

6

SCIENCE

SAMPLE RESPONSES



## Moon phases

This booklet is designed to help teachers make overall, on-balance judgments by providing examples of student responses. The responses are not an exhaustive set.

E samples

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# E Sample: Response 1

## Guide to making judgments — Year 6 Science

**Purpose:** To demonstrate understanding and interpretation of the causes of day and night, and of Moon phases.

Student .....

Knowledge and understanding	Investigating	Communicating	Reflecting
<p>• Describes the motion of the Earth and Moon.</p> <p><b>Knowledge and understanding</b> [Q 1–4, 6]</p> <p>While some links are made from motion of Earth and Moon to day and night, most responses are incorrect and/or incomplete. Provides no correct responses about forces.</p>	<p>Interprets information and uses scientific concepts and</p> <p><b>Investigating</b> [Q 5, 8, 10]</p> <p>Links a conclusion to visual information by identifying night time in Q 5. Response for Q 10 has a detailed diagram of the solar system, but no relevant information or justification is presented.</p>	<p>Communicates information, explanations and conclusions using diagrams and scientific terminology.</p> <p>Q 2–10</p> <p>Clearly conveys intended meaning through explanations, conclusions, justifications and diagrams.</p> <p><b>Communicating</b> Demonstrates ability to draw a labelled diagram, but minimal communication of relevant ideas.</p>	<p>Reflects on learning to evaluate ideas.</p> <p>Q 7, 9</p> <p>Considers a range of relevant scientific understandings when evaluating the ball-and-string analogy and the title of the photo.</p> <p>Includes relevant scientific understandings in reflection.</p> <p><b>Reflecting</b> No evidence of reflection.</p> <p>Reflections are based on preconceptions rather than evidence presented.</p>
<p>Correctly identifies and classifies a force.</p> <p>Correctly identifies or classifies a force.</p> <p>Links motion of Earth and Moon to day and night.</p>	<p>evaluating the title of the photo.</p> <p>Links conclusions to visual information.</p>	<p>Uses everyday language.</p> <p>Draws rudimentary diagrams.</p>	<p>Reflections are based on preconceptions rather than evidence presented.</p>

Feedback .....

### Overall grade

The purpose of this QCAT is for students to demonstrate understanding and interpretation of the causes of day and night, and of moon phases. There is very limited evidence of knowledge or understanding relevant to this assessment, even though the diagram in Q 10 implies that this student may have some related knowledge and understanding of the solar system. There is minimal evidence of applying the processes of investigating, communicating and reflecting. On balance, this is an overall E.

## E Sample: Response 1

1. Choose words from the word list to complete the paragraphs below.

Word list (Not all of the words are used)					
Sun	<del>Earth</del>	Moon	<del>orbit</del>	in shadow	<del>phases</del>
sunrise	reflecting	28 days	<del>24 hours</del>	daytime	night-time



• Use Diagram 1 to help you.

Earth rotates once every day. On the side facing the Sun, it is .....  
and on the other side it is ..... because it is sunrise.

Moonrise, night and the appearance of the Sun and Moon moving across the sky are actually caused by the rotation of the Earth. The Moon is in ..... around the Earth, taking about ..... for one revolution.

As it moves around the Earth, the Moon appears to go through changes in shape, called ..... as we see more or less of the side that is ..... light from the Sun.

While orbiting the Earth, the Moon also rotates slowly, almost exactly one turn during each orbit, so the same side is always facing the earth.

