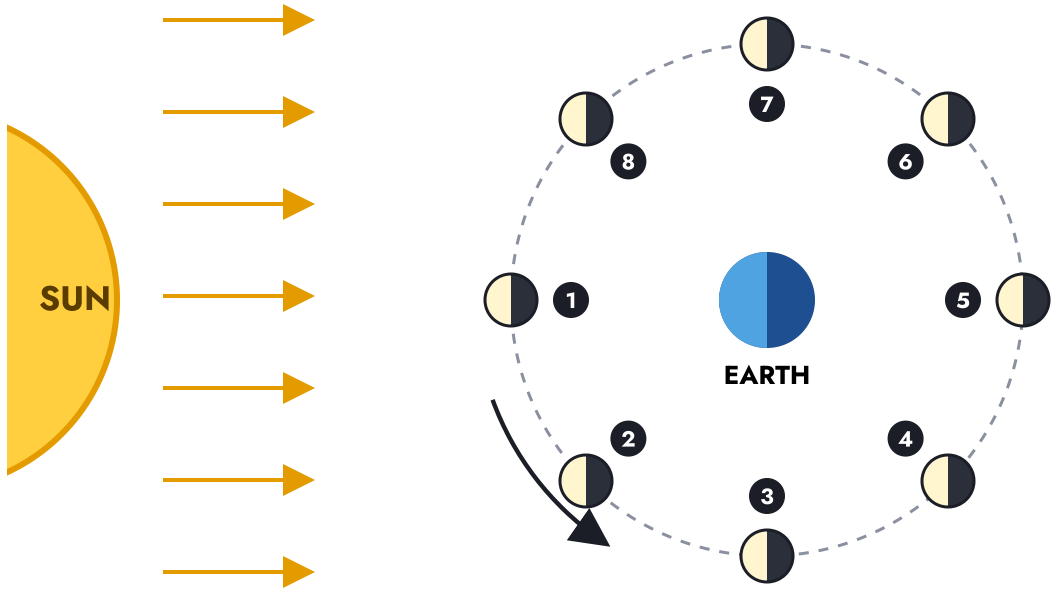
GRADES 6–8

# Why the Moon Has Phases

Name: _____

**Model:** the Sun always lights half of the Moon. As the Moon orbits Earth (about 29.5 days from new Moon to new Moon), we see different fractions of that lit half. Earth's shadow does **not** cause phases.

## 1 The Sun–Earth–Moon model




sunlight

View from above Earth's North Pole · not to scale

For each numbered position, shade the circle to show how the Moon **looks from Earth** (Northern Hemisphere), then name the phase.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|
| ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| _____ | _____ | _____ | _____ | _____ | _____ | _____ | _____ |

## 2 Use the model

1. At which position is the Moon between Earth and the Sun? _____ Why can't we see it then?

2. At position 5 the Moon is on the far side of Earth from the Sun, yet it is usually fully lit. Why doesn't Earth's shadow block it every month?

GRADES 6–8 · PART 2

# Moon Data Lab

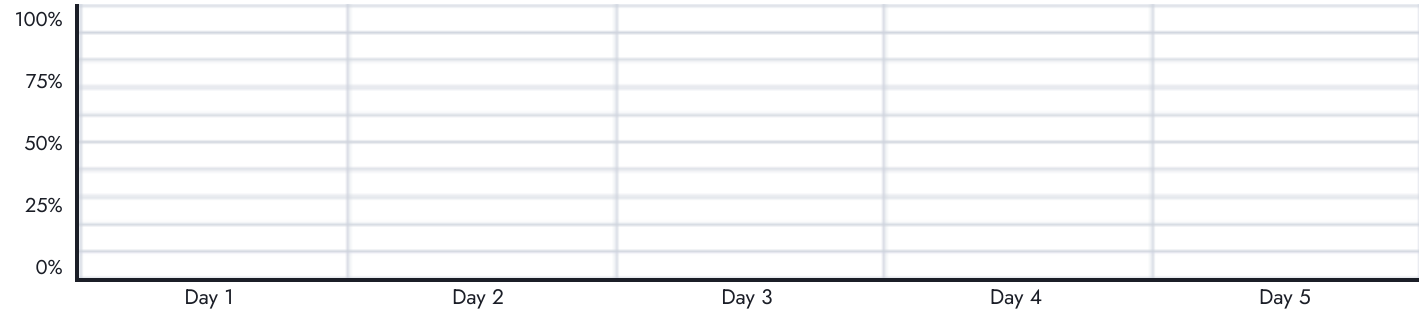
Name: _____

On the Skyline™ MOON UPDATE live stream, the **top-right corner** shows % illuminated and the phase name all the time. The Moon segment adds the exact illumination, the Moon's age (days since new Moon) and its distance. Record data at about the **same time each day**.

## 3 Data table (5 days)

| Date | Time | Phase name | % illuminated | Moon age (days) | Change from previous day (%) |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

## 4 Graph and analyze




3. Is the Moon waxing or waning? Use your data as evidence.

4. Did the % change by the same amount each day? Where in the cycle does it change fastest?

5. Use the 29.5-day cycle and your data to predict the date of the next full Moon. Show your reasoning.

6. The stream also shows the Moon's distance. Does distance cause phases? Explain using the model.