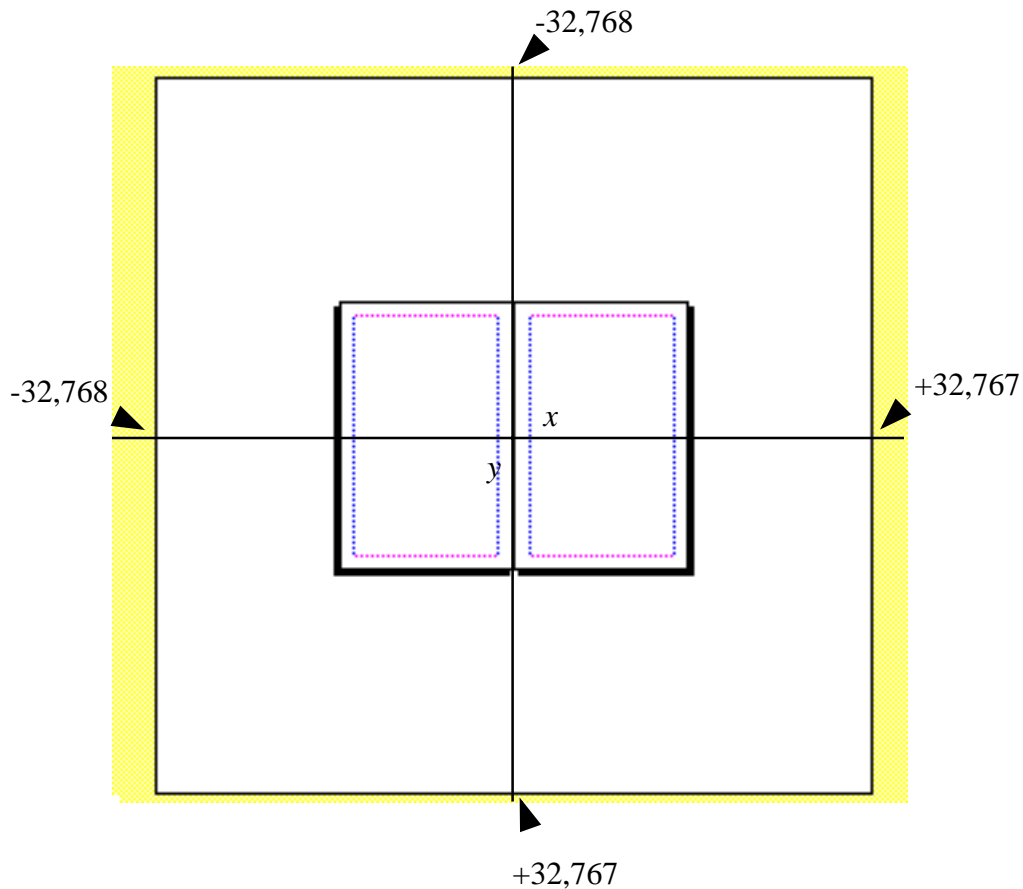Working with coordinates in PageMaker.

A PageMaker Publication is always presented to the user on the pasteboard. The pasteboard is a larger work area on which the the page is displayed and on which the user can construct elements before placing them on the page. The pasteboard is to PageMaker, the world.

PageMaker has a coordinate system, in which any location on the pasteboard can be expressed. This we refer to as the world coordinate system. Locations and measurements in the world coordinate system are always expressed in twips. One twip is 1/1440 inches or 1/20 pica-points.

This figure shows the PageMaker coordinate system. The origin for the world coordinate system is in the center of the pasteboard. The x axis has positive values to the right of the origin and the y axis has positive values toward the bottom of the pasteboard.

This SDK uses the WCPOINT type for variables that express points in the world coordinate system. The WCPOINT type is defined as:

```
typedefshort WC;              // World Coordinates
typedef struct __WCPOINT {
        WC x;
        WC y;
} WCPOINT, DCPOINT, *LPWCPOINT, *LPDCPOINT;
```

Since the WCPOINT holds the x and y values of a location in short (16 bit) fields, it is sufficient for expressing locations within the coordinate system (-32,768 to 32,767), but a larger type is needed for measurements that are not based on the origin (The width of the pasteboard, in twips, is 65,535 too large to be held in a short.) For the occasions that a larger type is needed we use LONGPOINT:

```
typedef struct __LONGPOINT {
        long x;
        long y;
} LONGPOINT, *LPLONGPOINT;
```

A third type that you will need to be familiar with when working with the world coordinate sytem is the RECT:

```
typedef struct _RECT {
        long left;
        long top;
        long right;
        long bottom;
} RECT;
```

This type is used for storing two points, usually representing the upper-left and lower-right corners of a region.

Screen Coordinates

The screen coordinate system has its origin in the upper-right hand corner of the screen. The positive values on the x axis lead to the right of the sceen, and the positive values on the y axis lead to the bottom of the screen.

The PageMaker interface CIBasic provides member functions for converting world coordinates to screen coordinates and back. For more information on the conversion functions see the CIBasic documentation.