Out of This World with Science and Technology: A Study of Astronomy

Grade Level or Special Area: 1st and Technology
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Length of Unit: 10 – 45 minute technology-integrated lessons and 2 culminating activities

I. ABSTRACT

Technology doesn't have to send you into orbit. This Astronomy unit will. The science lessons in this two-week elementary Astronomy unit start as simply as a read aloud of a story or informational book. However, that is not where the lesson ends. Each lesson integrates technology by using a variety of software programs, Internet resources, and even email to contact an e-pal -- all given in easy-to-use formats. Take your students on the adventure of a lifetime --a techno-journey to the planets and the stars!

II. OVERVIEW

A. Concept Objectives

1. The student knows that organisms, objects, and events have properties and patterns. (TEKS, Science b1.5)
2. The student knows that systems have parts and are composed of organisms and objects. (TEKS, Science b1.6)
3. The student knows that many types of changes occur. (TEKS, Science b1.7)

B. Content from the *Core Knowledge Sequence*

1. Patterns and Classification (p.35)
   - Recognize patterns and predict the extension of a pattern
2. Astronomy: Introduction to the Solar System (p.39)
   - Sun, source of energy, light, heat
   - Moon, phases of the moon (full, crescent, new)
   - The nine planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto)
   - Stars
     Constellations, Big Dipper
     The sun is a star.
   - Earth and its place in the solar system
     The earth moves around the sun, the sun does not move.
     The earth revolves (spins); one revolution takes one day (24 hours).
     Sunrise and sunset
     When it is day where you are, it is night for people on the opposite side of the earth.
3. Sayings and Phrases (p.26)
   - A.M. and P.M.
   - There's no place like home.

C. Skill Objectives

1. The student asks questions about objects and events. (adapted from TEKS, Science b1.2A)
2. The student will record and compare collected information. (adapted from TEKS, Science b1.4B)
3. The student identifies, predicts, and creates patterns. (adapted from TEKS, Science b1.5B)

4. The student will observe, measure, and record changes. (adapted from TEKS, Science b1.7A)
5. The student uses data input skills appropriate to the task. (TEKS, Technology Applications b.2)
6. The student acquires electronic information in a variety of formats, with appropriate supervision. (TEKS, Technology Applications b.5)
7. The student uses appropriate computer-based productivity tools to create and modify solutions to problems. (TEKS, Technology Applications b.7)
8. The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge. (TEKS, Technology Applications b.8)
9. The student delivers the product electronically in a variety of media, with appropriate supervision. (TEKS, Technology Applications b.11)

III. BACKGROUND KNOWLEDGE

A. For Teachers

1. Biber, Deborah, editor. *Stars and Planets.* Austin, Texas: Steck-Vaughn Company, 1994, ISBN 0-8114-9246-X.
2. Hirsch, Jr. E.D., editor. *What Your First Grader Needs To Know.* New York, New York: Dell Publishing, 1997, ISBN 0-383-31987-8.
3. Vlitos, Roger, editor. *Be an Expert Astronomer*. New York, New York: Shooting Star Press, Inc., 1993, ISBN 1-56924-026-4.

B. For Students

The students will review and build on these topics from the Kindergarten Core Knowledge Sequence:

1. Patterns and Classification (p.17)
   - Moving from concrete objects to pictorial representations, recognize patterns and predict the extension of a pattern.
2. Seasons and the Weather (p. 20)
   - The four seasons
   - The sun: source of light and warmth

IV. RESOURCES

A. *Stars* (Jennifer Dussling)
B. *Stars* (Paul P. Sipera)
C. U.S. Naval Observatory http://aa.usno.navy.mil/data/docs/RS_OneYear.html
D. *The Sun Our Nearest Star* (Franklyn M. Branley)
E. *The Sun is my Favorite Star* (Frank Asch) Internet site
F. Nasa Kids Sundials http://kids.msfc.nasa.gov/Earth/Sundials/SundialMake.asp
G. Sundials http://www.dsellers.demon.co.uk/sundials/st_johns.htm
H. *Earth Cycles* (Michael Elsohn Ross)
H. *What Makes Day and Night* (Franklyn M. Branley) pgs. 22 and 23
I. *What's Out There?* (Lynn Wilson) selected pages with moon phases
J. Earth and Moon Viewer http://fourmilab.ch/earthview/vplanet.html
K. Nasa Kids Toons http://kids.msfc.nasa.gov/Toons
L. Moon Calendar http://www.ameritech.net/users/paulcarlisle/MoonCalendar.html
M. *The Big Dipper* (Franklyn M. Branley)
N. *The Sky is Full of Stars* (Franklyn M. Branley)
O. A to Z Teacher Stuff http://atozteacherstuff.com/go/jump2.cgi?ID=2825

P. Fun Brain http://www.funbrain.com/funbrain/cgi-bin/science.cgi?A1=s&A13=%5B..%2Fconstellation%2F%5D%5constellation%5D&A15=2&A2=1&A3=0&submit=Play+Space+Hopper
Q. *Stars! Stars! Stars!* (Bob Barner)
R. *Our Stars* (Anne Rockwell)
S. *The Planets* (Gail Gibbons)
T. *The Planets in our Solar System* (Franklyn M. Branley)
U. Planet 10 http://www.solarsystem.org.uk/planet10/
V. Nasa Kids Solar System http://kids.msfc.nasa.gov/solarsystem/solarsystemjava.asp
W. *Earth* (David Bennett)
X. *The Third Planet* (Sally Ride and Tam O'Shaughnessy)
Y. I Know That http://www.iknowthat.com/com/L3?Area=PuzzleMaps
Z. *Me and My Place in Space* (Joan Sweeney)
AA. Space Kids Solar System www.spacekids.com/solarsystem/index.html
BB. I Know That Solar System http://www.iknowthat.com/com/L3?Area=Science%20Lab
CC. Space Kids Play and Do http://www.spacekids.com/playanddo/playanddo/index.html
DD. Windows to the Universe http://www.windows.ucar.edu/cgi-bin/tour.cgi?link=/our_solar_system/planets_table.html&sw=false&sn=0&edu=elem&cdp=/windows3.html&cd=false&tour=&fr=f&frp=/windows3.html
EE. Solar System Trading Cards http://amazing-space.stsci.edu/resources/explorations/trading/game.htm
FF. *Space Vehicles* (Anne Rockwell and David Brion)
GG. Nasa Kids Shuttle Launch http://kidsmsfc.nasa.gov/rockets/shuttle/launch.asp
HH. Filamentality http://www.kn.pacbell.com/wired/fil/pages/webplanetsct.html

