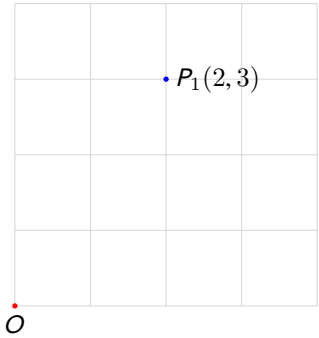


tkz-euclide examples

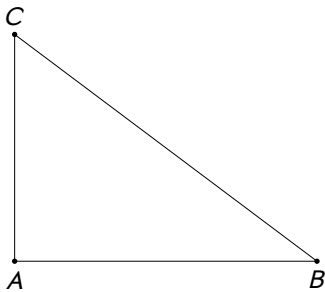
1 Points

1.1 Fixed Points

1.1.1 Cartesian Coordinates: (x, y)

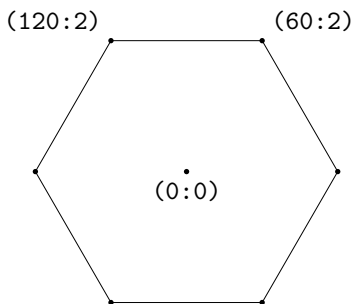


```
\begin{tikzpicture}
\tkzInit[xmax=4,ymax=4]
\tkzGrid[color=gray!30]
\tkzDefPoint(0,0){O}
\tkzDrawPoint[red](O)
\tkzDefPoint(2,3){P1}
\tkzDrawPoint[blue](P1)
\tkzLabelPoint[right](P1){$P_1(2,3)$}
\tkzLabelPoints[below](O)
\end{tikzpicture}
```



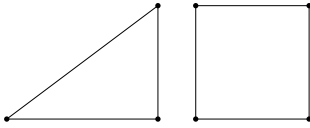
```
\begin{tikzpicture}
\tkzDefPoint(0,0){A}
\tkzDefPoint(4,0){B}
\tkzDefPoint(0,3){C}
\tkzDrawPolygon(A,B,C)
\tkzDrawPoints(A,B,C)
\tkzLabelPoints[below](A,B)
\tkzLabelPoints[above](C)
\end{tikzpicture}
```

1.1.2 Polar Coordinates: (degree:radius)



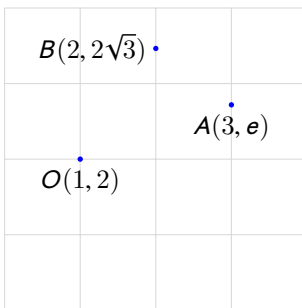
```
\begin{tikzpicture}
\tkzDefPoint(0:0){O}
\tkzDefPoint(60:2){A_1} \tkzDefPoint(120:2){A_2}
\tkzDefPoint(180:2){A_3} \tkzDefPoint(240:2){A_4}
\tkzDefPoint(300:2){A_5} \tkzDefPoint(360:2){A_6}
\tkzDrawPolygon(A_1,A_2,A_3,A_4,A_5,A_6)
\tkzDrawPoints(A_1,A_2,A_3,A_4,A_5,A_6,O)
\tkzLabelPoint[above right](A_1){\texttt{(60:2)}}
\tkzLabelPoint[above left](A_2){\texttt{(120:2)}}
\tkzLabelPoint[below](O){\texttt{(0:0)}}
\end{tikzpicture}
```

1.1.3 Multiple Points: `\tkzDefPoints`



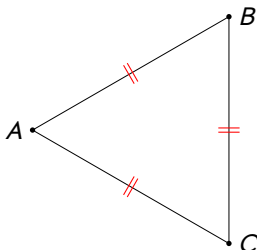
```
\begin{tikzpicture}[scale=1]
\tkzDefPoints{0/0/A,2/0/B,2/1.5/C}
\tkzDrawPolygon(A,B,C)
\tkzDrawPoints(A,B,C)
\tkzDefPoints{2.5/0/A,4/0/B,4/1.5/C,2.5/1.5/D}
\tkzDrawPolygon(A,...,D)
\tkzDrawPoints(A,B,C,D)
\end{tikzpicture}
```

