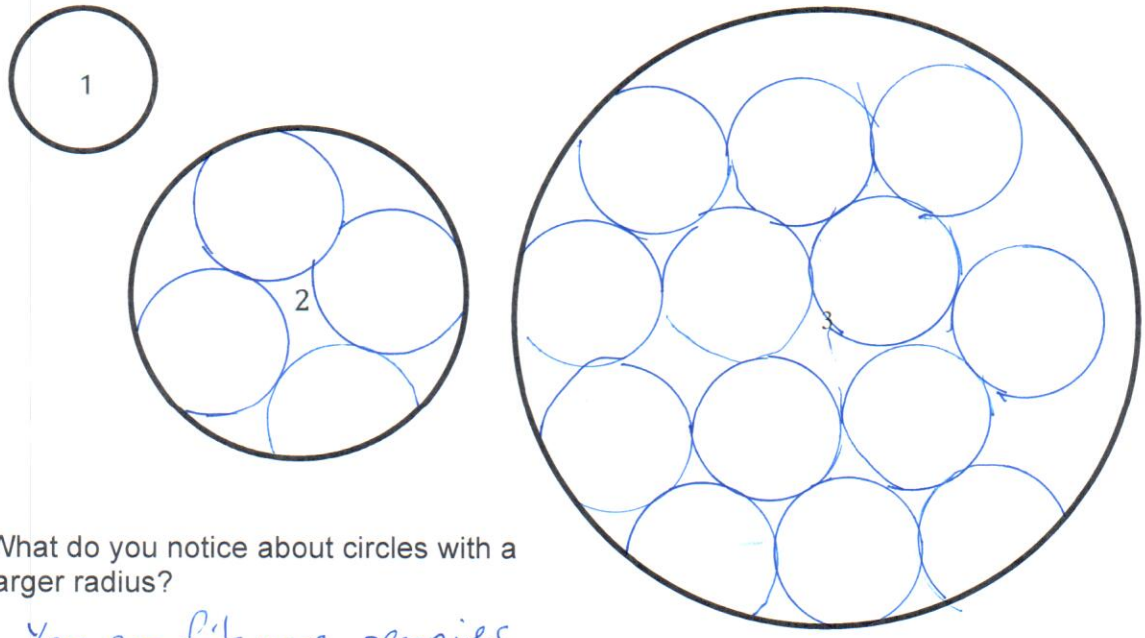
Name: Sample Key

Circles and Telescopes

Based on a NASA activity found at: http://nasawavelength.org/resource/nw-000-000-003-619/

Measure the radius and diameter of each circle, and find the exact and approximate area. Then count how many pennies it takes to cover each circle.

Circle	Radius	Diameter	Exact Area	Approximate Area	Number of Pennies
1	.9 cm	1.8 cm	$.81\pi$ cm^2	2.54 cm^2	1
2	2.2 cm	4.4 cm	4.84π cm^2	15.20 cm^2	3.5
3	4.1 cm	8.2 cm	16.81π cm^2	52.78 cm^2	13



What do you notice about circles with a larger radius?

You can fit more pennies

Larger radius = more area

Telescopes work by collecting light from stars and planets using a mirror or lens. Some telescopes are even made up of smaller mirrors put together (similar to the pennies you filled the circles with, or **tessellations** of hexagons).

How do you think a telescope with a larger radius would be geometrically different from a telescope with a smaller radius? Would it work differently?

(might be a tessellation & not perfectly round)

→ it will be larger in area

→ it will collect more light (it will see fainter stars)