CHEATSHEET_EUCLIDE

Part I : Def and Get .

Conventions :

Options in [...] E for Euclide T for TikZ

A,B,C,... are names of points

a angle d length and r radius n number

☞ {} for new point () for coordinates or defined point

Points

```
\tkzDefPoint[T](x,y){A}
\tkzDefPoint[T](a:d){A}
\tkzDefPoints{x1/y1/A1,x2/y2/A2,...}
\tkzDefShiftPoint[C](xB,yB){A}
\tkzDefShiftPointCoord[xC,yC](xB,yB){A}
```

Point With

```
\tkzDefPointWith[orthogonal,K=n](A,B)            \tkzGetPoint{X}
\tkzDefPointWith[linear,K=n](A,B)                \tkzGetPoint{X}
\tkzDefPointWith[colinear at=C,K=n](A,B)         \tkzGetPoint{X}
\tkzDefPointWith[orthogonal normed,K=n](A,B)     \tkzGetPoint{X}
\tkzDefPointWith[linear normed,K=n](A,B)        \tkzGetPoint{X}
\tkzDefPointWith[colinear normed at=C,K=n](A,B) \tkzGetPoint{X}
```

Specific Points

```
\tkzDefBarycentricPoint(A1=n1,A2=n2,...)     \tkzGetPoint{X}
\tkzDefCentroid(A,B,...)                     \tkzGetPoint{X}
\tkzDefMidPoint(A,B)                         \tkzGetPoint{X}
\tkzDefIntSimilitudeCenter(#1,#2)(#3,#4)     \tkzGetPoint{X}
\tkzDefExtSimilitudeCenter(#1,#2)(#3,#4)     \tkzGetPoint{X}
```

By transformation

```
\tkzDefPointBy[translation=from B to C](A)   \tkzGetPoint{X}
\tkzDefPointBy[homothety=center B ratio n](A \tkzGetPoint{X}
\tkzDefPointBy[reflection=over B -- C](A)    \tkzGetPoint{X}
\tkzDefPointBy[symmetry=center B](A)         \tkzGetPoint{X}
\tkzDefPointBy[projection=onto B -- C](A)    \tkzGetPoint{X}
\tkzDefPointBy[rotation=center B angle a](A) \tkzGetPoint{X}
\tkzDefPointBy[rotation in rad=center B angle a](A)...
\tkzDefPointBy[inversion=center B through C](A)    ...
```

☞💣 \tkzDefPointsBy[O](A,B,...){E,F,...}

\tkzDefPointsBy[O](A,B,...){} gives A',B',..

Definition of triangles

```
\tkzDefTriangle[equilateral](A,B)                \tkzGetPoint{X}
\tkzDefTriangle[half](A,B)                       \tkzGetPoint{X}
\tkzDefTriangle[pythagore](A,B)                  \tkzGetPoint{X}
\tkzDefTriangle[school](A,B)                     \tkzGetPoint{X}
\tkzDefTriangle[golden](A,B)                     \tkzGetPoint{X}
\tkzDefTriangle[sublime](A,B)                    \tkzGetPoint{X}
\tkzDefTriangle[euclide](A,B)                    \tkzGetPoint{X}
\tkzDefTriangle[gold](A,B)                       \tkzGetPoint{X}
\tkzDefTriangle[cheops](A,B)                     \tkzGetPoint{X}
\tkzDefTriangle[two angles = {#1 and #2}](A,B)   \tkzGetPoint{X}
```

Centers of triangle

```
\tkzDefTriangleCenter[ortho](A,B,C)          \tkzGetPoint{X}
\tkzDefTriangleCenter[centroid](A,B,C)       \tkzGetPoint{X}
\tkzDefTriangleCenter[circum](A,B,C)         \tkzGetPoint{X}
\tkzDefTriangleCenter[in](A,B,C)             \tkzGetPoint{X}
\tkzDefTriangleCenter[ex](A,B,C)             \tkzGetPoint{X}
\tkzDefTriangleCenter[euler](A,B,C)          \tkzGetPoint{X}
\tkzDefTriangleCenter[symmedian](A,B,C)      \tkzGetPoint{X}
\tkzDefTriangleCenter[lemoine](A,B,C)        \tkzGetPoint{X}
\tkzDefTriangleCenter[grebe](A,B,C)          \tkzGetPoint{X}
\tkzDefTriangleCenter[spieker](A,B,C)        \tkzGetPoint{X}
\tkzDefTriangleCenter[gergonne](A,B,C)       \tkzGetPoint{X}
\tkzDefTriangleCenter[nagel](A,B,C)          \tkzGetPoint{X}
```

```
\tkzDefTriangleCenter[mittenpunkt](A,B,C)    \tkzGetPoint{X}
\tkzDefTriangleCenter[feuerbach](A,B,C)      \tkzGetPoint{X}
```