1.2 Calculations: `xfp`



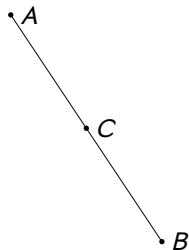
```
\begin{tikzpicture}
\tkzInit[xmax=4,ymax=4] \tkzGrid[color=gray!30]
\tkzDefPoint(-1+2,sqrt(4)){O}
\tkzDefPoint({3*ln(exp(1))},{exp(1)}){A}
\tkzDefPoint({4*sin(pi/6)},{4*cos(pi/6)}){B}
\tkzDrawPoints[color=blue](O,B,A)
\tkzLabelPoint[below](O){$O(1,2)$}
\tkzLabelPoint[below](A){$A(3,e)$}
\tkzLabelPoint[left](B){$B(2,2\sqrt{3})$}
\end{tikzpicture}
```

1.3 Point Relative to Another: `\tkzDefShiftPoint`



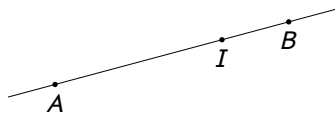
```
\begin{tikzpicture}[scale=1]
\tkzDefPoint(2,3){A}
\tkzDefShiftPoint[A](30:3){B}
\tkzDefShiftPoint[A]({3/2*sqrt(3)},-1.5){C}
\tkzDrawPolygon(A,B,C)
\tkzDrawPoints(A,B,C)
\tkzLabelPoints[right](B,C)
\tkzLabelPoints[left](A)
\tkzMarkSegments[mark=||,color=red](A,B A,C B,C)
\end{tikzpicture}
```

1.4 Midpoint: \tkzDefMidPoint



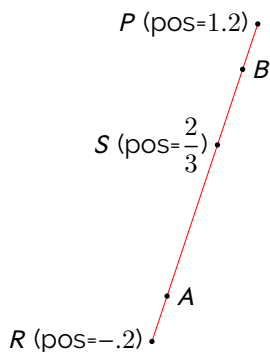
```
\begin{tikzpicture}[scale=1]
\tkzDefPoint(2,3){A}
\tkzDefPoint(4,0){B}
\tkzDefMidPoint(A,B) \tkzGetPoint{C}
\tkzDrawSegment(A,B)
\tkzDrawPoints(A,B,C)
\tkzLabelPoints[right](A,B,C)
\end{tikzpicture}
```

1.5 Barycenter: \tkzDefBarycentricPoint



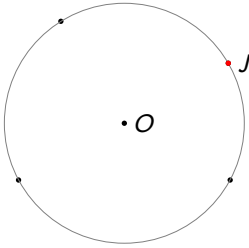
```
\begin{tikzpicture}
\tkzDefPoint(1,1.5){A}
\tkzDefShiftPointCoord[1,1.5](15:3.2){B}
\tkzDefBarycentricPoint(A=2,B=5)
\tkzGetPoint{I}
\tkzDrawPoints(A,B,I) \tkzDrawLine(A,B)
\tkzLabelPoints(A,B,I)
\end{tikzpicture}
```

1.6 Point on a Line: \tkzDefPointOnLine



```
\begin{tikzpicture}
\tkzDefPoints{O/O/A,1/3/B}
\tkzDrawLine[red](A,B)
\tkzDefPointOnLine[pos=1.2](A,B) \tkzGetPoint{P}
\tkzDefPointOnLine[pos=-0.2](A,B) \tkzGetPoint{R}
\tkzDefPointOnLine[pos=2/3](A,B) \tkzGetPoint{S}
\tkzLabelPoints[right](A,B)
\tkzLabelPoint[left](P){$P$ (pos=$1.2$)}
\tkzLabelPoint[left](R){$R$ (pos=$-.2$)}
\tkzLabelPoint[left](S){$S$ (pos=$\dfrac{2}{3}$)}
\tkzDrawPoints(A,B,P,R,S)
\end{tikzpicture}
```