## E Sample: Response 1

Diagram 2: Phases of the Moon

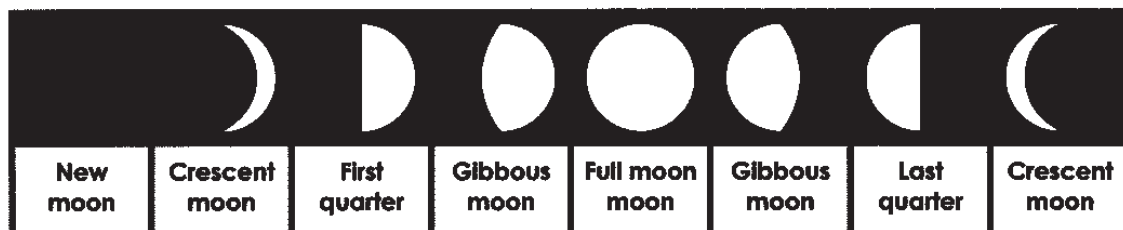
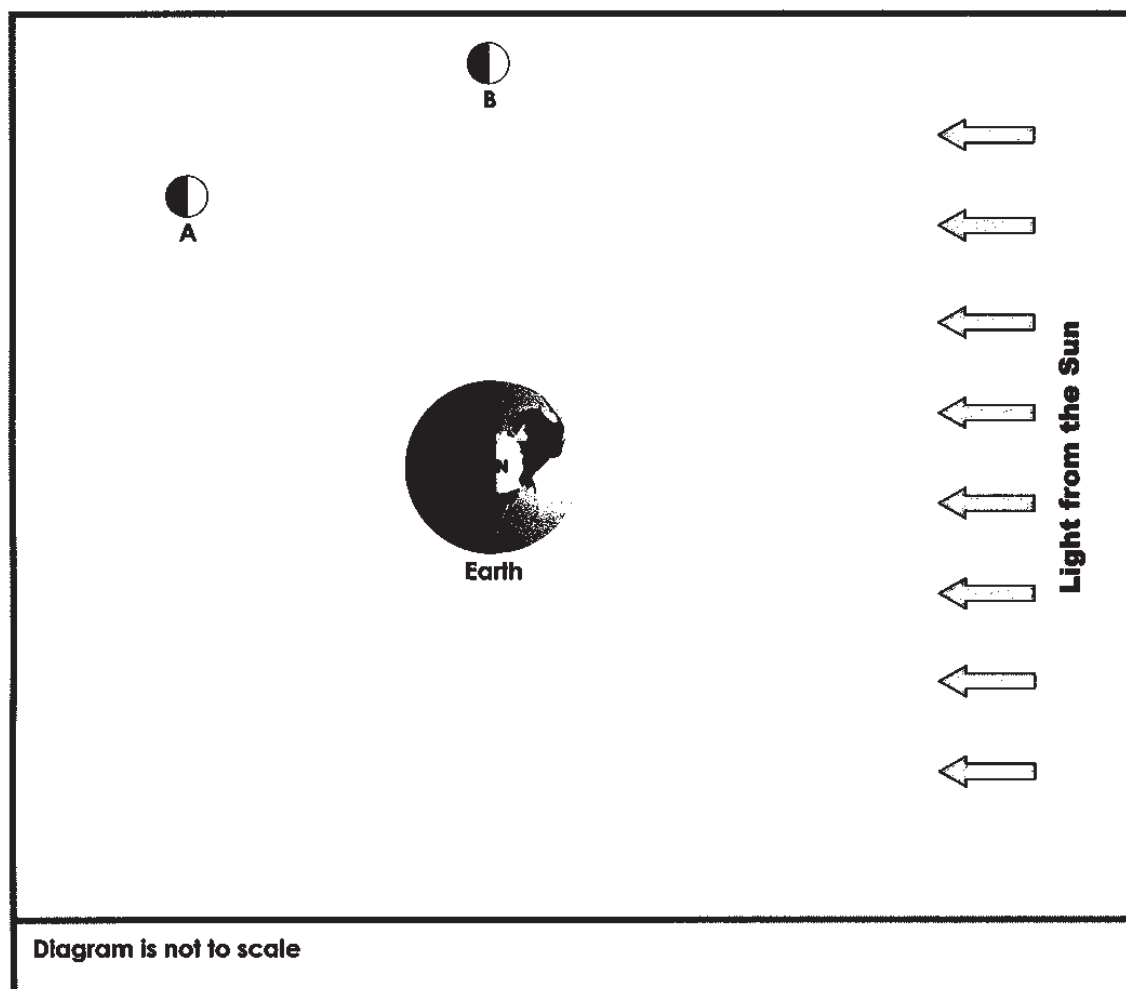



Diagram 3: Earth with the Moon in two different positions




## E Sample: Response 1

Use Diagrams 2 and 3 to help you complete the following.


