

- Base = overall width
- Left = overall height
- The Right leg dimension (R) may be found using the following equation:
  - $R = L - \frac{B}{2}$

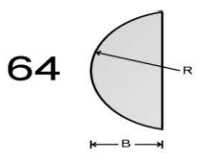
***Height(L) cannot be greater than 1/2 width(B) otherwise it'll be shape 60 (Extended Leg Seg.)**



Half Round/Chord

Dimensional Constraints	E1	Shop Floor
Base:	Required	Less Than Right; Rq
Left:	Less than Right; Rqrd	N/A
Right:	Required	Required
Top:	N/A	N/A
S1:	N/A	N/A
S2:	N/A	N/A

Shop Floor Image

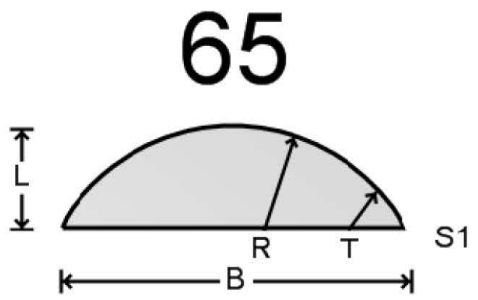


Possible Configurations

Shape Notes

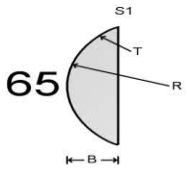
- Base = overall width; Left = overall height
- (Find the Base) $B = \sqrt{(8 * L * R - 4 * L^2)}$
- (Find the Left) $L = R - \left[\sqrt{\frac{4*R^2 - B^2}{2}}\right]$
- (Find the Right) $R = \frac{B^2 + (4*L^2)}{8*L}$

- Base = overall height

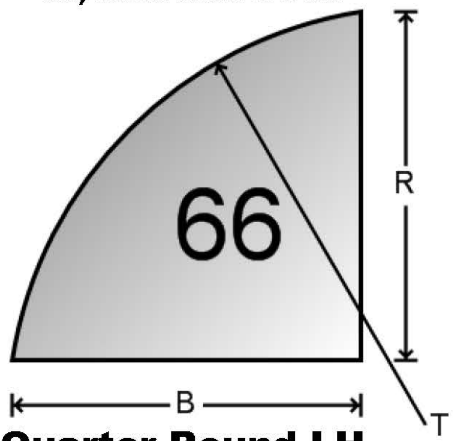


Ellipse

Dimensional Constraints		
	E1	Shop Floor
Base:	Required	Greater Than Top; Rq
Left:	Greater Than Top; Rq	N/A
Right:	Greater Than Left; Rq	Greater than Base; Rq
Top:	Less Then Right; Rq	Less Then Right; Rq
S1:	Required	Required
S2:	N/A	N/A

Shop Floor Image	Possible Configurations	Shape Notes
		• Base = overall width • Left = overall height • (Find the Base) $B = 2 * \left[\sqrt{((R-T)^2 - (R-L-S1)^2 + \sqrt{(T^2 - S1^2)}}\right]$ • Base = overall height

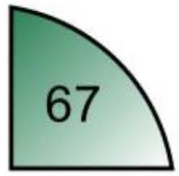
***Even if R & B are same. Angle must! also be the same to be perfect (Shape 53) otherwise it's 66**

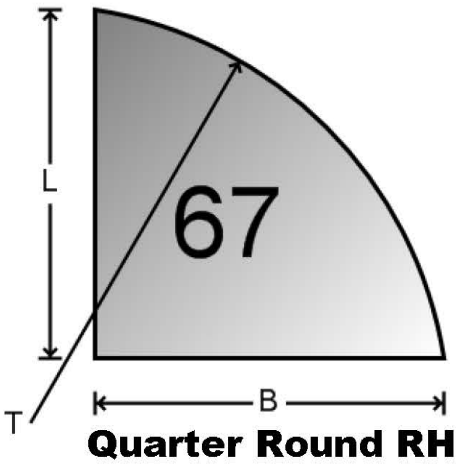


Quarter Round LH

Dimensional Constraints	
Base:	Less Than Top; Required
Left:	N/A
Right:	Less Than Top; Required
Top:	Required
S1:	N/A
S2:	N/A