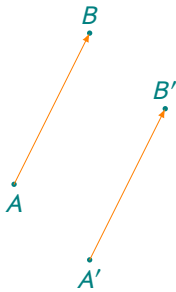
1.7 Point on a Circle: `\tkzDefPointOnCircle`



```
\begin{tikzpicture}[scale=0.7]
  \tkzDefPoints{0/0/A,4/0/B,0.8/3/C}
  \tkzDefCircle[circum](A,B,C)
  \tkzGetPoint{O} \tkzGetLength{r0}
  \tkzDefPointOnCircle[R=center O angle 30 radius \r0]
  \tkzGetPoint{J}
  \tkzDrawPoints(A,B,C)
  \tkzDrawCircle(O,J)
  \tkzDrawPoints(O,J)
  \tkzDrawPoint[red](J)
  \tkzLabelPoints[right](O,J)
\end{tikzpicture}
```

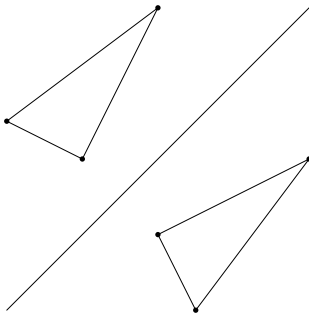
1.8 Transformations: `\tkzDefPointBy`

1.8.1 Translation



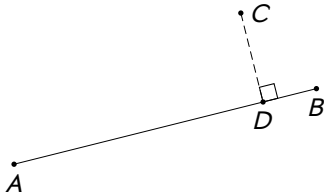
```
\begin{tikzpicture}[>=latex]
  \tkzDefPoints{0/0/A, 1/2/B, 2/1/B'}
  \tkzDefPointBy[translation= from B to A](B')
  \tkzGetPoint{A'}
  \tkzDrawPoints[teal](A,B,A',B')
  \tkzLabelPoints[above, color=teal](B,B')
  \tkzLabelPoints[below, color=teal](A,A')
  \tkzDrawSegments[orange,->](A,B A',B')
\end{tikzpicture}
```

1.8.2 Reflection



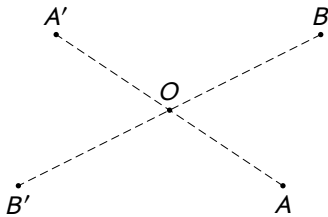
```
\begin{tikzpicture}
  \tkzDefPoints{0/0/X,4/4/Y,2/1/A,4/2/B,2.5/0/C}
  \tkzDrawSegment(X,Y)
  \tkzDefPointBy[reflection=over X--Y](A)
  \tkzGetPoint{A'}
  \tkzDefPointBy[reflection=over X--Y](B)
  \tkzGetPoint{B'}
  \tkzDefPointBy[reflection=over X--Y](C)
  \tkzGetPoint{C'}
  \tkzDrawPoints(A,B,C,A',B',C')
  \tkzDrawPolygons(A,B,C A',B',C')
\end{tikzpicture}
```

1.8.3 Projection



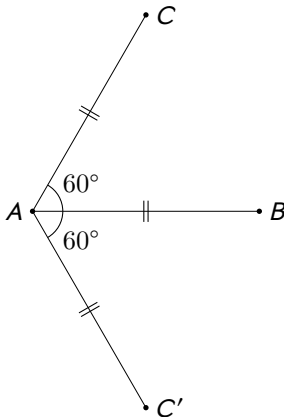
```
\begin{tikzpicture}
\tkzDefPoints{0/0/A,4/1/B,3/2/C}
\tkzDrawSegment(A,B)
\tkzDefPointBy[projection=onto A--B](C)
\tkzGetPoint{D}
\tkzDrawPoints(A,B,C,D)
\tkzDrawSegment[densely dashed](C,D)
\tkzMarkRightAngle[size=.2](B,D,C)
\tkzLabelPoints(A,B,D)
\tkzLabelPoints[right](C)
\end{tikzpicture}
```

