Name _____ Date _____ Period _____

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Telescopes & Technology

Activity 1 - Technology or Not?

Use the definition of technology to categorize each of the items in the container as either technology or not-technology.

Technology	Not-Technology

Activity 2 - Through the Looking Lens

Galileo Galilei was the first person to take lenses and point to "the heavens". He was the first person to observe things using his telescope; his ancestors only had their eyes. The big question, (I know you want to know)… how did he know what lenses to use to build this new technology? (You know the telescope)

Materials

1 chunk clay (lens stand)
a baggie with 3 lenses (to magnify object)
1 piece of colored construction paper (the image projects onto it)
1 ruler (measure focus distance)

1. Galileo used basic lenses to build his telescope. When you gently place the lenses in your hand, you can feel the curve of the lens, it can curve "in" or "out". Test each lens to identify whether the lens curves in or out and record in the data table.

2. Use modeling clay to form a base to hold one of the lenses upright on your desktop. Rotate your lens so that the light from the lamp passes through it.

3. Hold the construction paper so that the light passing through the lens lands on the paper. Slowly move the paper closer to or farther from the lens until you see the sharpest (most focused) image of the light on the paper. One group member will hold the paper in this position, while another group member uses the ruler to measure the distance between the lens and the paper in cm. Record the measurement in the data table below.

4. Repeat steps 1 and 2 for the remaining lenses.

Lens #	Type of Curve on Lens (in or out)	Focus Distance (cm)

5. List something the lenses have in common and something they have different.

6. What do you **think** (hypothesis, make a good guess) is causing the distance each lens will focus to be different?

7. What do you predict will happen if you used 2 lenses for steps 1 and 2 instead of a single lens?

8. Try it out, using **2 different combinations**; record your results in the data table below.

Lens #'s	Type of Curve on each Lens (in or out)	Focus Distance (cm)

9. What happened when 2 lenses were used in to focus the light? Support your response with evidence (results in the data table)

10. Identify the variables for this activity

Independent _____

Dependent _____

Control _____

Activity 3 - Different Telescopes

Use pages 496 – 501 in the amazing red science book of knowledge to answer the following questions.

1. Name 1 way refracting and reflecting telescopes are similar and 1 way they are different.

2. What limits the size and magnification of a refracting telescope?

3. Name 2 ways the atmosphere limits what astronomers can detect in space.

4. What is the difference between optical and nonoptical telescopes?

5. What is the advantage of linking radio telescopes?