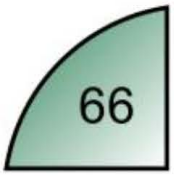
Mirror Image	Possible Configurations	Shape Notes

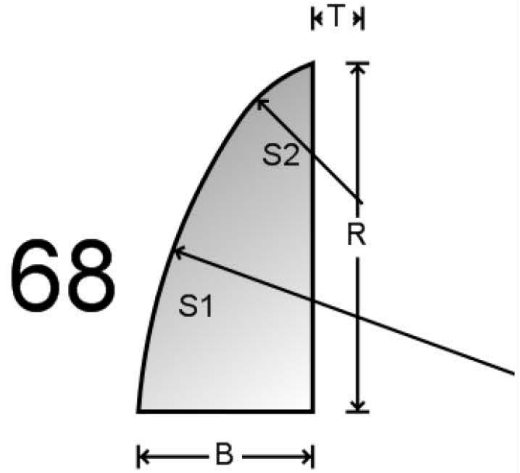
		• Base = overall width; Right = overall width
		• Dimensions must satisfy the following equations to avoid shape bulging:
		  • $B \leq \sqrt{T^2 - (T-R)^2}$
		  • $R \leq \sqrt{T^2 - (T-B)^2}$



Quarter Round RH

Dimensional Constraints	
Base:	Less Than Top; Required
Left:	Less Than Top; Required
Right:	N/A
Top:	Required
S1:	N/A
S2:	N/A

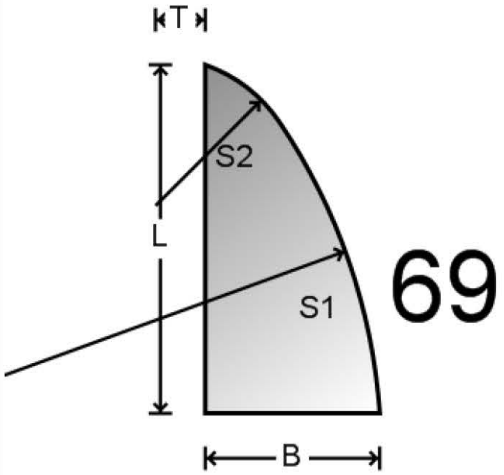
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width; Left = overall height • Dimensions must satisfy the following equations to avoid shape bulging: • $B \leq \sqrt{T^2 - (T-L)^2}$ • $L \leq \sqrt{T^2 - (T-B)^2}$



Custom Curve

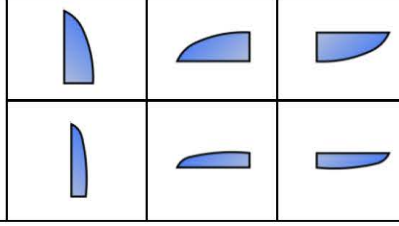
Dimensional Constraints	
Base:	Less Than S1; Required
Left:	N/A
Right:	> S2, < S1; Required
Top:	Required
S1:	Greater Than S2; Required
S2:	Required

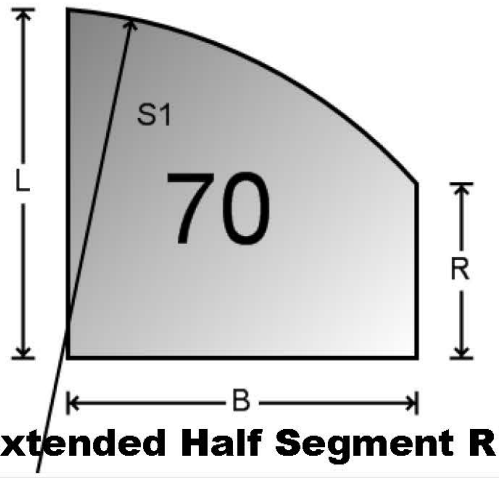
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Right = overall height