1.8.4 Symmetry



```
\begin{tikzpicture}[scale=1]
\tkzDefPoint(0,0){O}
\tkzDefPoint(1.5,-1){A}
\tkzDefPoint(2,1){B}
\tkzDefPointsBy[symmetry=center O](B,A){}
\tkzDrawSegments[densely dashed](A,A' B,B')
\tkzDrawPoints(A,B,O,A',B')
\tkzLabelPoints[below](A,B')
\tkzLabelPoints[above](A',O,B)
\end{tikzpicture}
```

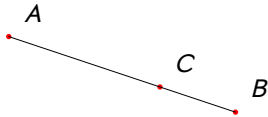
1.8.5 Rotation and Rotation in Rad



```
\begin{tikzpicture}
\tkzDefPoint["$A$" left](0,0){A}
\tkzDefPoint["$B$" right](3,0){B}
\tkzDefPointBy[rotation=center A angle 60](B)
\tkzGetPoint{C}
\tkzDefPointBy[rotation in rad=center A angle -
pi/3](B)
\tkzGetPoint{C'}
\tkzLabelPoints[right](C,C')
\tkzDrawPoints(A,B,C,C')
\tkzDrawSegments(A,B A,C A,C')
\tkzMarkAngles[mark=none, size=0.4cm](B,A,C C',A,B)
\tkzLabelAngles[pos=0.75](B,A,C C',A,B){$60^\circ$}
\tkzMarkSegments[mark=|](A,B A,C A,C')
\end{tikzpicture}
```

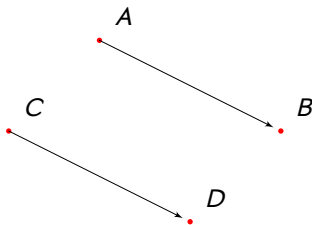
1.9 Defining Points Using a Vector: \tkzDefPointWith

1.9.1 Linear

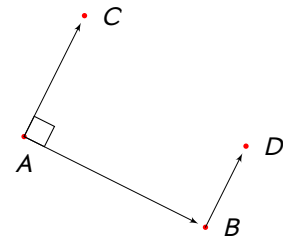


```
\begin{tikzpicture}
\tkzDefPoint(1,3){A}
\tkzDefPoint(4,2){B}
\tkzDefPointWith[linear,K=2/3](A,B)
\tkzGetPoint{C}
\tkzDrawPoints[color=red](A,B,C)
\tkzDrawSegment(A,B)
\tkzLabelPoints[above right=3pt](A,B,C)
\end{tikzpicture}
```

1.9.2 Colinear



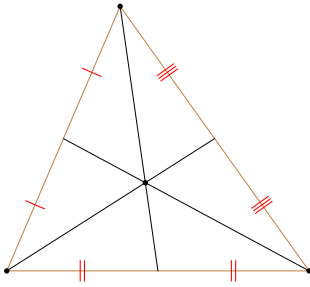
```
\begin{tikzpicture}[scale=1.2,
vect/.style={->,shorten >=3pt,>=latex'}]
\tkzDefPoint(2,3){A}
\tkzDefPoint(4,2){B}
\tkzDefPoint(1,2){C}
\tkzDefPointWith[colinear=at C](A,B)
\tkzGetPoint{D}
\tkzDrawPoints[color=red](A,B,C,D)
\tkzLabelPoints[above right=3pt](A,B,C,D)
\tkzDrawSegments[vect](A,B C,D)
\end{tikzpicture}
```



```
\begin{tikzpicture}[scale=1.2,
vect/.style={->,shorten >=3pt,>=latex'}]
\tkzDefPoints{2/3/A, 4/2/B}
\tkzDefPointWith[orthogonal,K=2/3](A,B)
\tkzGetPoint{C}
\tkzDefPointWith[orthogonal,normed,K=-1](B,A)
\tkzGetPoint{D}
\tkzDrawPoints[color=red](A,B,C,D)
\tkzLabelPoints[right=3pt](B,C,D)
\tkzLabelPoints[below=3pt](A)
\tkzDrawSegments[vect](A,B A,C B,D)
\tkzMarkRightAngle(B,A,C)
\end{tikzpicture}
```