V. LESSONS

Lesson One: Stars – Rising (and Setting) to the Occasion

A. *Daily Objectives*

1. Concept Objective(s)
   a. The student knows that organisms, objects, and events have properties and patterns. (TEKS, Science b1.5)
   b. The student knows that many types of changes occur. (TEKS, Science b1.7)
2. Lesson Content
   a. Patterns and Classification (p.35)
      - Recognize patterns and predict the extension of a pattern
   b. Astronomy: Introduction to the Solar System (p.39)
      - Sun, source of energy, light, heat
      - Earth and its place in the solar system
        Sunrise and sunset
3. Skill Objective(s)
   a. The student asks questions about objects and events. (adapted from TEKS, Science b1.2A)
   b. The student will record and compare collected information. (adapted from TEKS, Science b1.4B)
   c. The student identifies, predicts, and creates patterns. (adapted from TEKS, Science b1.5B)

d. The student will observe, measure, and record changes. (adapted from TEKS, Science b1.7A)
e. The student uses data input skills appropriate to the task. (TEKS, Technology Application b.2)
f. The student acquires electronic information in a variety of formats, with appropriate supervision. (TEKS, Technology Applications b.5)
g. The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge. (TEKS, Technology Applications b.8)

B. *Materials*
1. *Stars* (Jennifer Dussling)
2. *Stars* (Paul P. Sipera) pgs. 16 and 28
3. KW (know and want to know) Star worksheet (Appendix A) – class set
4. current almanac or current newspaper or Internet site http://aa.usno.navy.mil/data/docs/RS_OneYear.html
5. Excel document Sunrise Sunset to chart changes/patterns of sunrise and sunset (Appendix B) – either on the computer or 1 hardcopy for the class
6. computer

C. *Key Vocabulary*
1. predict – to tell about something in advance of its occurrence by means of special knowledge or inference
2. sunrise – time of the daily first appearance of the sun above the eastern horizon
3. sunset – time of the daily disappearance of the sun below the western horizon

D. *Procedures/Activities*
1. The teacher will lead the class in completing a KW (know and want to know) worksheet on the KW Star worksheet. "Know" goes on the star's 5 points and "want to know" goes in the middle of the star. The teacher can compile the students' responses on the worksheets onto a large star for the class if desired.
2. The teacher will read aloud *Stars* (Jennifer Dussling) and pgs. 16 and 28 of *Stars* (Paul P. Sipera).
3. The teacher will lead students using either the Internet, http://aa.usno.navy.mil/data/docs/RS_OneYear.html , the current year's almanac, or the daily newspaper to find the time of sunrise and sunset for that day. The teacher will enter this information either onto an existing Excel document or on a hard copy of this document Sunrise Sunset (Appendix B).
4. The teacher will lead a discussion predicting what the times will be for the next day.
5. Each day steps 3, 4, and 5 must be repeated (allowing the students to use more of their computer skills) until a pattern is formed and recognized by the students.

E. *Assessment/Evaluation*
1. The student will orally share one item from the K area and one from the W area of his/her KW chart.
2. The student will demonstrate to the teacher the computer skills necessary to find the times of sunrise and sunset and place that information on the Excel document or on the hard copy.

Lesson Two: Stars – You Are My Sunshine

A. *Daily Objectives*

1. Concept Objective(s)
   a. The student knows that systems have parts and are composed of organisms and objects. (TEKS, Science b1.6)
   b. The student knows that many types of changes occur. (TEKS, Science b1.7)
2. Lesson Content
   a. Astronomy: Introduction to the Solar System (p.39)
      - Sun, source of energy, light, heat
      - Stars
        The sun is a star.
      - Earth and its place in the solar system
        The earth moves around the sun, the sun does not move.
        Sunrise and sunset
        When it is day where you are, it is night for people on the opposite side of the earth.
3. Skill Objective(s)
   a. The student will observe, measure, and record changes. (adapted from TEKS, Science b1.7A)
   b. The student acquires electronic information in a variety of formats, with appropriate supervision. (TEKS, Technology Applications b.5)
   c. The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge. (TEKS, Technology Applications b.8)

B. *Materials*

1. *The Sun Our Nearest Star* (Franklyn M. Branley)
2. *The Sun is my Favorite Star* (Frank Asch) pgs. 24 and 25 or Internet site http://kids.msfc.nasa.gov/Earth/Sundials/SundialMake.asp
3. long stick, small square piece of clay, paper plate OR downloaded sundial page from Internet site
4. scissors
5. tape
6. pencils – class set
7. computer

C. *Key Vocabulary*

1. sundial – a kind of clock made by the sun and a shadow

D. *Procedures/Activities*

1. The teacher will read aloud *The Sun is my Favorite Star* (Frank Asch).
2. The teacher will show, read aloud, and lead a class discussion about how to make a sundial with pgs. 24 and 25 of *The Sun Our Nearest Star* (Franklyn M. Branley) or the Internet site http://kids.msfc.nasa.gov/Earth/Sundials/SundialMake.asp .
3. The teacher will lead the class in creating and demonstrating a sundial.
4. While observing the sundial the class made, the student will draw the sundial and shadow correctly and record the correct time.
5. The teacher will lead the students using the Internet to show sundial information http://kids.msfc.nasa.gov/Earth/Sundials.asp and showing a sundial in another country http://www.dsellers.demon.co.uk/sundials/st_johns.htm .

6. The class will add information to the sunrise/sunset document from Lesson 1.

E. *Assessment/Evaluation*

1. The student, after observation, will draw a sundial with the shadow in the correct place and record the time of drawing.
2. The student will demonstrate to the teacher the computer skills necessary to find the times of sunrise and sunset and place that information on the Excel document or on the paper chart (Appendix B).

