Name: _____ Section: _____

Balloniverse

Big Bang - Analogy Activity

Purpose: to create a model that illustrates how the universe expands

Materials: balloon
marker
tape measure (or string & ruler)

Procedures:

1. Inflate your balloon until it is about 4 inches (10 cm) in diameter, but **do not tie the end**.
2. Using the marker, make six dots on the balloon in widely scattered locations. Label one dot "home" and the others A-E. The home dot represents the Milky Way galaxy, and the others represent galaxies formed in the early universe.
3. Without letting air out of the balloon, use the tape measure (or string & ruler) to measure the distance from "home" to each dot. Record the distances in the table under the heading "Measurement 1."
4. Using your tape measure (or string & ruler), determine the circumference of the balloon. Record the circumference in the table under the heading "Measurement 1."
5. Inflate the balloon so that its diameter is about 4 inches (10 cm) bigger (≈ 20 cm). Make a prediction about the new distances from "home" to dots A-E.

Adapted from: http://school.discoveryeducation.com/curriculumcenter/universe/activity2.html

6. Measure the distances to each of the dots, the balloon's circumference, and record these measurements under "Measurement 2" in the table.
7. For the last time, inflate the balloon 4-inches (10 cm) bigger (≈ 30 cm). Make a prediction about the new distances from "home" to dots A-E.
8. Measure the distances to each of the dots, the balloon's circumference, and record these measurements under "Measurement 3" in the table.

Data/Observations:

Distance from "home" (cm)	Measurement 1	*Prediction*	Measurement 2	*Prediction*	Measurement 3
Dot A					
Dot B					
Dot C					
Dot D					
Dot E					
Circumference of balloon (cm)					

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Conclusion/Questions:

1. How did the distance from the "home" dot to each of the other galaxies change each time you inflated the balloon?

2. Did the galaxies near "home" or those farther away appear to move the greatest distance?

3. How could you use this model to simulate the "Big Crunch," a time when all the galaxies might collapse in on themselves?

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