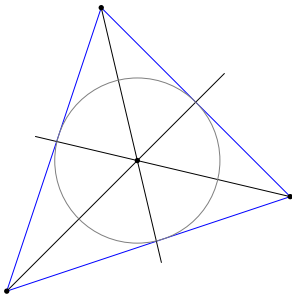
1.10 Triangle Centers: \tkzDefTriangleCenter

1.10.1 Centroid



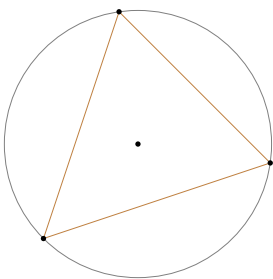
```
\begin{tikzpicture}
\tkzDefPoints{0/0/A,4/0/B,1.5/3.5/C}
\tkzDrawPolygon[color=brown](A,B,C)
\tkzDefTriangleCenter[centroid](A,B,C) \tkzGetPoint{D}
\tkzDrawPoints(A,B,C,D)
\tkzDefMidPoint(A,B) \tkzGetPoint{E}
\tkzDefMidPoint(B,C) \tkzGetPoint{F}
\tkzDefMidPoint(C,A) \tkzGetPoint{G}
\tkzDrawSegments(C,E A,F B,G)
\tkzMarkSegments[mark=|,color=red](C,G A,G)
\tkzMarkSegments[mark=||,color=red](A,E B,E)
\tkzMarkSegments[mark=|||,color=red](B,F C,F)
\end{tikzpicture}
```

1.10.2 Incenter



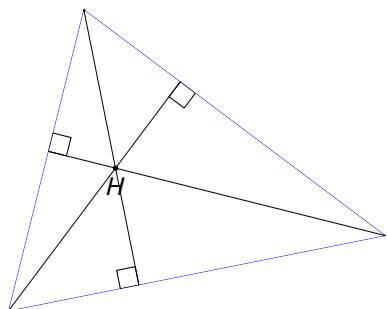
```
\begin{tikzpicture}[scale=1.25]
\tkzDefPoints{0/1/A,3/2/B,1/4/C}
\tkzDefTriangleCenter[in](A,B,C) \tkzGetPoint{I}
\tkzDefPointBy[projection=onto A--C](I)
\tkzGetPoint{Ib}
\tkzDrawPolygon[color=blue](A,B,C)
\tkzDrawPoints(A,B,C,I)
\tkzDrawLines[add = 0 and 2/3](A,I B,I C,I)
\tkzDrawCircle(I,Ib)
\end{tikzpicture}
```

1.10.3 Circumcenter



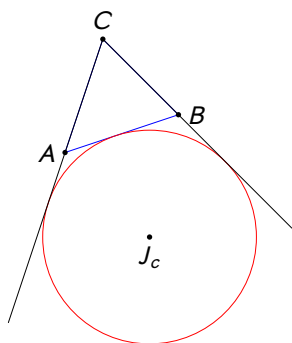
```
\begin{tikzpicture}
\tkzDefPoints{0/1/A,3/2/B,1/4/C}
\tkzDefTriangleCenter[circum](A,B,C) \tkzGetPoint{G}
\tkzDrawPolygon[color=brown](A,B,C)
\tkzDrawCircle(G,A)
\tkzDrawPoints(A,B,C,G)
\end{tikzpicture}
```


1.10.4 Orthocenter



```
\begin{tikzpicture}
\tkzDefPoint(0,0){A}
\tkzDefPoint(5,1){B}
\tkzDefPoint(1,4){C}
\tkzClipPolygon(A,B,C)
\tkzDefTriangleCenter[ortho](B,C,A) \tkzGetPoint{H}
\tkzDefSpcTriangle[orthic,name=H](A,B,C){a,b,c}
\tkzDrawPolygon[color=blue](A,B,C)
\tkzDrawPoints(A,B,C,H)
\tkzDrawLines[add=0 and 1](A,Ha B,Hb C,Hc)
\tkzLabelPoint(H){H}
\tkzAutoLabelPoints[center=H](A,B,C)
\tkzMarkRightAngles(A,Ha,B B,Hb,C C,Hc,A)
\end{tikzpicture}
```