2. Shade in the shape and name the phase of the Moon when it is in position A.

View from Earth	Name of phase
	<u>full moon</u>

3. Shade in the shape and name the phase of the Moon when it is in position B.

View from Earth	Name of phase
	<u>gibbous moon</u>

4. Draw another moon in Diagram 3, according to the following instructions:
- draw the Moon in a position to show the phase below
  - label it C
  - shade the dark side.

View from Earth	Name of phase
	Crescent moon

## E Sample: Response 1

5. In the box below:

- a) colour the sky to show whether it is day (blue) or night (black).
- b) draw the phase of the Moon you would see from the position shown in Diagram 4.
- c) name the phase of the Moon: .....



## E Sample: Response 1

6. Compare the ball and string with the actual Earth and Moon, by completing this table.

	The boy with the ball and string	The Earth and Moon
What are the forces stopping the Moon and ball from moving away?  Choose from this list: magnetism, gravity, reflection, string pulling in, string pulling out.	gravity	S.P.O.
Is the force a contact force or a force acting at a distance?  Circle one in each case.	a contact force or a force acting at a distance	a contact force or a force acting at a distance
Does the same side of the Moon (or ball) always face Earth (or boy)?  Circle one in each case.	Yes or No	Yes or No

7. Think about using the ball and string to explain the motion of the Moon.

What is useful about the ball and string?	What is <b>not</b> useful about the ball and string?
.....	.....
.....	.....
.....	.....
.....	.....
.....	.....

**STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS**



## E Sample: Response 1

Look at the photo of the Earth.

8. Explain why the Earth has that shape in the photo.



• Think about what causes Moon phases.

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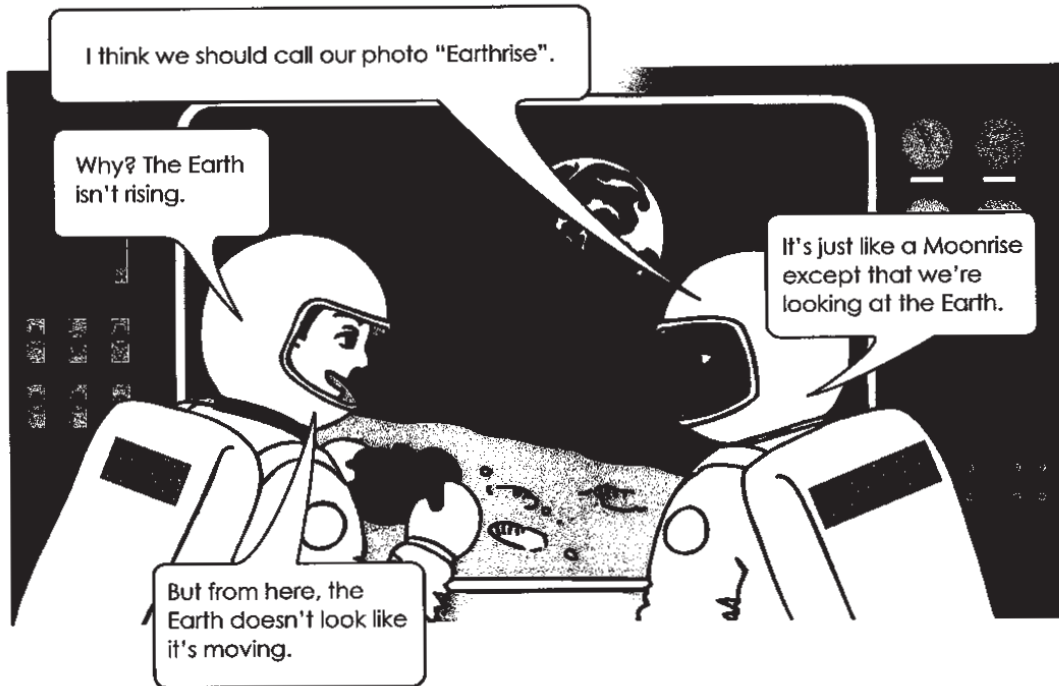
.....

.....

Include a diagram to show what you mean.