Lesson Three: Stars – Ch-ch-ch-changes (more than a oldies song?)– Days, Seasons and Moon Phases

A. *Daily Objectives*

1. Concept Objective(s)
   a. The student knows that organisms, objects, and events have properties and patterns. (TEKS, Science b1.5)
   b. The student knows that many types of changes occur. (TEKS, Science b1.7)
2. Lesson Content
   a. Patterns and Classification (p.35)
      - Recognize patterns and predict the extension of a pattern
   b. Earth and its place in the solar system
      - The earth revolves (spins); one revolution takes one day (24 hours).
      - When it is day where you are, it is night for people on the opposite side of the earth.
3. Skill Objective(s)
   a. The student will record and compare collected information. (adapted from TEKS, Science b1.4B)
   b. The student uses data input skills appropriate to the task. (TEKS, Technology Applications b.2)
   c. The student identifies, predicts, and creates patterns. (adapted from TEKS, Science b1.5B)
   d. The student will observe, measure, and record changes. (adapted from TEKS, Science b1.7A)
   e. The student acquires electronic information in a variety of formats, with appropriate supervision. (TEKS, Technology Applications b.5)

B. *Materials*

1. *Earth Cycles* (Michael Elsohn Ross)
2. *What Makes Day and Night* (Franklyn M. Branley) pgs. 22 and 23
3. *What's Out There?* (Lynn Wilson) selected pages with moon phases
4. white paper – class set
5. pencils, colors
6. Moon Phases worksheet (Appendix C)
7. computer

C. *Key Vocabulary*

1. A.M. – (ante meridiem) before noon and exactly midnight- used chiefly in the abbreviated form to specify the hour
2. P.M. – (post meridiem) noon and any time after noon – used chiefly in the abbreviated form to specify the hour

3. season – a period of the year usually characterized by a particular weather
4. phase – regularly recurring cycles of change

D. *Procedures/Activities*

1. The teacher will read *Earth Cycles* (Michael Elsohn Ross).
2. The teacher will use a student and a flashlight to demonstrate the sun (flashlight) shining on the earth (student) as shown on pgs. 22 and 23 of *What Makes Day and Night* (Franklyn M. Branley). Have the student spin around slowly to demonstrate day and night (A.M. and P.M.)
3. The teacher will lead the students in visiting the Internet site http://fourmilab.ch/earthview/vplanet.html to see a view of the Earth from space.
4. The teacher will read aloud selected pages about the seasons from *The Reasons for the Seasons* (Gail Gibbons).
5. The student, on a sheet of white paper folded to create 4 equal squares, will draw a picture representing each of the 4 seasons and label each with the correct season's name.
6. The student will visit the web site http://kids.msfc.nasa.gov/Toons Earth Seasons to hear information and see the pictures about what makes the seasons.
7. The teacher will lead the students in using the Internet http://www.ameritech.net/users/paulcarlisle/MoonCalendar.html to find pictures representing the phases of the moon.
8. The teacher will read aloud selected pages of *What's Out There?* (Lynn Wilson) showing the moon phases.
9. The student will complete the Moon Phases worksheet (Appendix C) using the words full, half, crescent, half, crescent (first one side and then the other), and new.
10. The class will add information to the sunrise/sunset document from Lesson 1.

E. *Assessment/Evaluation*

1. The student, after finding the information online or in a book, will create pictorial representations for and label each of the seasons.
2. The student will complete the Moon Phases worksheet (Appendix C).
3. The student will demonstrate to the teacher the computer skills necessary to visit the Nasa Toons site about the seasons.
4. The student will demonstrate to the teacher the computer skills necessary to find the times of sunrise and sunset and place that information on the Excel document or on the paper chart (Appendix B).

Lesson Four: Stars – Twinkle, Twinkle

A. *Daily Objectives*

1. Concept Objective(s)
   a. The student knows that organisms, objects, and events have properties and patterns. (TEKS, Science b1.5)
   b. The student knows that systems have parts and are composed of organisms and objects. (TEKS, Science b1.6)
2. Lesson Content
   a. Patterns and Classification (p.35)
      - Recognize patterns and predict the extension of a pattern
   b. Astronomy: Introduction to the Solar System (p.39)
      - Stars
        Constellations, Big Dipper

3. Skill Objective(s)
    a. The student will record and compare collected information. (adapted from TEKS, Science b1.4B)
    b. The student acquires electronic information in a variety of formats, with appropriate supervision. (TEKS, Technology Applications b.5)
    c. The student will record and compare collected information. (adapted from TEKS, Science b1.4B)
    d. The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge. (TEKS, Technology Applications b.8)

B. *Materials*
1. *The Big Dipper* (Franklyn M. Branley)
2. *The Sky is Full of Stars* (Franklyn M. Branley) pgs. 29-31or Internet site http://atozteacherstuff.com/go/jump2.cgi?ID=2825
3. empty coffee can, cardboard, small nail, flashlight OR fluorescent sticky stars, black construction paper, flashlight
4. scissors, pencils – class set
5. pictures of the constellations found online at http://www.funbrain.com/funbrain/cgi-bin/science.cgi?A1=s&A13=%5B..%2Fconstellation%2F%5D%5constellation%5D&A15=2&A2=1&A3=0&submit=Play+Space+Hopper or Constellation Cards (Appendix D 1,2, and 3)
6. computer

C. *Key Vocabulary*
1. constellation – any of the 88 configurations of the stars

D. *Procedures/Activities*
1. The teacher will read aloud *The Big Dipper* (Franklyn M. Branley).
2. The teacher will read aloud *The Sky is Full of Stars* (Franklyn M. Branley) pgs. 29-31or visit the Internet site http://atozteacherstuff.com/go/jump2.cgi?ID=2825 for an activity with creating a constellation.
3. The students will create a constellation according to the instructions and using the Constellation Cards (Appendix D 1, 2,and 3).
4. The students will share the constellation made in the culminating activity Space Bubble (save constellation creations for that activity).
5. The class will add information to the sunrise/sunset document from Lesson 1.