1.10.5 Excenter

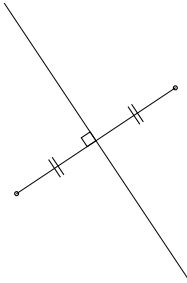


```
\begin{tikzpicture}[scale=0.5]
\tkzDefPoints{0/1/A,3/2/B,1/4/C}
\tkzDefTriangleCenter[ex](B,C,A) \tkzGetPoint{J_c}
\tkzDefPointBy[projection=onto A--B](J_c)
\tkzGetPoint{Tc}
\tkzDrawPolygon[color=blue](A,B,C)
\tkzDrawPoints(A,B,C,J_c)
\tkzDrawCircle[red](J_c,Tc)
\tkzDrawLines[add=1.5 and 0](A,C B,C)
\tkzLabelPoints[left](A)
\tkzLabelPoints[right](B)
\tkzLabelPoints[above](C)
\tkzLabelPoints(J_c)
\end{tikzpicture}
```

2 Lines

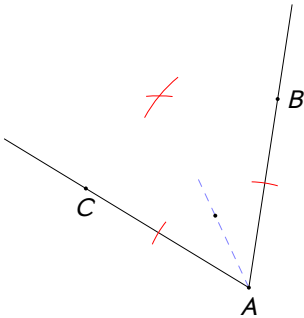
2.1 Definition: \tkzDefLine

2.1.1 Mediator



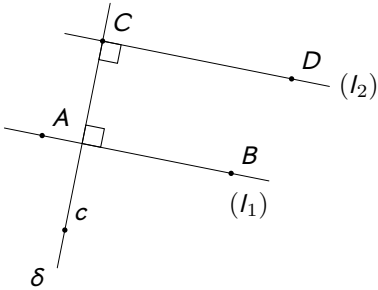
```
\begin{tikzpicture}[scale=0.7]
\tkzSetUpPoint[size=1.5pt]
\tkzDefPoints{-2/0/A,1/2/B}
\tkzDefLine[mediator](A,B)
\tkzGetPoints{C}{D}
\tkzInterLL(C,D)(A,B)
\tkzGetPoint{I}
\tkzDrawPoints(A,B)
\tkzDrawSegments(A,B C,D)
\tkzMarkRightAngle[size=.2](A,I,C)
\tkzMarkSegments[mark=|](A,I B,I)
\end{tikzpicture}
```

2.1.2 Bisector



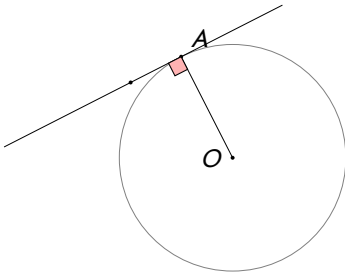
```
\begin{tikzpicture}[rotate=25,scale=.7]
\tkzDefPoints{0/0/C, 2/-3/A, 4/0/B}
\tkzDefLine[bisector,K=.5](B,A,C)
\tkzGetPoint{a}
\tkzDrawLines[add= 0 and .5](A,B A,C)
\tkzShowLine[bisector,gap=4,size=2,color=red](B,A,C)
\tkzDrawLines[blue!50,dashed,add= 0 and .5](A,a)
\tkzLabelPoints[below](A,C)
\tkzLabelPoints[right](B)
\tkzDrawPoints[size=1.5pt](A,B,C,a)
\end{tikzpicture}
```

2.1.3 Orthogonal And Parallel



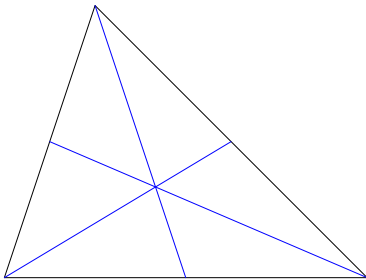
```
\begin{tikzpicture}
\tkzDefPoints{-1.5/-0.25/A,1/-0.75/B,-0.7/1/C}
\tkzDrawLine(A,B)
\tkzDefLine[orthogonal=through C](B,A)
\tkzGetPoint{c}\tkzDrawLine(C,c)
\tkzInterLL(A,B)(C,c)\tkzGetPoint{I}
\tkzDefLine[parallel=through C](A,B)
\tkzGetPoint{D}\tkzDrawLine(C,D)
\tkzDrawPoints(A,B,C,c,D)
\tkzLabelPoints[above right](A,B,C,c,D)
\tkzLabelLine[pos=1.25,below left](A,B){$(l_1)$}
\tkzLabelLine[pos=1.2,right](C,D){$(l_2)$}
\tkzLabelLine[pos=1.25,left](C,c){$\delta$}
\tkzMarkRightAngle(C,I,B)\tkzMarkRightAngle(I,C,D)
\end{tikzpicture}
```

