How to animate an explosion

**A first attempt:**

Idea: Make an array of shapes shoot out from a central point with random x-speeds and y-speeds. Store their x and y positions in arrays that get updated in each frame using the speed arrays.

xC = 400

yC = 400

for i = 1 to numParticles

x.append( xC )

y.append( yC )

xSpeed.append( randint(-10,10) )

ySpeed.append( randint(-10,10) )

sizes.append( randint(2,5) )

particleGraphics.append( 0 )

for f = 1 to numFrames:

for i = 1 to numParticles:

particleGraphics [i] = create\_oval( x[i], y[i], x[i]+sizes[i], y[i]+sizes[i])

x[i] = x[i] + xSpeed[i]

y[i] = y[i] + ySpeed[i]

update()

sleep()

for i = 1 to numParticles:

delete(particleGraphics [i])

**Problem with this approach:**

The ovals expand in a big square, which doesn’t look realistic.

How can we make them emerge in a circle?

New Idea: Instead of two separate x- and y-speeds, give each particle a radius, a random speed at which it flies away from the centre, and a random angle at which it flies. Using sine and cosine, calculate the particle’s x- and y-positions using the radius and angle.

for i = 1 to numParticles

x.append( xC )

y.append( yC )

**r.append( 0 )**

**angle.append( randint( 1 , 360) )**

**rSpeed.append( randint(-10,10) )**

sizes.append( randint(2,5) )

particleGraphics.append( 0 )

for f = 1 to numFrames:

for i = 1 to numParticles:

particleGraphics [i] = create\_oval( x[i], y[i], x[i]+sizes[i], y[i]+sizes[i])

x[i] = xCentre + r[i] \* cos( angle[i] )

y[i] = yCentre - r[i] \* sin( angle[i] )

r[i] = r[i] + rSpeed[i]

update()

sleep()

for i = 1 to numParticles:

delete(particleGraphics [i])