E. *Assessment/Evaluation*
1. The students will create and label one constellation for the Space Bubble.
2. The student will demonstrate to the teacher the computer skills necessary to find the times of sunrise and sunset and place that information on the Excel document or on the paper chart (Appendix B).

Lesson Five: Stars – You Are My Shining Star

A. *Daily Objectives*
1. Concept Objective(s)
    a. The student knows that organisms, objects, and events have properties and patterns. (TEKS, Science b1.5)

b. The student knows that systems have parts and are composed of organisms and objects. (TEKS, Scienceb1.6)

2. Lesson Content
   a. Patterns and Classification (p.35)
      - Recognize patterns and predict the extension of a pattern
   b. Astronomy: Introduction to the Solar System (p.39)
      - Stars
        Constellations, Big Dipper
3. Skill Objective(s)
   a. The student will record and compare collected information. (adapted from TEKS, Science b1.4B)
   b. The student uses data input skills appropriate to the task. (TEKS, Technology Applications b.2)
   c. The student acquires electronic information in a variety of formats, with appropriate supervision. (TEKS, Technology Applications b.5)
   d. The student will record and compare collected information. (adapted from TEKS, Science b1.4B)
   e. The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge. (TEKS, Technology Applications b.8)

B. *Materials*
1. *Stars! Stars! Stars!* (Bob Barner)
2. *Our Stars* (Anne Rockwell) selected pages with pictures of the constellations or Internet site http://atozteacherstuff.com/go/jump2.cgi?ID=2825
3. empty coffee can, cardboard, small nail, flashlight OR fluorescent sticky stars, black construction paper, flashlight
4. scissors, pencils – class set
5. pictures of the constellations found online at http://www.funbrain.com/funbrain/cgi-bin/science.cgi?A1=s&A13=%5B..%2Fconstellation%2F%5D%5constellation%5D&A15=2&A2=1&A3=0&submit=Play+Space+Hopper or at http://www.astro.wisc.edu/~dolan/constellations/constellationjavalist.html for examples only
6. computer

C. *Key Vocabulary*
1. constellation – any of the 88 configurations of the stars

D. *Procedures/Activities*
1. The teacher will read aloud *Stars! Stars! Stars!* (Bob Barner).
2. The teacher will read aloud selected pages from *Our Stars* (Anne Rockwell) with pictures of the constellations or visit the Internet site http://atozteacherstuff.com/go/jump2.cgi?ID=2825 for the activity with creating a constellation.
3. The students will create their own constellation according to the instructions and by using their own imaginations. This must be an original creation. Not a copy of an existing constellation as in the previous lesson.
4. The students will share their constellation in the culminating activity Space Bubble (save constellation creations for that activity).

5. The students will visit the web site http://www.funbrain.com/funbrain/cgi-bin/science.cgi?A1=s&A13=%5B..%2Fconstellation%2F%5D%5constellation%5D&A15=2&A2=1&A3=0&submit=Play+Space+Hopper . Students must do the tutorial part of the program before playing the Space Hopper game.
6. The class will add information to the sunrise/sunset document from Lesson 1.

E. *Assessment/Evaluation*

1. The students will create and label their own original constellation for the Space Bubble.
2. The student will demonstrate to the teacher the computer skills necessary to visit the Fun Brain website to learn about constellations.
3. The student will demonstrate to the teacher the computer skills necessary to find the times of sunrise and sunset and place that information on the Excel document or on the paper chart (Appendix B).

Lesson Six: Planets – A Whole New World

A. *Daily Objectives*

1. Concept Objective(s)
   a. The student knows that organisms, objects, and events have properties and patterns. (TEKS, Science b1.5)
   b. The student knows that systems have parts and are composed of organisms and objects. (TEKS, Science b1.6)
2. Lesson Content
   a. Patterns and Classification (p.35)
      - Recognize patterns and predict the extension of a pattern
   b. Astronomy: Introduction to the Solar System (p.39)
      - The nine planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto)
3. Skill Objective(s)
   a. The student will record and compare collected information. (adapted from TEKS, Science b1.4B)
   b. The student identifies, predicts, and creates patterns. (adapted from TEKS, Science b1.5B)
   c. The student uses data input skills appropriate to the task. (TEKS, Technology Applications b.2)
   d. The student acquires electronic information in a variety of formats, with appropriate supervision. (TEKS, Technology Applications b.5)
   e. The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge. (TEKS, Technology Applications b.8)

B. *Materials*

1. *The Planets* (Gail Gibbons) first part of book only
2. *The Planets in our Solar System* (Franklyn M. Branley) pgs. 26 and 27
3. planet mnemonic, song, and poem (Appendix E)
4. white paper – class set
5. pencils, colors, and scissors – class set
6. regular coat hanger or piece of dowel rod – class set
7. hole punch
8. string
9. computer

C. *Key Vocabulary*

1. planet – one of the bodies that revolves around the sun in the solar system
2. solar system – the sun and group of planets that are held by its attraction (pull of gravity) and revolve around it

D. *Procedures/Activities*

1. The teacher will read aloud first part of the book *The Planets* (Gail Gibbons).
2. The teacher will lead the students in visiting the Internet site http://www.solarsystem.org.uk/planet10/ Solar System Fly Through to see a virtual trip through the solar system.
3. The teacher will share the planet mnemonic, song, and/or poem with the class several times until memorized.
4. The teacher will show and have made the templates of the planets from pgs. 26 and 27 of *The Planets in our Solar System* (Franklyn M. Branley).
5. The student will use the templates and additional planet books with pictures of the planets to create each planet – drawing, cutting, coloring, hole punching, attaching string—and making them into a mobile.
6. The students will visit the Internet site http://kids.msfc.nasa.gov/solarsystem/solarsystemjava.asp to receive and reinforce information about the solar system.

E. *Assessment/Evaluation*

1. The student will orally name the planets in order by using the mnemonic, song, or poem.
2. The student will create a solar system mobile.
3. The student will demonstrate to the teacher the computer skills necessary to visit the Nasa Solar System website to learn about constellations.