2.2 Tangent to a Circle: \tkzDefTangent

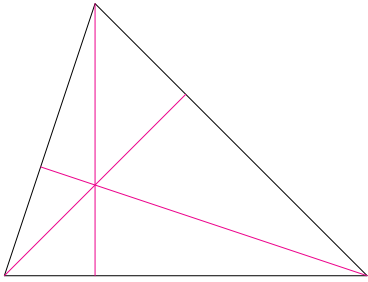


```
\begin{tikzpicture}[scale=.75]
  \tkzDefPoint(0,0){O}
  \tkzDefRandPointOn[circle=center O radius 2]
  \tkzGetPoint{A}
  \tkzDrawSegment(O,A)
  \tkzDrawCircle(O,A)
  \tkzDefTangent[at=A](O) \tkzGetPoint{h}
  \tkzDrawPoints[size=1.5pt](A,O,h)
  \tkzDrawLine[add = 2 and 2.5](A,h)
  \tkzMarkRightAngle[fill=red!30](O,A,h)
  \tkzLabelPoints[above right](A) \tkzLabelPoints[left](O)
\end{tikzpicture}
```

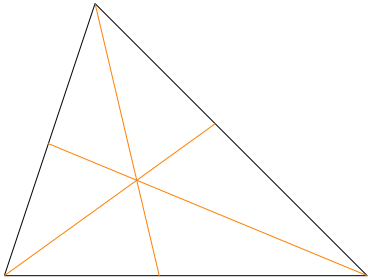
2.3 Median, Altitude, and Bisector



```
\begin{tikzpicture}[scale=1.2]
\tkzDefPoint(0,0){A}
\tkzDefPoint(4,0){B}
\tkzDefPoint(1,3){C}
\tkzDrawPolygon(A,B,C)
\tkzSetUpLine[color=blue]
\tkzDefSpcTriangle[medial,name=M](A,B,C){_A,_B,_C}
\tkzDrawSegments(A,M_A B,M_B C,M_C)
\end{tikzpicture}
```

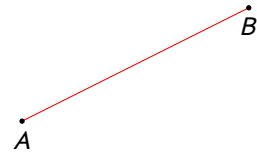


```
\begin{tikzpicture}[scale=1.2]
\tkzDefPoint(0,0){A}
\tkzDefPoint(4,0){B}
\tkzDefPoint(1,3){C}
\tkzDrawPolygon(A,B,C)
\tkzSetUpLine[color=magenta]
\tkzDefSpcTriangle[orthic,name=H](A,B,C){_A,_B,_C}
\tkzDrawSegments(A,H_A B,H_B C,H_C)
\end{tikzpicture}
```

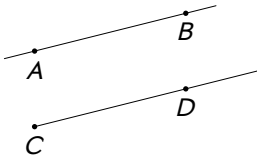


```
\begin{tikzpicture}[scale=1.2]
\tkzDefPoint(0,0){A}
\tkzDefPoint(4,0){B}
\tkzDefPoint(1,3){C}
\tkzDrawPolygon(A,B,C)
\tkzSetUpLine[color=orange]
\tkzDefSpcTriangle[in,name=I](A,B,C){_A,_B,_C}
\tkzDrawSegments(A,I_A B,I_B C,I_C)
\end{tikzpicture}
```