## E Sample: Response 1

Here are two astronauts who have taken a similar photo.  
The astronauts discussed what they should call it.



The Pilot and Commander disagree about whether "Earthrise" is a correct title.

9. List some science ideas they could use to support their opinions about "Earthrise".



- List all the evidence you can find to support one or both astronauts
- Look back over pages 4-11 for ideas.

Pilot: "The Earth isn't rising"	Commander: "Earthrise"

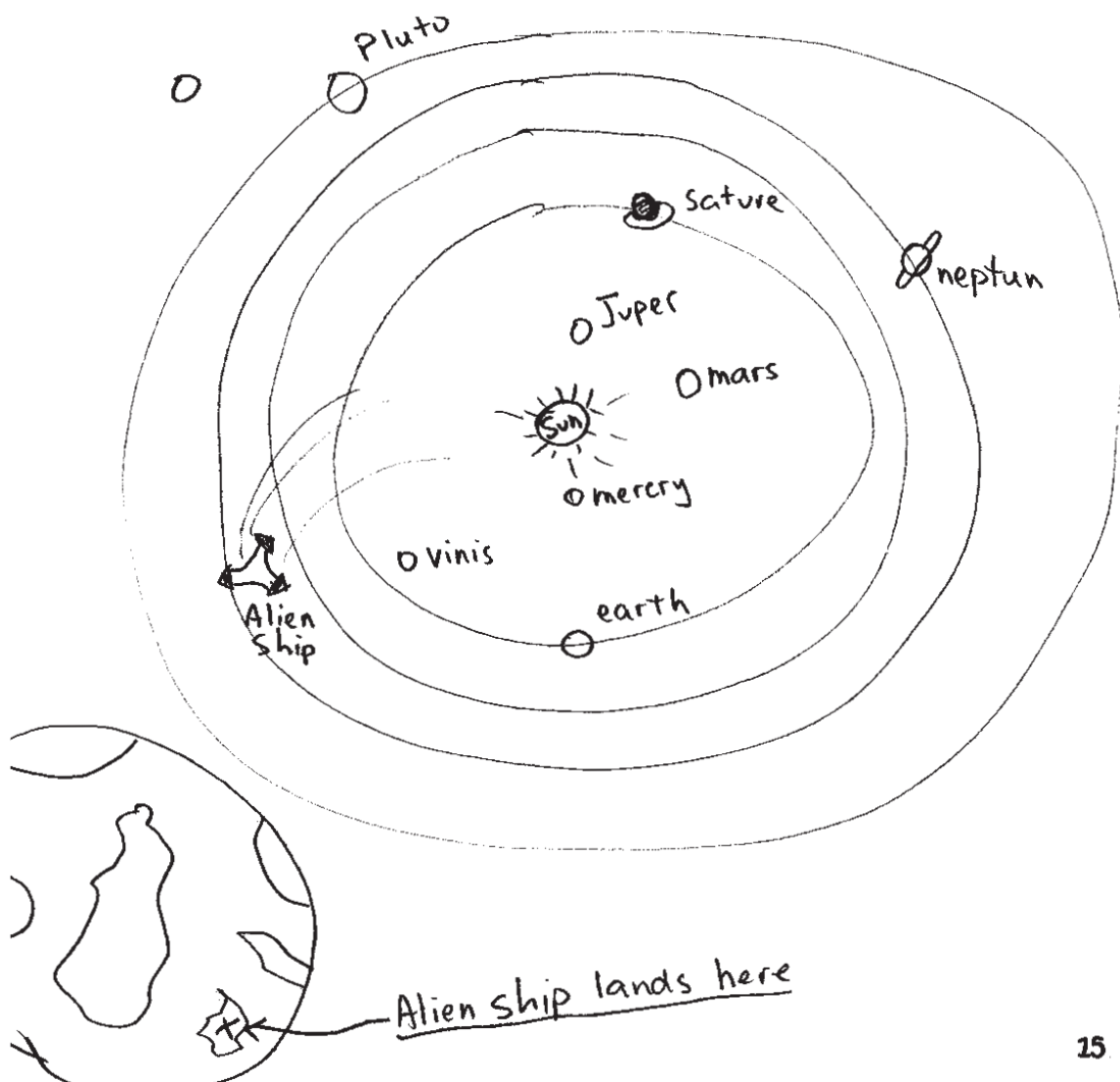
## E Sample: Response 1

10. Decide which astronaut you agree with.

Give scientific reasons to explain your opinion. You may use a diagram.