Lesson Seven: Planets – The Third Rock From the Sun

A. *Daily Objectives*

1. Concept Objective(s)
   a. The student knows that systems have parts and are composed of organisms and objects. (TEKS, Science b1.6)
2. Lesson Content
   a. Astronomy: Introduction to the Solar System (p.39)
      - Earth and its place in the solar system
   b. Sayings and Phrases (p.26)
      - There's no place like home.
3. Skill Objective(s)
   a. The student will record and compare collected information. (adapted from TEKS, Science b1.4B)
   b. The student uses data input skills appropriate to the task. (TEKS, Technology Applications b.2)
   c. The student acquires electronic information in a variety of formats, with appropriate supervision. (TEKS, Technology Applications b.5)
   d. The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge. (TEKS, Technology Applications b.8)

B. *Materials*

1. *Earth* (David Bennett)
2. *The Third Planet* (Sally Ride and Tam O'Shaughnessy)

3. 1 large piece of paper or chart paper
4. marker
5. white paper – class set
6. pencils and colors – class set
7. Trading Card computer document or worksheet (Appendix F)
8. computer

C. *Key Vocabulary*
1. globe – a spherical representation of the Earth
2. map – a flat representation of the Earth
3. perspective – to view things in true relation to position

D. *Procedures/Activities*
1. The teacher will read aloud *Earth* (David Bennett).
2. The teacher will share the pictures from the book *The Third Planet* (Sally Ride and Tam O'Shaughnessy) while discussing the meaning of perspective.
3. The teacher will lead the students in visiting the Internet site http://fourmilab.ch/earthview/vplanet.html and in discussing the differences and similarities in globes and maps.
4. The teacher will lead the class in making a chart with the title MAPS, BOTH, GLOBES and record student responses in the correct column while students describe maps and globes.
5. The students will complete a map of Earth titled, There's No Place Like Home.
6. The teacher will lead the class in a discussion of what the Core Saying means in relationship to Earth and the other planets.
7. The student will visit the Internet site http://www.iknowthat.com/com/L3?Area=PuzzleMaps to practice constructing a map of the Earth.

E. *Assessment/Evaluation*
1. The student will create a map of the Earth.
2. The student will demonstrate to the teacher the computer skills necessary to visit the I Know That website to practice creating the map of the Earth.

Lesson Eight: Planets – To Infinity and Beyond

A. *Daily Objectives*
1. Concept Objective(s)
   a. The student knows that organisms, objects, and events have properties and patterns. (TEKS, Science b1.5)
   b. The student knows that systems have parts and are composed of organisms and objects. (TEKS, Science b1.6)
2. Lesson Content
   a. Astronomy: Introduction to the Solar System (p.39)
      - The nine planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto)
3. Skill Objective(s)
   a. The student will record and compare collected information. (adapted from TEKS, Science b1.4B)
   b. The student uses data input skills appropriate to the task. (TEKS, Technology Applications b.2)

c. The student uses appropriate computer-based productivity tools to create and modify solutions to problems. (TEKS, Technology Applications b.7)

d. The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge. (TEKS, Technology Applications b.8)

e. The student delivers the product electronically in a variety of media, with appropriate supervision. (TEKS, Technology Applications b.11)

B. *Materials*

1. *Me and My Place in Space* (Joan Sweeney)
2. Planet Book PowerPoint template or hard copy (Appendix F 1, 2, and 3) – class set
3. individual books about the planets – see Bibliography
4. teacher and peer rubric (Appendix G 1and 2)
5. computer

C. *Key Vocabulary*

1. Milky Way – an immense galaxy made up of hundreds of billions of stars which the Earth's sun is a part
2. galaxy – any number of large-scale collections of stars
3. universe – everything that exists in space

D. *Procedures/Activities*

1. The teacher will read aloud *Me and My Place in Space* (Joan Sweeney).
2. The teacher will lead the students in creating a PowerPoint or book about the Earth by looking either in nonfiction books or on Internet sites www.spacekids.com/solarsystem/index.html Solar System Central, http://www.iknowthat.com/com/L3?Area=Science%20Lab Solar System, http://www.spacekids.com/playanddo/playanddo/index.html ,and http://www.windows.ucar.edu/cgi-bin/tour.cgi?link=/our_solar_system/planets_table.html&sw=false&sn=0&edu=elem&cdp=/windows3.html&cd=false&tour=&fr=f&frp=/windows3.html to complete the PowerPoint template Planet Book (Appendix F 1, 2, and 3).
3. The students will work cooperatively with a partner or on a team to research and create a PowerPoint or book about one of the other planets—not Earth. Each group should choose a different planet so that all planets are presented.
4. The students, working with their partner/team, will orally present their PowerPoint or book to the class.

E. *Assessment/Evaluation*

1. The students will work cooperatively with partners/teams to create and present the PowerPoint presentation or book about a planet to the class to be assessed by the teacher and other students with a rubric (Appendix G 1and 2).

Lesson Nine: Planets – Faaaaaaaaar Out!

A. *Daily Objectives*

1. Concept Objective(s)
   a. The student knows that organisms, objects, and events have properties and patterns. (TEKS, Science b1.5)
   b. The student knows that systems have parts and are composed of organisms and objects. (TEKS, Science b1.6)
2. Lesson Content
   a. Astronomy: Introduction to the Solar System (p.39)

- The nine planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto)

3. Skill Objective(s)
   a. The student will record and compare collected information. (adapted from TEKS, Science b1.4B)
   b. The student uses data input skills appropriate to the task. (TEKS, Technology Applications b.2)
   c. The student acquires electronic information in a variety of formats, with appropriate supervision. (TEKS, Technology Applications b.5)
   d. The student acquires electronic information in a variety of formats, with appropriate supervision. (TEKS, Technology Applications b.5)
   e. The student uses appropriate computer-based productivity tools to create and modify solutions to problems. (TEKS, Technology Applications b.7)
   f. The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge. (TEKS, Technology Applications b.8)

