# Written Assessment Options for the Sky Time Lesson

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WHAT DO YOU KNOW? [p 1 of 3]

1. Draw arrows to connect each box with the correct place on planet Earth.

   NORTH AMERICA

   NORTH POLE

   SOUTH POLE

   SOUTH AMERICA

2. Draw the EQUATOR on the Earth cartoon above.

3. Order the objects below from smallest (1) to largest (3).

   ____ Earth
   ____ Moon
   ____ Sun

4. Order the objects below from closest (1) to farthest (3) from Earth.

   ____ Sun
   ____ Moon
   ____ North Star

5. How many stars are in the Solar System? _________

6. How do you think people kept track of time before the invention of clocks, watches, and numbered calendars? What is a day? What is a year?

7. If it is noon where you are, what time is it on the opposite side of Earth?

   _______________
8. How does the Sun appear to move in the sky during the day? Draw the path of the Sun on the diagram below.

9. Why do you think the Sun appears to rise in the East and set in the West?

10. Do stars and constellations also appear to rise and set? Circle one: YES NO Explain:

11. Does Earth move in space? Circle one: YES NO Explain (draw pictures if it helps to explain):
12. How many trips around the Sun have you made in your life? __________

13. Do we see the same stars and constellations at different times of year?
   Circle one:       YES       NO

   Explain (use drawings if it helps you to explain):
Here are images that show the relative size of the Sun compared to the Earth and Moon. In reality all of these objects are 10 billion times wider. This page is too small to show the properly scaled distance between the Sun and the Earth-Moon system. That part is up to you!

First, cut out the images along the dashed lines. Then measure about 14 meters (45 ft) from the Sun to the Earth-Moon system. Now you have your own scale model!

**Question:** How far away would the nearest star to the Sun be in this scale model?

**Answer:** Alpha Centauri would be about 4000 km (2400 miles) away in this scale model – like having the cut-out Sun in California and a cut-out star in New York!

Name: ____________________
BODY GEOGRAPHY

DIRECTIONS:
1. Label the North and South Poles by filling in the boxes shown.
2. Fill in the “E” and “W” signs in the student’s hands.
3. Draw the Equator on the boy (whose upper body represents the whole Earth).
KINESTHETIC TIMES OF DAY

A. Write the correct times of day for someone on the front of the rotating boy.
Choose from: SUNRISE, SUNSET, NOON or MIDNIGHT

1. ______________  2. ______________  3. ______________  4. ______________

Earth turns about its axis. We call this movement ________________.

Earth takes _______ hours to rotate around. We call this length of time Earth’s rotational period.

B. Fill in the blanks below

Name: ____________________
ROTATION VS. ORBIT

Fill in the blanks below

Earth turns about its own axis. We call this movement __________________.
Earth takes ________ hours to rotate around. We call this length of time Earth’s rotational period.

Earth moves around the Sun. We say that Earth ______________ the Sun.
Earth takes ________ days to go once around. We call this length of time Earth’s orbital period.
YOUR BIRTHDAY STARS  [p 1 of 2]

Use the Zodiac Diagram to answer these questions.

1. Estimate the date at the girl’s position: ________________.

2. Name a Zodiac constellation that would be visible to her at midnight: ______________________

3. Write the names of two Zodiac constellations that would be visible in the night sky at midnight on the Summer Solstice (21 June).
   ______________________   ______________________

4. Do we see different stars at different times of year?
   Circle one: YES NO
   Explain:

5. Write down your birthdate (day, month, year): ________________

6. Mark an “X” on the Diagram to show your birthday position in Earth’s orbit around the Sun.

7. Write the names of two constellations that would be visible in the night sky at midnight on your birthday:
   ______________________   ______________________

8. Can you see the constellation representing your “sign” of the Zodiac in the night sky on your birthday?
   Circle one: YES NO
   Explain:
THE ZODIAC DIAGRAM

Use this Zodiac Diagram to answer questions.

REMEMBER: During the lesson, you were standing around the inner circle with your body representing Earth in orbit around the Sun.
THE NIGHT SKY IN CHINA

Fill in the answers and design a kinesthetic demonstration

1. Do you think people in the US will see pretty much the same stars tonight as people in China saw 12 hours ago?  
   Circle one:  YES  NO

STOP! RECORD AND KEEP YOUR ANSWER ABOVE. THEN GO ON TO SEE IF YOUR ANSWER CHANGES OR STAYS THE SAME BY THE END. LET'S GO!

2. What is Earth’s rotational period (in hours)?  _______________

3. What is Earth’s orbital period around the Sun (in days)?  _______________

4. How many times does Earth rotate during one orbit of the Sun?  _______________

5. How many degrees are in a circular orbit?  ______________°

6. So about how many degrees does Earth move in orbit in one day?  ______________°  
   Explain:

7. Look at the diagram. How long will it take for Earth to rotate from noon in the USA (midnight in China) to midnight in the USA (noon in China)?  __________hrs?

8. So about how far will Earth have moved in its orbit during this time?  ______________°

9. Will people in the US see pretty much the same stars tonight as people in China saw 12 hours ago?  
   Circle one:  YES  NO

10. Work in pairs to design a kinesthetic demonstration that proves your answer.
WHAT HAVE YOU LEARNED?  [p 1 of 4]

1. How many stars are in the Solar System? ____________

2. Provide the TWO answers requested in the box below:

3. Write the correct times of day for someone on the front of the rotating boy.

Choose from SUNRISE, SUNSET, NOON or MIDNIGHT.
WHAT HAVE YOU LEARNED? [p 2 of 4]

4. Do stars appear to rise and set? Why or why not?

5. Fill in the blanks below and DRAW PICTURES to show what you mean.

a) Earth turns about its own axis. It takes ________ hours to turn once around.
   We call this movement ___________________.
   DRAWING of Earth doing this movement:

b) Earth moves around the Sun. It takes ___________ days to go once around.
   We say that Earth is in ________________ around the Sun. How many trips
   around the Sun have you made in your life? ______________
   DRAWING of Earth doing this movement:

6. How many times does Earth rotate during one orbit of the Sun?
   ______

7. About how much (out of 360°) does Earth move in orbit in one day?
   _____° Explain your reasoning:
WHAT HAVE YOU LEARNED?  [p 3 of 4]

8. Refer to the Zodiac Diagram on the next page to answer these questions:

a) Estimate the date at the boy’s position: ______________.

b) Name a Zodiac constellation that would be visible to him at midnight:

____________________


c) Estimate the date at the girl’s position: ______________.

d) Name a Zodiac constellation that would be visible to her at midnight:

____________________


e) Write the names of two constellations that would be visible in the night sky at midnight on the Winter Solstice (21 December).

________________________  ______________________

f) Do we see the same stars at different times of year? Why or why not?


g) Write down the date of your birthday: ______________________

h) Mark an “X” on the Diagram to show your birthday position in Earth’s orbit.

i) Write the names of two constellations that would be visible in the night sky at midnight on your birthday.

________________________  ______________________

j) BONUS: Can you see the constellation representing your “sign” of the Zodiac in the night sky on your birthday? Explain your answer on the back.

Name: ____________________
THE ZODIAC DIAGRAM

DIRECTONS: Use this Zodiac Diagram to answer questions.

REMEMBER: During the lesson, you were standing around the inner circle with your body representing Earth in orbit around the Sun.

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Kinesthetic Astronomy™
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