I agree with pilot because i have to  
agree with somebody

and becuse



## Student

**Purpose:** To demonstrate understanding and interpretation of the causes of day and night, and of Moon phases.

Knowledge and understanding	Investigating	Communicating	Reflecting
<p><b>Knowledge and understanding</b> [Q 1–4, 6]</p> <p>Some links are made from motion of Earth and Moon to day and night, but Q 1–3 are mostly incorrect; Q 4 is partially correct. Responses about forces (Q 6) are mostly incorrect.</p>	<p><b>Investigating</b> [Q 5, 8, 10]</p> <p>Links a conclusion to visual information by identifying night time in Q 5. A confused response in Q 10 mentions a science concept (gravity) but does not justify a logical opinion. No response for Q 8.</p>	<p><b>Communicating</b> [Q 2–10]</p> <p>Uses everyday language in fragmentary or unclear communication; some rudimentary diagrams in Q 2–4.</p>	<p><b>Reflecting</b> [Q 7, 9]</p> <p>No relevant ideas in Q 7 or 9 to provide evidence of reflection on scientific learning.</p>

## Feedback:

## Overall grade

This response presents evidence of very limited knowledge and understanding of causes of day and night, movement of Earth and Moon, and forces. There is minimal evidence of applying the processes of investigating, communicating and reflecting. On balance, this is an overall E.

## E Sample: Response 2

1. Choose words from the word list to complete the paragraphs below.

Word list					
Sun	<del>Earth</del>	<del>Moon</del>	<del>orbit</del>	in shadow	<del>phases</del>
<del>sunrise</del>	reflecting	<del>28 days</del>	<del>24 hours</del>	<del>day</del>	<del>night</del>



- Use Diagram 1 to help you.
- Not all of the words are used.

Earth rotates once every 24 hours. On the side facing the Sun, it is reflecting and on the other side it is night because it is sunrise.

Moonrise, shadow and the appearance of the Sun and Moon moving across the sky are actually caused by the rotation of the Earth.

The Moon is in phases around the Earth, taking about orbit for one revolution.

As it moves around the Earth, the Moon appears to go through changes in shape, called phases, as we see more or less of the side that is Moon light from the Sun.

While orbiting the Earth, the Moon also rotates slowly, almost exactly one turn during each orbit, so the same side is always facing the Earth.