B. *Materials*
   1. *The Planets* (Gail Gibbons) last part of book only
   2. individual books about the planets
   3. Trading Card computer document and/or worksheet (Appendix H) – class set
   4. computer

C. *Key Vocabulary*
   1. revolves – to orbit a central point

D. *Procedures/Activities*
   1. The teacher will read aloud the last part of the book *The Planets* (Gail Gibbons).
   2. The teacher will use the computer document or the worksheet (Appendix H) and the information from the PowerPoint presentation or book about Earth to demonstrate how to make a Trading Card about Earth.
   3. The students will use multiple copies of the computer document or the worksheet (Appendix H) and the information from the PowerPoint presentation or book about a planet to make a trading card about the planet. Information about the planet is on one side and the name and a picture of the planet should go on the other side.
   4. The students will actually trade cards with other students.
   5. The teacher will lead the class in visiting the Internet site http://amazing-space.stsci.edu/resources/explorations/trading/game.htm to assess knowledge learned about the planets.
   6. The students will visit the Internet site http://amazing-space.stsci.edu/resources/explorations/trading/game.htm independently also.

E. *Assessment/Evaluation*
   1. The student will put the correct data onto the Trading Card template or worksheet (Appendix H).
   2. The student will complete the necessary artwork of the planet to make the Trading Card complete.
   3. The student will demonstrate to the teacher the necessary computer skills to visit the Internet site to assess knowledge about the planets.

Lesson Ten: Planets – Houston, We Have a Problem…

A. *Daily Objectives*

1. Concept Objective(s)
   a. The student knows that organisms, objects, and events have properties and patterns. (TEKS, Science b1.5)
   b. The student knows that systems have parts and are composed of organisms and objects. (TEKS, Science b1.6)
2. Lesson Content
   a. Astronomy: Introduction to the Solar System (p.39)
      - The nine planets (Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto)
3. Skill Objective(s)
   a. The student will record and compare collected information. (adapted from TEKS, Science b1.4B)
   b. The student uses data input skills appropriate to the task. (TEKS, Technology Applications b.2)
   c. The student acquires electronic information in a variety of formats, with appropriate supervision. (TEKS, Technology Applications b.5)
   d. The student uses appropriate computer-based productivity tools to create and modify solutions to problems. (TEKS, Technology Applications b.7)
   e. The student uses research skills and electronic communication, with appropriate supervision, to create new knowledge. (TEKS, Technology Applications b.8)
   f. The student delivers the product electronically in a variety of media, with appropriate supervision. (TEKS, Technology Applications b.11)

B. *Materials*

1. *Space Vehicles* (Anne Rockwell and David Brion)
2. computer

C. *Key Vocabulary*

1. vehicle – a means for carrying or transporting something

D. *Procedures/Activities*

1. The teacher will read aloud *Space Vehicles* (Anne Rockwell and David Brion).
2. The students will visit the Internet site http://kidsmsfc.nasa.gov/rockets/shuttle/launch.asp to show the space shuttle launching.
3. The teacher will lead the students in a Web Quest http://www.kn.pacbell.com/wired/fil/pages/webplanetsct.html using Earth for the mission.
4. The students, working with the same partners/teams as before, will complete the Web Quest using the planet researched for the PowerPoint and Trading Card for the mission.

E. *Assessment/Evaluation*

1. The student will demonstrate to the teacher the necessary computer skills and cooperative group skills to work with a partner/team to complete the Web Quest Mission in Space.

VI. CULMINATING ACTIVITY

A. Space Bubble – after lesson 5

The teacher will construct a "night sky" environment for view of the constellations that the students have created. Cut black trash bags open so that they lay flat. The more trash bags used, the bigger the "bubble" will be. Tape the trash bags together with any heavy-duty tape (duct, packing, etc.) so that they create an enclosed space with openings on both ends. At one end attach a box fan securely with tape. At the other end create a smaller opening (but still large enough for a person to fit through) by taping shut part of the end and fashioning a "door" flap that can be lightly taped shut. When completed with taping, turn on the fan, lightly tape shut the door and the "bubble" will inflate. Turning out the lights in the room will help to darken the space created inside the bubble. Placing a covering (loosely so it won't get sucked into the fan) over the back of the fan will also help to darken the inside. Students take turns going inside and sharing their 2 constellations that they created. How many can go inside at once depends on the size of your bubble. Happy Stargazing!

B. Life on Planet 10 – after lesson 10

The students will create their own virtual planet with the Internet site www.solarsystem.org.uk/planet10. Students will take the information from the Internet site and make it into a book about Planet 10, their own planet. These planets, complete with name, atmosphere, life forms, etc., can be shared with the rest of the class through viewing the Internet site, visuals made by the student, and student-made books about the planet.

VII. HANDOUTS/WORKSHEETS

Appendix A – KW Stars
Appendix B – Sunrise Sunset
Appendix C – Moon Phases
Appendix D1, 2, and 3 – Constellation Cards
Appendix E – Planet mnemonic, song, and poem
Appendix F1, 2, and 3 – Planet Book
Appendix G – Trading Cards

