

# Pennsylvania

## Middle School

### Physical Science, Chemistry and Physics (D. Astronomy)

## Starry Night Lesson Plans

*In order of relevance*

#### 3.4.7. Grades 5-7

D. Describe essential ideas about the composition and structure of the universe and the earth's place in it.	A1-A5	B1-B2	C1-C4	D1-D3	E1-E4	F1-F3	G1-G3	H1-H2
1. Compare various planets' characteristics.	B1-B2	C1-C4						
2. Describe basic star types and identify the sun as a star type.	G2	F1-F3						
3. Describe and differentiate comets, asteroids and meteors.	D1-D3							
4. Identify gravity as the force that keeps planets in orbit around the sun and governs the rest of the movement of the solar system and the universe.	C2	F3	G3	H1-H2	I2			
5. Illustrate how the positions of stars and constellations change in relation to the Earth during an evening and from month to month.	E1-E4							
6. Identify equipment and instruments that explore the universe.	I1-I2	H1	F2					
7. Identify the accomplishments and contributions provided by selected past and present scientists in the field of astronomy.	C2							
8. Identify and articulate space program efforts to investigate possibilities of living in space and on other planets.	I1-I2	C1	F2					

#### 3.4.10. Grades 8-10

D. Explain essential ideas about the composition and structure of the universe.	F1-F3	G1-G3	H1-H3	I1-I3	C1-C4	D1-D3		
1. Compare the basic structures of the universe (e.g., galaxy types, nova, black holes, neutron stars).	H1-H3	G1-G3						
2. Describe the structure and life cycle of star, using the Hertzsprung-Russell diagram.	G2	G3	F1	F2				
3. Describe the nuclear processes involved in energy production in a star.	F1							
4. Explain the "red-shift" and Hubble's use of it to determine stellar distance and movement.	H3	H2	I3	G1				
5. Compare absolute versus apparent star magnitude and their relation to stellar distance.	G1-G2							
6. Explain the impact of the Copernican and Newtonian thinking on man's view of the universe.	C2	I2						
7. Identify and analyze the findings of several space instruments in regard to the extent and composition of the solar system and universe.	C1-C4	D1-D3	I1-I3	H1-H3				