

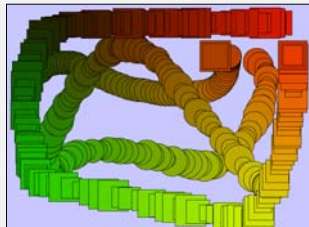
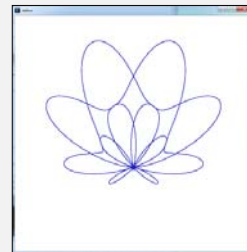
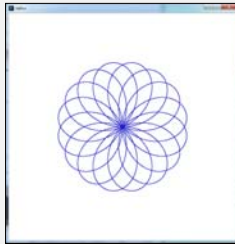
Three Dimensions



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3d.pptx

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The 3D Processing Functions You Will Care About

```
rotateX( radians );
rotateY( radians );
rotateZ( radians );

scale( sx, sy, sz );

translate( tx, ty, tz );

box( sizex, sizey, sizez );

sphereDetail( slices, stacks );
sphere( radius );

beginShape( );
vertex( x, y, z );
endShape( );
```



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Sample 3D Program – the Global Variables at the top of the program

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```
int LastMouseX;  
int LastMouseY;  
int Udetail = 20;  
int Vdetail = 20;  
float Yangle = 0.;  
float Xrot = 0., Yrot = 0.;  
  
boolean FillSphere = false;  
boolean StillPressed = false;  
boolean Animate = false;
```

Sample 3D Program – the setup() Function

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```
void  
setup( )  
{  
  size( 800, 800, P3D );  
  background( 200, 200, 255 );  
  stroke( 0, 0, 0 );  
  fill( 255, 255, 0 );  
}
```

This third argument to size() tells Processing to allow it to do 3D

Sample 3D Program – the draw() Function, part I

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```
void
draw( )
{
    background( 200, 200, 255 );
    if( keyPressed )
    {
        if( ! StillPressed ) // same as saying "if( StillPressed == false )"
        {
            switch( key )
            {
                case 'a':
                    Animate = ! Animate;
                    break;

                case 'f':
                    FillSphere = ! FillSphere;
                    break;

                case 'i':
                    Udetail = Udetail - 1;
                    Vdetail = Vdetail - 1;
                    break;

                case 'm':
                    Udetail = Udetail + 1;
                    Vdetail = Vdetail + 1;
                    break;
            }
        }
        StillPressed = true;
    }
    else
    {
        StillPressed = false;
    }
}
```



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Sample 3D Program – the draw() Function, part II

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```
if( mousePressed )
{
    int dx = mouseX - LastMouseX;
    int dy = mouseY - LastMouseY;
    Xrot = Xrot + dy;
    Yrot = Yrot + dx;
}
LastMouseX = mouseX;
LastMouseY = mouseY;

translate( width/2, height/2 );
rotateY( radians(Yrot) );
rotateX( radians(Xrot) );

fill( 255, 30, 30 );
pushMatrix( );
rotateX( radians(Yangle) );
translate( 0, 300, 0 );
box(20, 20, 20);
popMatrix( );

if( FillSphere )
    fill( 255, 255, 0 );
else
    noFill( );

pushMatrix( );
rotateY( radians(Yangle) );
sphereDetail( Udetail, Vdetail );
sphere( 200. );
if( Animate )
    Yangle = Yangle + 1.;
popMatrix( );
}
```



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