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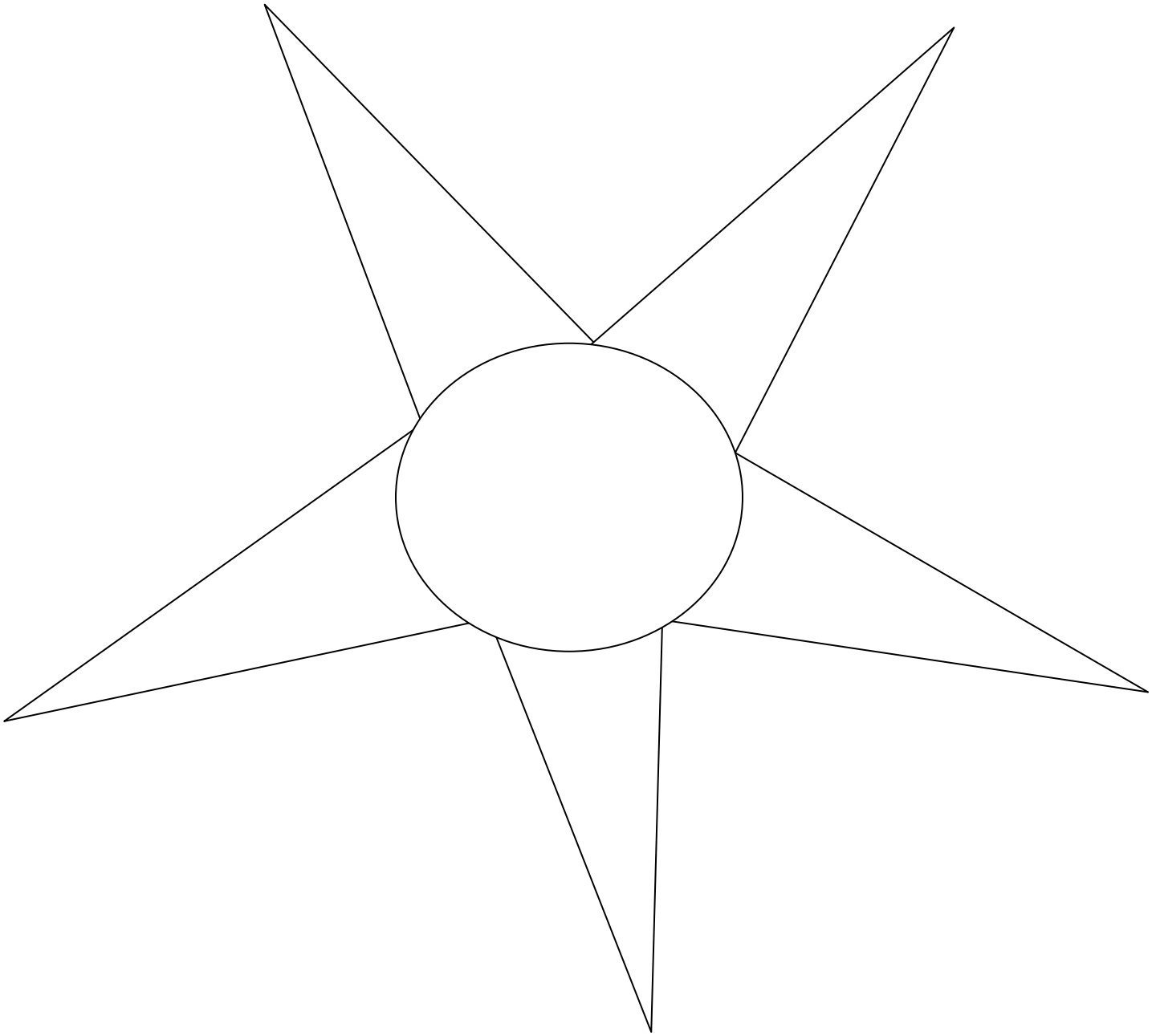
Appendix A

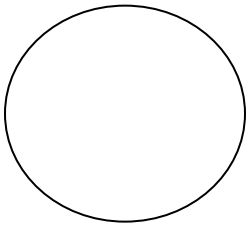
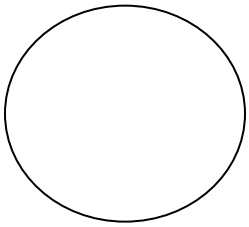
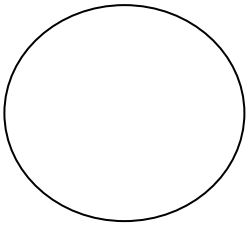
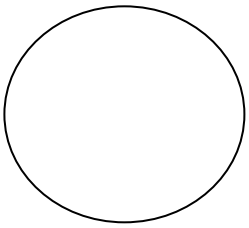
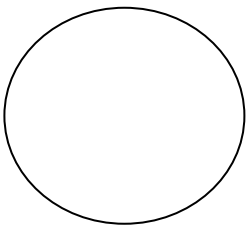
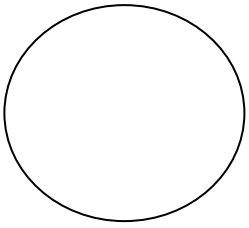
KW Star



Appendix B

date	sunrise time	sunset time

Appendix C

draw the Moon Phase	**tell the Moon Phase name** new, half (2), crescent(2), full
	_____
	_____
	_____
	_____
	_____
	_____

Capricornus	Cancer
Aries	Libra

Taurus	Virgo
Scorpius	Leo

Aquarius	Sagittarius
Gemini	Pisces

Planet Mnemonic Devices

- My Very Easy Method Just Speeds Up Naming Planets.
- My Very Excellent Mother Just Sent Us Nine Pizzas.
- Most Voracious Elephants Make Jam Sundaes Using New Plates.
- My Very Excitable Mother Just Started Using New Perfume.

Planet Song

Tune: Way Down Yonder in the Paw Paw Patch

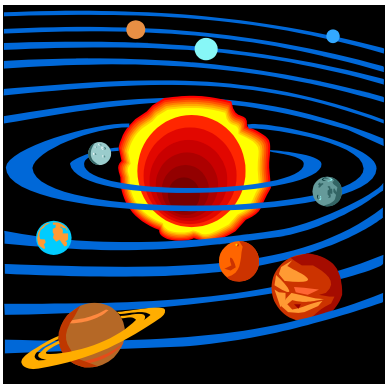
Here are nine planets that we know.
Round and round the Sun they go.
Mercury, Venus, Earth, and Mars,
These are the planets near our star.

Jupiter, Saturn, Uranus, too.
Neptune, Pluto, we can't see you.
These are the nine planets that we know.
Round and round the Sun they go.

Planet Rap

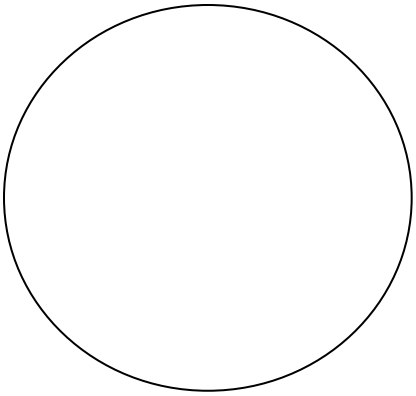
First is Mercury, closest to the Sun.
Hot, hot Venus is the second one.
Earth comes third, I love it a lot.
Mars is fourth, it's freezing-not hot.
Jupiter, fifth, is bigger than the rest.
Sixth comes Saturn, its rings look best.
Uranus and Neptune are seven and eight.
They are gas balls, and they look great.
Tiny Pluto is the last.
Naming the planets is a blast!

