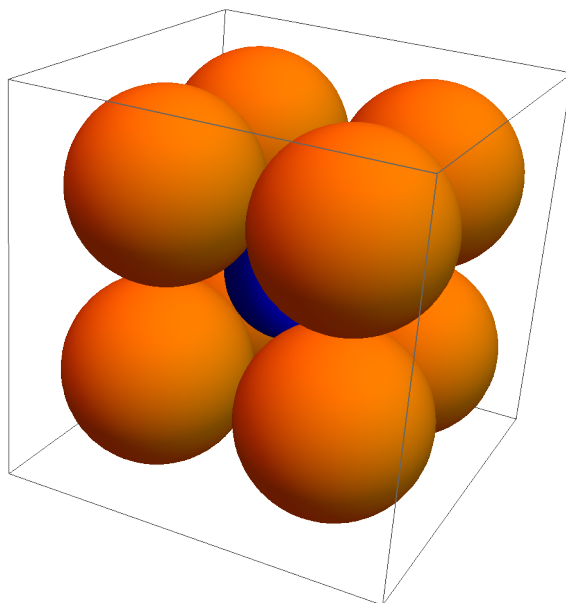
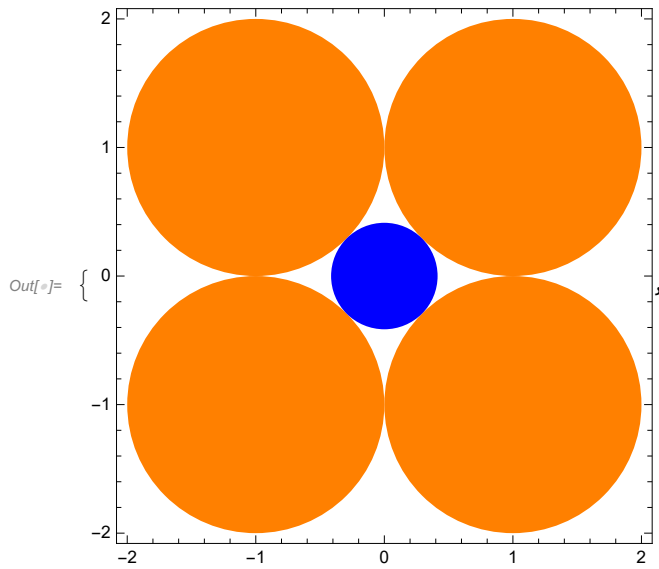


Pensieve header: November 6, 2020: The 1206 Riddle.

```

In[ ]:= {Graphics[{Orange, Disk /@ Tuples[{1, -1}, 2], Blue, Disk[{0, 0},  $\sqrt{2} - 1$ ]},
  Frame -> True, ImageSize -> 360],
Graphics3D[{Orange, Ball /@ Tuples[{1, -1}, 3], Blue, Ball[{0, 0, 0},  $\sqrt{3} - 1$ ]},
  ImageSize -> 360]}

```



}



$$\frac{2 \pi^{n/2} r^n}{n \Gamma\left(\frac{n}{2}\right)} \approx \frac{2 \times 3.14159^{n/2} r^n}{n \Gamma\left(\frac{n}{2}\right)}$$

(assuming radius r)

$$\text{In}[*]:= \mathbf{r[n_]} := \mathbf{N}\left[\frac{2 \pi^{n/2} (\sqrt{n} - 1)^n}{\left(n \text{Gamma}\left[\frac{n}{2}\right]\right) 4^n}\right]$$

In[*]:= Table[r[n], {n, 1, 100}]

Out[*]:= {0., 0.0336883, 0.0256763, 0.0192766, 0.0148324, 0.0117012, 0.00942996, 0.00773623, 0.0064424, 0.00543354, 0.00463295, 0.00398795, 0.00346144, 0.00302666, 0.00266395, 0.00235862, 0.00209949, 0.00187795, 0.00168729, 0.0015222, 0.00137845, 0.00125265, 0.00114203, 0.00104435, 0.000957722, 0.000880619, 0.000811745, 0.00075002, 0.000694528, 0.000644493, 0.000599253, 0.000558243, 0.000520974, 0.000487026, 0.000456033, 0.000427678, 0.000401685, 0.00037781, 0.00035584, 0.000335588, 0.000316888, 0.000299594, 0.000283573, 0.000268712, 0.000254905, 0.000242061, 0.000230097, 0.000218937, 0.000208516, 0.000198772, 0.000189652, 0.000181105, 0.000173087, 0.000165558, 0.000158481, 0.000151822, 0.00014555, 0.000139638, 0.000134059, 0.000128792, 0.000123813, 0.000119104, 0.000114646, 0.000110423, 0.000106419, 0.00010262, 0.0000990137, 0.000095587, 0.0000923293, 0.00008923, 0.0000862796, 0.0000834692, 0.0000807905, 0.0000782359, 0.0000757982, 0.0000734706, 0.0000712471, 0.0000691218, 0.0000670894, 0.0000651446, 0.0000632829, 0.0000614998, 0.0000597912, 0.0000581532, 0.0000565821, 0.0000550745, 0.0000536273, 0.0000522374, 0.000050902, 0.0000496183, 0.000048384, 0.0000471966, 0.000046054, 0.0000449539, 0.0000438944, 0.0000428737, 0.00004189, 0.0000409416, 0.0000400269, 0.0000391445}

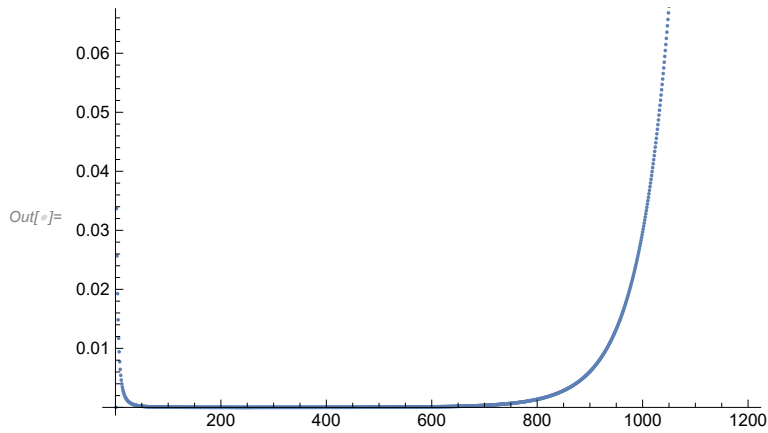
```
In[ ]:= ListPlot[Table[r[n], {n, 1., 1200}]]
```

General: $\frac{1}{5.12428 \times 10^{307}}$ is too small to represent as a normalized machine number; precision may be lost. +

General: 1.04624×10^{262} $1.056452658714892 \times 10^{-324}$ is too small to represent as a normalized machine number; precision may be lost. +

General: 2.52279×10^{263} $2.465546437207740 \times 10^{-326}$ is too small to represent as a normalized machine number; precision may be lost. +

General: Further output of General::munfl will be suppressed during this calculation. +



```
In[ ]:= ListPlot[Table[Log[r[n]], {n, 1., 2000}]]
```

General: $\frac{1}{5.12428 \times 10^{307}}$ is too small to represent as a normalized machine number; precision may be lost. +

General: 1.04624×10^{262} $1.056452658714892 \times 10^{-324}$ is too small to represent as a normalized machine number; precision may be lost. +

General: 2.52279×10^{263} $2.465546437207740 \times 10^{-326}$ is too small to represent as a normalized machine number; precision may be lost. +

General: Further output of General::munfl will be suppressed during this calculation. +

