Earth rotation orbit and seasons

Year 7 Science | Student worksheet

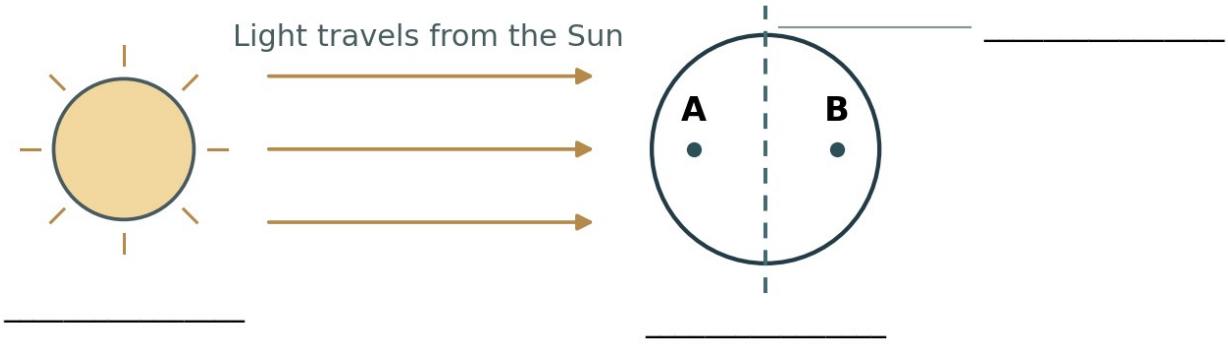
Name _____ Class _____ Date _____

Watch the model on the class screen. Talk through each prediction, then write your own observations and explanations on these pages.

Rotation makes day and night

Rotation means spinning. Earth rotates about an imaginary line called its axis. The axis passes through the North and South Poles.

1 Label the Sun, Earth and axis. Shade the half having night.



2 Use the diagram and the demonstration

Point A has day / night. Point B has day / night. Circle one for each.

One full day and night cycle takes about _____ standard Earth hours.

3 Explain the moving Sun

The Sun appears to move across the sky because Earth _____

4 Complete the explanation

Our place changes from day to night when _____

5 Check the claim

“Night happens because the Moon blocks the Sun.” Agree / Disagree

Explain your answer using the word sunlight.

Remember One hour on the model clock always equals one standard Earth hour.

Orbit makes a year

An orbit is the path of one object around another. Earth travels around the Sun while it keeps rotating.

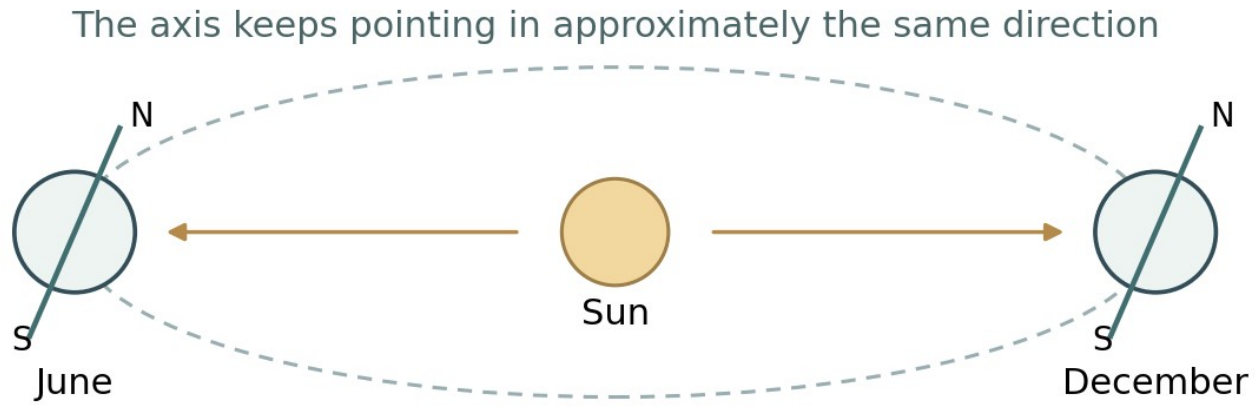
6 Keep the two motions separate

Motion	What Earth does	Time for Earth
Rotation	_____	About _____ hours
Orbit	_____	About _____ days

A year is the time Earth takes to complete one _____ around the Sun.

Tilt changes daylight and seasons

Earth's axis is tilted about 23.4° away from a line straight up from its orbital plane. The axis keeps pointing in approximately the same direction during one year.



Diagrams show the idea only. Sizes and distances are not to scale.

7 Watch the two solstice demonstrations at Melbourne's latitude

Model month	Daylight at Melbourne	Melbourne season
June	_____ h _____ min	_____
December	_____ h _____ min	_____

8 Compare the hemispheres

When Melbourne has summer, the northern hemisphere has _____.

9 Explain Melbourne's summer

Circle the better explanation: Earth's tilt / Earth being closer to the Sun.

Use both daylight length and the angle of sunlight in your explanation.

_____

_____

_____

10 Watch the blue axis through one orbit

Does it keep approximately the same direction or flip over? _____

What happens when we change a setting

Predict before your teacher changes the model. Change one setting at a time. Keep the other settings the same so the comparison is fair.

Test 1 Remove the tilt

Keep Earth's solar day at 24 hours and stay at Melbourne's latitude. Compare June and December with the usual tilt, then with 0° tilt.

11 Predict and observe

With no tilt, I predict the difference in June and December daylight will _____

Earth's tilt	June daylight	December daylight
23.4°	Copy from page 2 _____ h _____ min	Copy from page 2 _____ h _____ min
0°	_____ h _____ min	_____ h _____ min

Explain what removing the tilt changed.

Test 2 Make the solar day longer

Restore the usual tilt. Keep the same December position in the orbit and Melbourne's latitude. Change the solar day from 24 to 48 standard Earth hours.

12 Predict before watching

I predict the daylight time will _____

I predict the time taken for one orbit will _____

13 Record the comparison

Solar day length	Noon clock time	Daylight time	Solar days per year
24 Earth hours	_____	____ h ____ min	_____
48 Earth hours	_____	____ h ____ min	_____

Each clock hour stays 60 Earth minutes. A 48-hour day has 48 hours on its dial.

14 Explain the result

The number of solar days in a year changes because _____

To make the time for one orbit shorter, we would need to change the _____ setting.