Planet Book

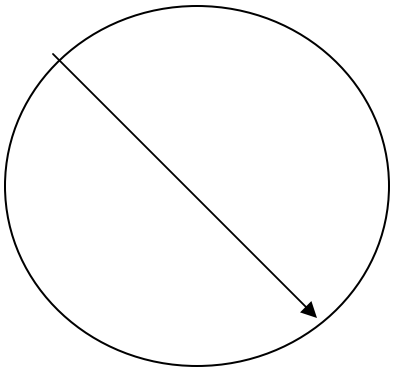


My planet is _____.

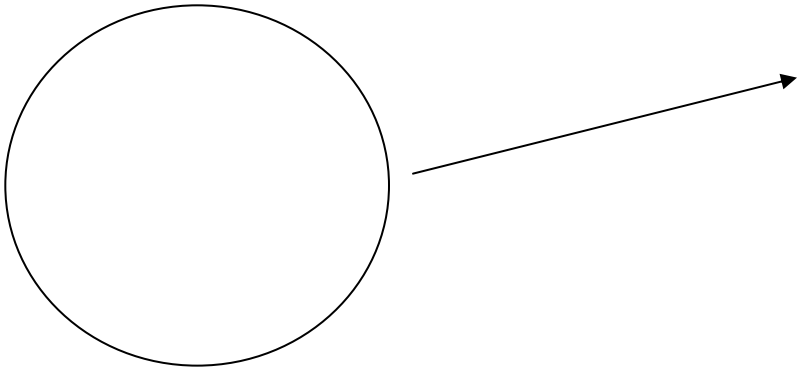
Its name means _____.

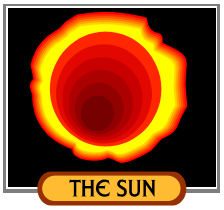


_____ is _____ miles in diameter and has _____ moons.



_____ is _____ from the sun.

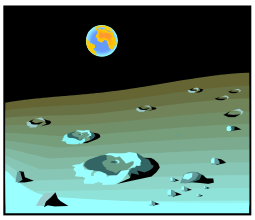




It is _____ there.

I would weigh _____ on _____.

I would be _____ years old on _____ since one year on Earth equals _____on _____.



The most interesting thing about _____ is

_____

_____.

Appendix G

PowerPoint Presentation Rubric

Teacher Name: **K Lewis**

Student Name: _____

CATEGORY	100 = 4	85 = 3	70 = 2	50 = 1
Content - Accuracy	All content throughout the presentation is accurate. There are no factual errors.	Most of the content is accurate but there is one piece of information that might be inaccurate.	The content is generally accurate, but one piece of information is clearly flawed or inaccurate.	Content is typically confusing or contains more than one factual error.
Spelling and Grammar	Presentation has no misspellings or grammatical errors.	Presentation has 1-2 misspellings, but no grammatical errors.	Presentation has 1-2 grammatical errors but no misspellings.	Presentation has more than 2 grammatical and/or spelling errors.
Cooperation	Group delegates tasks and shares responsibility effectively all of the time.	Group delegates tasks and shares responsibility effectively most of the time.	Group delegates tasks and shares responsibility effectively some of the time.	Group often is not effective in delegating tasks and/or sharing responsibility.
Effectiveness	Project includes all material needed. It is highly effective.	Project includes most material but is lacking one or two key elements. It is adequate.	Project is missing more than two key elements. It is incomplete.	Project is lacking several key elements and has inaccuracies that make it poor.
Oral Presentation	All members of the group take turns presenting and speak with a pleasant volume.	All members of the group take turns presenting but the volume is either too loud or not loud enough.	Not all members take a turn presenting but the volume is pleasant.	Not all members take a turn and the volume is either too loud or not loud enough.

Appendix G-2

PowerPoint Presentation Rubric

for _____, _____, _____

planet name _____

Listen for this information in the presentation. Mark all, some, or none.

		all	some	none
1.	planet's name		--	☹
2.	planet's meaning		--	☹
3.	planet's distance from the sun		--	☹
4.	planet's temperature		--	☹
5.	planet's diameter (size)		--	☹
6.	planet's number of moons		--	☹
7.	planet's number of rings		--	☹
8.	person's weight on planet		--	☹
9.	person's age on planet		--	☹
10.	year equivalency to Earth		--	☹
11.	planet's interesting fact		--	☹

Planet _____

Meaning of Name

_____

Distance from Sun

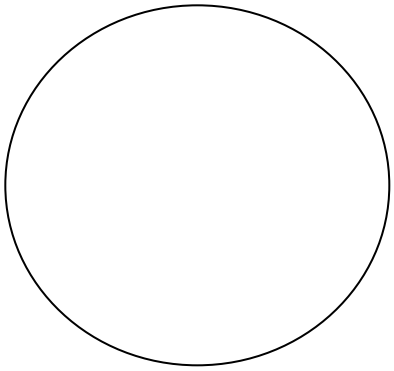
_____

Temperature

_____

Size of Planet

_____



_____

Planet _____

Meaning of Name

_____

Distance from Sun

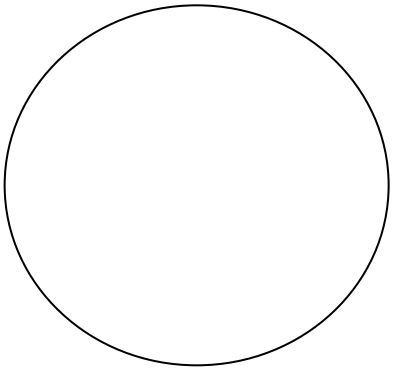
_____

Temperature

_____

Size of Planet

_____



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