Custom Curve

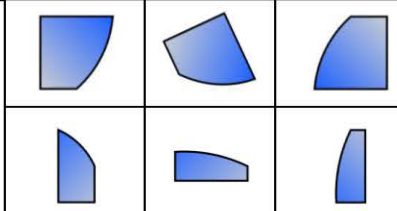
Dimensional Constraints	
Base:	Less Than S1; Required
Left:	> S2, < S1; Required
Right:	N/A
Top:	Required
S1:	Greater Than S2; Required
S2:	Required

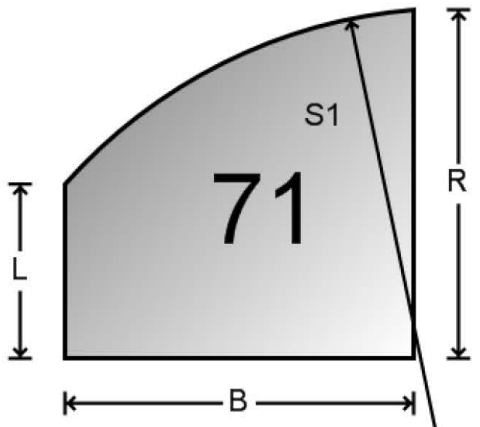
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width • Left = overall height



Extended Half Segment RH

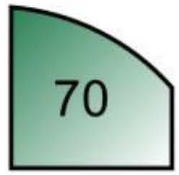
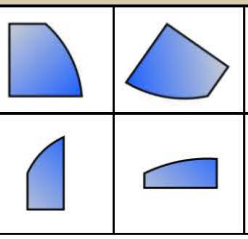
Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	N/A
S1:	>= Base; Required
S2:	N/A

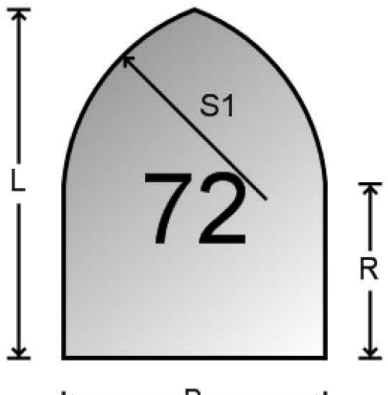
Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width; Left = overall height • Dimensions must satisfy the following equations to avoid shape bulging: • $S1 \geq L - R$ • $B \leq \sqrt{S1^2 - (S1 - L + R)^2}$



Extended Half Segment LH

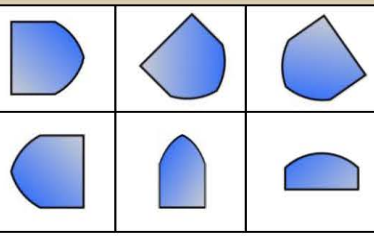
Dimensional Constraints	
Base:	Required
Left:	Less Than Right; Required
Right:	Required
Top:	N/A
S1:	>= Base; Required
S2:	N/A

Mirror Image	Possible Configurations	Shape Notes
		• Base = overall width; Right = overall height • Dimensions must satisfy the following equations to avoid shape bulging: • $S1 \geq R - L$ • $B \leq \sqrt{S1^2 - (S1 - R + L)^2}$



Gothic Head

Dimensional Constraints	
Base:	Required
Left:	Required
Right:	Less Than Left; Required
Top:	N/A
S1:	>= ½ Base; Required
S2:	N/A

Possible Configurations	Shape Notes
	• Base = overall width; Left = overall height • Dimensions must satisfy the following equation to avoid a "keyhole" condition: • $S1 \geq L - R$