## E Sample: Response 2

Diagram 2: Phases of the Moon

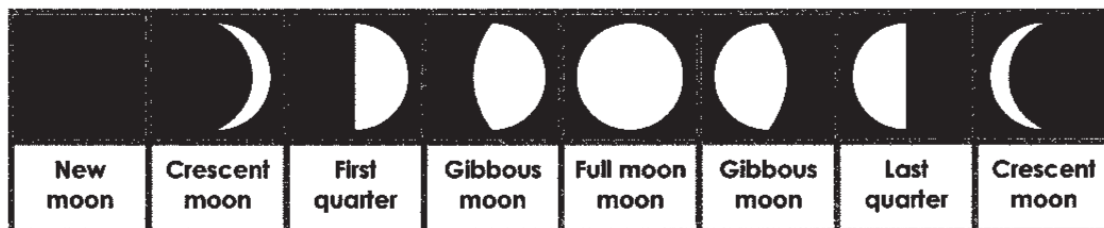
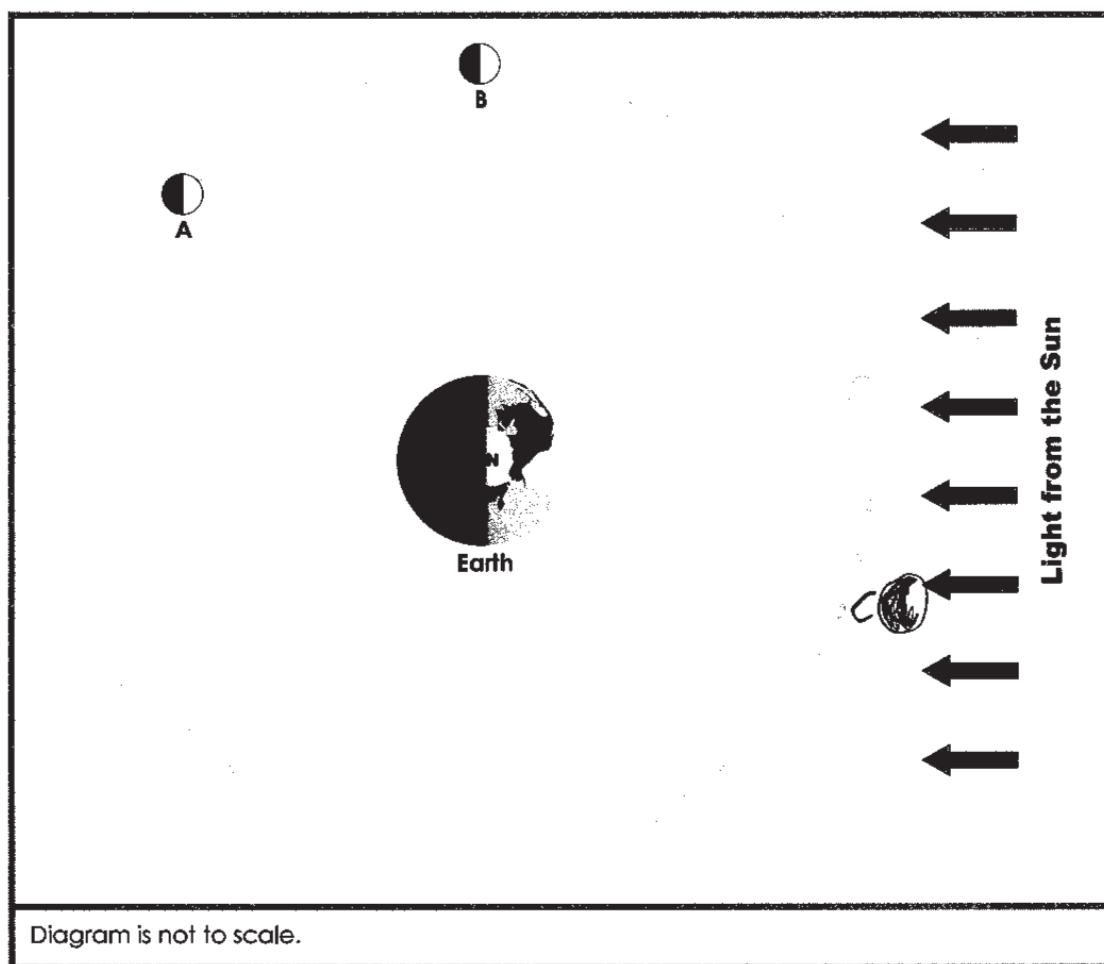



Diagram 3: Earth with the Moon in two different positions




## E Sample: Response 2

Use Diagrams 2 and 3 to help you complete the following questions.


2. Shade in the shape and name the phase of the Moon when it is in position A.

View from Earth	Name of phase
	first quarter

3. Shade in the shape and name the phase of the Moon when it is in position B.

View from Earth	Name of phase
	Last quarter

4. Draw another moon in Diagram 3, according to the following instructions:
- draw the Moon in a position to show the phase below
  - label it C
  - shade the dark side.

View from Earth	Name of phase
	Crescent moon

## E Sample: Response 2

5. In the box below:

- a) draw the phase of the Moon you would see from the position shown in Diagram 4
- b) colour the sky to show whether it is day (blue) or night (black)
- c) name the phase of the Moon: .....



