#### gd (Shape Guide)

This element specifies the precense of a shape guide that will be used to govern the geometry of the specified shape. A shape guide consists of a formula and a name that the result of the formula is assigned to. Recognized formulas are listed with the fmla attribute documentation for this element.

 [Note: The [order](order.docx) in which guides are specified determines the [order](order.docx) in which their values will be calculated. For instance it is not possible to specify a guide that uses another guides result when that guide has not yet been calculated. [end](end.docx) note]

[Example: Consider the case where the user would like to specify a triangle with it's bottom edge defined not by static points but by using a varying parameter, namely an guide. Consider the diagrams and DrawingML shown below. This first triangle has been drawn with a bottom edge that is equal to the 2/3 the value of the shape height. Thus we see in the figure below that the triangle appears to occupy 2/3 of the vertical space within the shape bounding box.



<a:xfrm>
 <a:off x="3200400" [y](y.docx)="1600200"/>
 <a:ext cx="1705233" cy="679622"/>
</a:xfrm>

<a:custGeom>
 <a:avLst/>
 <a:gdLst>
 <a:gd name="myGuide" fmla="\*/ [h](h.docx) 2 3"/>
 </a:gdLst>

 <a:ahLst/>
 <a:cxnLst/>
 <a:rect l="0" [t](t.docx)="0" r="0" b="0"/>

 <a:pathLst>

 <a:path [w](w.docx)="1705233" [h](h.docx)="679622">
 <a:moveTo>
 <a:pt x="0" [y](y.docx)="myGuide"/>
 </a:moveTo>

 <a:lnTo>
 <a:pt x="1705233" [y](y.docx)="myGuide"/>
 </a:lnTo>

 <a:lnTo>
 <a:pt x="852616" [y](y.docx)="0"/>
 </a:lnTo>
 <a:close/>
 </a:path>
 </a:pathLst>
</a:custGeom>

If however we change the guide to half that, namely 1/3. Then we see the entire bottom edge of the triangle move to now only occupy 1/3 of the toal space within the shape bounding box. This is because both of the bottom points in this triangle depend on this guide for their coordinate positions. The triangle and corresponding DrawingML shown below illustrate this point.



<a:gdLst>
 <a:gd name="myGuide" fmla="\*/ [h](h.docx) 1 3"/>
</a:gdLst>

[end](end.docx) example]

|  |
| --- |
| Parent Elements |
| [avLst](avLst.docx) (§); [gdLst](gdLst.docx) (§) |

|  |  |
| --- | --- |
| Attributes | Description |
| fmla (Shape Guide Formula) | Specifies the formula that will be used to calculate the value for a guide. Each formula has a certain number of arguments and a specific set of operations to perform on these arguments in [order](order.docx) to generate a value for a guide. There are a total of 17 different formulas available. These are shown below with the usage for each defined.('\*/') - Multiply Divide FormulaArguments: 3 (fmla="\*/ x [y](y.docx) z")Usage: "\*/ x [y](y.docx) z" = ((x \* y) / z) = value of this guide('+-') - Add Subtract FormulaArguments: 3 (fmla="+- x [y](y.docx) z")Usage: "+- x [y](y.docx) z" = ((x + y) - z) = value of this guide('+/') - Add Divide FormulaArguments: 3 (fmla="+/ x [y](y.docx) z")Usage: "+/ x [y](y.docx) z" = ((x + y) / z) = value of this guide('?:') - If Else FormulaArguments: 3 (fmla="?: x [y](y.docx) z")Usage: "?: x [y](y.docx) z" = if (x > 0), then [y](y.docx) = value of this guide,[else](else.docx) z = value of this guide('abs') - Absolute Value FormulaArguments: 1 (fmla="abs [x](x.docx)")Usage: "abs x" = if (x < 0), then (-1) \* x = value of this guide[else](else.docx) x = value of this guide('at2') - ArcTan FormulaArguments: 2 (fmla="at2 x [y](y.docx)")Usage: "at2 x [y](y.docx)" = arctan(y / x) = value of this guide('cat2') - Cosine ArcTan FormulaArguments: 3 (fmla="cat2 x [y](y.docx) z")Usage: "cat2 x [y](y.docx) z" = (x\*(cos(arctan(z / y))) = value of this guide('cos') - Cosine FormulaArguments: 2 (fmla="cos x [y](y.docx)")Usage: "cos x [y](y.docx)" = (x \* cos( [y](y.docx) )) = value of this guide('max') - Maximum Value FormulaArguments: 2 (fmla="max x [y](y.docx)")Usage: "max x [y](y.docx)" = if (x > y), then x = value of this guide[else](else.docx) [y](y.docx) = value of this guide('min') - Minimum Value FormulaArguments: 2 (fmla="min x [y](y.docx)")Usage: "min x [y](y.docx)" = if (x < y), then x = value of this guide[else](else.docx) [y](y.docx) = value of this guide('mod') - Modulo FormulaArguments: 3 (fmla="mod x [y](y.docx) z")Usage: "mod x [y](y.docx) z" = sqrt(x^2 + b^2 + c^2) = value of this guide('pin') - Pin To FormulaArguments: 3 (fmla="pin x [y](y.docx) z")Usage: "pin x [y](y.docx) z" = if (y < x), then x = value of this guide[else](else.docx) if (y > z), then z = value of this guide[else](else.docx) [y](y.docx) = value of this guide('sat2') - Sine ArcTan FormulaArguments: 3 (fmla="sat2 x [y](y.docx) z")Usage: "sat2 x [y](y.docx) z" = (x\*sin(arctan(z / y))) = value of this guide('sin') - Sine FormulaArguments: 2 (fmla="sin x [y](y.docx)")Usage: "sin x [y](y.docx)" = (x \* sin( [y](y.docx) )) = value of this guide('sqrt') - Square Root FormulaArguments: 1 (fmla="sqrt [x](x.docx)")Usage: "sqrt x" = sqrt(x) = value of this guide('tan') - Tangent FormulaArguments: 2 (fmla="tan x [y](y.docx)")Usage: "tan x [y](y.docx)" = (x \* tan( [y](y.docx) )) = value of this guide('val') - Literal Value FormulaArguments: 1 (fmla="[val](val.docx) [x](x.docx)")Usage: "[val](val.docx) x" = x = value of this guide[Note: Guides that have a literal value formula specified via fmla="[val](val.docx) x" above should only be used within the [avLst](avLst.docx) as an adjust value for the shape. This however is not strictly enforced. [end](end.docx) note]The possible values for this attribute are defined by the [ST\_GeomGuideFormula](ST_GeomGuideFormula.docx) simple type (§). |
| [name](name.docx) (Shape Guide Name) | Specifies the name that will be used to reference to this guide. This name may be used just as a variable would within an equation. That is this name may be substituted for literal values within other guides or the specification of the shape path.The possible values for this attribute are defined by the [ST\_GeomGuideName](ST_GeomGuideName.docx) simple type (§). |

The following XML Schema fragment defines the contents of this element:

<complexType [name](name.docx)="CT\_GeomGuide">

 <attribute [name](name.docx)="[name](name.docx)" type="[ST\_GeomGuideName](ST_GeomGuideName.docx)" use="required"/>

 <attribute [name](name.docx)="fmla" type="[ST\_GeomGuideFormula](ST_GeomGuideFormula.docx)" use="required"/>

</complexType>