Specific Triangles

```
\tkzDefSpcTriangle[in](A,B,C){Ia,Ib,Ic}  or incentral
or \tkzDefSpcTriangle[in](A,B,C){I_a,I_b,I_c}
or \tkzDefSpcTriangle[in,name=I](A,B,C){a,b,c}
or \tkzDefSpcTriangle[in,name=I](A,B,C){_a,_b,_c}
\tkzDefSpcTriangle[ex](A,B,C){a,b,c} ex or excentral
\tkzDefSpcTriangle[intouch,name=C](A,B,C){a,b,c}  or contact
\tkzDefSpcTriangle[extouch,name=T](A,B,C){a,b,c}
\tkzDefSpcTriangle[centroid,name=M](A,B,C){a,b,c} or medial
\tkzDefSpcTriangle[orthic,name=H](A,B,C){a,b,c} or ortho
\tkzDefSpcTriangle[feuerbach,name=F](A,B,C){a,b,c}
\tkzDefSpcTriangle[euler,name=E](A,B,C){a,b,c}
\tkzDefSpcTriangle[tangential=T](A,B,C){a,b,c}
```

Definition of lines

```
\tkzDefLine[mediator,O](A,B)                    \tkzGetPoint{X}
\tkzDefLine[perpendicular= through C](A,B)      \tkzGetPoint{X}
☞perpendicular= orthogonal
\tkzDefLine[orthogonal= through C](A,B)         \tkzGetPoint{X}
\tkzDefLine[parallel= through C](A,B)           \tkzGetPoint{X}
\tkzDefLine[bisector](A,B,C)                    \tkzGetPoint{X}
\tkzDefLine[bisector out](A,B,C)                \tkzGetPoint{X}
\tkzDefLine[symmedian](A,B,C)                   \tkzGetPoint{X}
 Options K default 1 and normed default false
```

```
\tkzDefTangent[at = A](O)                       \tkzGetPoint{X}
\tkzDefTangent[from = B](O,A)                   \tkzGetPoint{X}{Y}
\tkzDefTangent[from with R = B](O,r)            \tkzGetPoint{X}{Y}
```

Definition of circles

```
\tkzDefCircle(A,B) center A through B            \tkzGetPoint{X}
\tkzDefCircle[diameter](A,B)  diameter AB        \tkzGetPoint{X}
\tkzDefCircle[circum](A,B,C)                     \tkzGetPoint{X}
\tkzDefCircle[in](A,B,C)                         \tkzGetPoint{X}
\tkzDefCircle[ex](A,B,C)                         \tkzGetPoint{X}
\tkzDefCircle[euler](A,B,C)   nine points        \tkzGetPoint{X}
\tkzDefCircle[spieker](A,B,C)                    \tkzGetPoint{X}
\tkzDefCircle[apollonius,K=n](A,B)               \tkzGetPoint{X}
\tkzDefCircle[orthogonal from=A ](A,B)           \tkzGetPoint{X}
\tkzDefCircle[orthogonal through  = C and D ](A,B)\tkzGetPoint{X}
☞   You can get the radius with \tkzGetLength{r}
```

Intersection

```
\tkzInterLL(A,B)(C,D)                      \tkzGetPoint{X}
\tkzInterLC(A,B)(O,C)                      \tkzGetPoint{X}{Y}
\tkzInterLC(A,B)(O,r)                      \tkzGetPoint{X}{Y}
\tkzInterLC(A,B)(O,C,D)                    \tkzGetPoint{X}{Y}
\tkzInterCC(I,A)(J,B)  I and J centers     \tkzGetPoint{X}{Y}
\tkzInterCC[R](I,A)(J,B)  I and J centers  \tkzGetPoint{X}{Y}
\tkzInterCC[with nodes](I,A,B)(J,C,D)      \tkzGetPoint{X}{Y}
☞💣  AB and CD radius
```

Polygons

```
\tkzDefSquare(A,B)                \tkzGetPoint{X}{Y}
\tkzDefGoldRectangle(A,B)         \tkzGetPoint{X}{Y}
\tkzDefRegPolygon[center](A,B)) A center AB rayon P name default
\tkzDefRegPolygon[side,name=H,sides=6](A,B)) side AB hexa
```

Tools

```
\tkzGetPoint{A}
\tkzGetPoints{A}{B}
\tkzGetFirstPoint{A}
\tkzGetSecondPoint{B}
\tkzGetangle{angle}    defines \angle
\tkzGetLength{dist}    defines \dist
```

```
\tkzGetPointCoord(A){V}  you get \Vx and  \Vy
\tkzDuplicateSegment(C,D)(A,B)
☞ or \tkzDuplicateLength
☞ \tkzGetRandPointOn is remplaced by \tkzDefRandPointOn
```

Random point

```
\tkzDefRandPointOn[line = {A--B]                       \tkzGetPoint{X}
\tkzDefRandPointOn[rectangle = {A--B]                  \tkzGetPoint{X}
\tkzDefRandPointOn[segment = {A--B]                    \tkzGetPoint{X}
\tkzDefRandPointOn[circle=center A radius r]           \tkzGetPoint{X}
\tkzDefRandPointOn[circle through=center A through B] \tkzGetPoint{X}
\tkzDefRandPointOn[disk through=center A through B]    \tkzGetPoint{X}
```

```
\tkzDefEquiPoints[#1](#2,#3)
    from  dist  show
```