9



## E Sample: Response 2

6. Compare the ball and string with the actual Earth and Moon, by completing this table.

	The boy with the ball and string	The Earth and Moon
What are the forces stopping the Moon and ball from moving away? Choose from this list: <ul style="list-style-type: none"> <li>• magnetism</li> <li>• gravity</li> <li>• reflection</li> <li>• string pulling in</li> <li>• string pulling out</li> </ul>	String got pulled out	
Is the force a contact force or a force acting at a distance? Circle one in each case.	a contact force or a force acting at a distance	a contact force or a force acting at a distance
Does the same side of the Moon (or ball) always face Earth (or boy)? Circle one in each case.	Yes or No	Yes or No

7. Think about using the ball and string to explain the motion of the Moon.

What is useful about the ball and string?	What is <b>not</b> useful about the ball and string?
you can demonstrate straight how it works	

**STOP HERE: WAIT FOR YOUR TEACHER'S DIRECTIONS**

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## E Sample: Response 2

Look at the photo of the Earth.

8. Explain why the Earth has that shape in the photo.



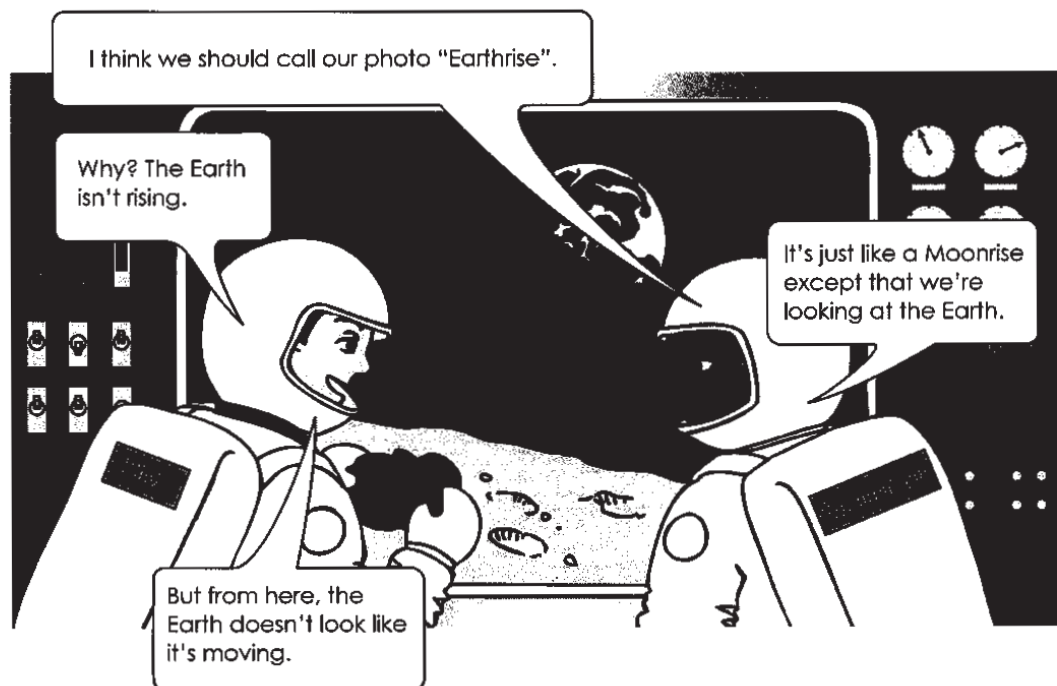
Think about what causes  
Moon phases.

Its a moon phase and its called a

Draw a diagram to show what you mean.

## E Sample: Response 2

Here are two astronauts who have taken a similar photo.  
The astronauts discussed what they should call it.



The Pilot and Commander disagree about whether "Earthrise" is a correct title.

9. List some science ideas they could use to support their opinions about "Earthrise".



- List all the evidence you can find to support one or both astronauts
- Look back over pages 4–11 for ideas.

Pilot: "The Earth isn't rising"	Commander: "Earthrise"
• No way just cause you're older doesn't mean your the Boss all the time.	• The earth is rising and we're are calling it moonrise

## E Sample: Response 2

10. Decide which astronaut you agree with.

Give scientific reasons to explain your opinion. You may use a diagram.

I agree with the Commander because that's what it's  
called and it is rising its gravity! and that  
is why you can't see it moving the gravity  
is holding it in place

and .....

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