

1. Make a document that look like the picture below.
2. Create a new page using MS Word.
3. Copy text from the text section below.
4. For help with Word commands, see the notes below.

9007610: 4. 01, 04,
08, 09, 10, 7. 02, 9.02

This is what your final product should look like:

Calculating the Position of an Orbiting Object

Many things in this world arc, orbit or swing. A baseball bat, opening doors, storms, planets, arms and legs to name just a few, these are all explained by simple trig formulae. Given that:

The center of the swing or axis is located at (X_c, Y_c) .
 The distance away from the center or Radius is R,
 The angle (in Radians, which we will explain later) is A, then:

Radius R

Angle A

Center (X_c, Y_c)

Note, after you multiply the radius by the sine and cosine, the coordinates of the center, (X_c, Y_c) have to be added

The X_c, Y_c coordinates of any point on the circle can be calculated

QB Programming examples: Starting the angle at zero starts your object here.

```

REM SPOKES OF A WHEEL

SCREEN 12
R=100
FOR A=0 TO 3.14159*2 STEP .1
  LINE (320,240)-(R*SIN(A)+320,R*COS(A)+240)
NEXT A

REM SPIRAL
SCREEN 12
CYCLES=15
FOR A=0 TO 3.14159*2*CYCLES STEP .01
  R=R+.01
  PSET (R*SIN(A)+320,R*COS(A)+240)
NEXT A
                
```

Give the angle to the sine and cosine functions in π radians. π radians work like degrees they start in a different place. A full circle is 2π instead of 360° . Half way around is π instead of 180° . $\frac{1}{2}\pi$ is 90° , and so on. Please do not forget that π is 3.14159.

Here is the text; feel free to copy and paste it in:

Calculating the Position of an Orbiting Object

Many things in this world arc, orbit or swing. A baseball bat, opening doors, storms, planets, arms and legs to name just a few, these are all explained by simple trig formulae. Given that:

The center of the swing or axis is located at (X,Y),
The distance away from the center or Radius is R,
The angle (in Radians, which we will explain later) is A,
then:

The X,Y coordinates of any point on the circle can be calculated

QB Programming examples: Starting the angle at zero starts your object here.

REM SPOKES OF A WHEEL

```
SCREEN 12      0 or 2 
R=100
FOR A=0 TO 3.14159*2 STEP .1
  LINE (320,240)-(R*SIN(A)+320,R*COS(A)+240)

  NEXT A
```

```
REM SPIRAL
SCREEN 12
CYCLES=15
FOR A=0 TO 3.14159*2*CYCLES STEP .01
  R=R+.01
  PSET (R*SIN(A)+320,R*COS(A)+240)
  NEXT A
```

1 « 

Give the angle to the sine and cosine functions in  radians.  radians work like degrees they start in a different place. A full circle is 2 instead of 360. Half way around is  instead of 180. « is 90, and so on. Please do not forget that  is 3.14159.

Notes

Text Box

1. Insert
2. Text box
3. Draw text box

Text box without lines

1. Click box
2. Right click on a box handle ■
3. Format text box
4. Colors and lines
5. Line
6. No color

Delete text boxes or shapes

1. Click
2. Right click on a box handle ■
3. Cut

Symbols and foreign lettering

1. Insert
2. Ω Symbol ▼
3. More symbols
4. Font ▼

Auto Shapes

1. Insert
2. Shapes ▼
3. Choose shape
4. Drag + across shape location

Change shape color and thickness

1. Right click shape
2. Format auto shape
3. Colors and lines

Rotate shape

1. Click shape
2. Drag green circle ● above shape

Repositioning arrow and line shapes

1. Click shape
2. Drag ● circle at either end of shape