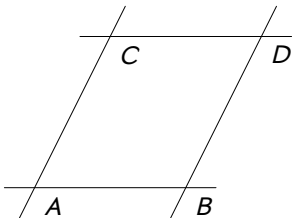
2.4 Drawing: \tkzDrawSegment and \tkzDrawLine



```
\begin{tikzpicture}[scale=1.5]
\tkzDefPoint(0,0){A}
\tkzDefPoint(2,1){B}
\tkzDrawSegment[color=red,thin](A,B)
\tkzDrawPoints(A,B)
\tkzLabelPoints(A,B)
\end{tikzpicture}
```

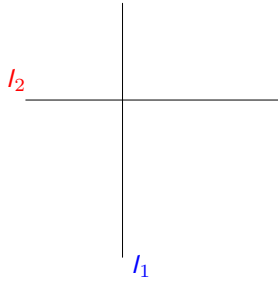


```
\begin{tikzpicture}
\tkzDefPoint(0,0){A}
\tkzDefPoint(2,0.5){B}
\tkzDefPoint(0,-1){C}\tkzDefPoint(2,-0.5){D}
\tkzDrawLine(A,B)
\tkzDrawLine[add = 0 and .5](C,D)
\tkzDrawPoints(A,B,C,D) \tkzLabelPoints(A,B,C,D)
\end{tikzpicture}
```

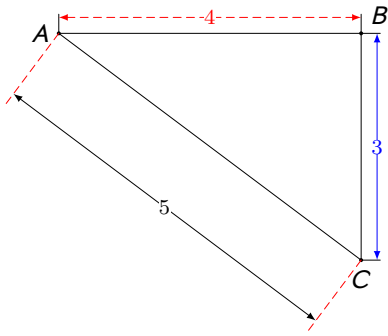


```
\begin{tikzpicture}
\tkzDefPoint(0,0){A}
\tkzDefPoint(2,0){B}
\tkzDefPoint(1,2){C}
\tkzDefPoint(3,2){D}
\tkzDrawLines(A,B C,D A,C B,D)
\tkzLabelPoints[below right](A,B,C,D)
\end{tikzpicture}
```

2.4.1 Labeling: \tkzLabelLine

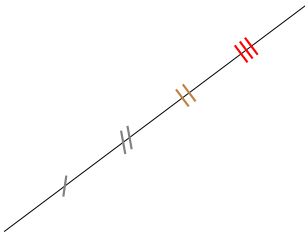


```
\begin{tikzpicture}[scale=0.8]
\tkzDefPoints{0/0/A,3/0/B,1/1/C}
\tkzDefLine[perpendicular=through C,K=-1](A,B)
\tkzGetPoint{c}
\tkzDrawLines(A,B C,c)
\tkzLabelLine[pos=1.25,blue,right](C,c){$l_1$}
\tkzLabelLine[pos=-0.25,red,above](A,B){$l_2$}
\end{tikzpicture}
```



```
\begin{tikzpicture}
\tkzDefPoint(0,0){A}
\tkzDefPoint(4,0){B}
\tkzDefTriangle[pythagore](A,B) \tkzGetPoint{C}
\tkzDrawPoints[size=1.5pt](A,B,C)
\tkzDrawSegment[dim={3$, 6pt, transform shape},
dim style/.append style={blue}](B,C)
\tkzDrawSegment[dim={4$, 6pt, transform shape},
dim style/.append style={densely dashed, red}](A,B)
\tkzDrawSegment[dim={5$, 1cm, transform shape},
dim fence style/.style={red,densely dashed}](C,A)
\tkzLabelPoints[left](A) \tkzLabelPoints[above right](B)
\tkzLabelPoints[below](C)
\end{tikzpicture}
```

2.4.2 Marking: \tkzMarkSegment



```
\begin{tikzpicture}
\tkzDefPoint(2,1){A}
\tkzDefPoint(6,4){B}
\tkzDrawSegment(A,B)
\tkzMarkSegment[thick,color=gray,pos=0.2,mark=s|](A,B)
\tkzMarkSegment[thick,color=gray,pos=0.4,mark=s||](A,B)
\tkzMarkSegment[thick,color=brown,pos=0.6,mark=|||](A,B)
\tkzMarkSegment[thick,color=red,pos=0.8,mark=||||](A,B)
\end{tikzpicture}
```