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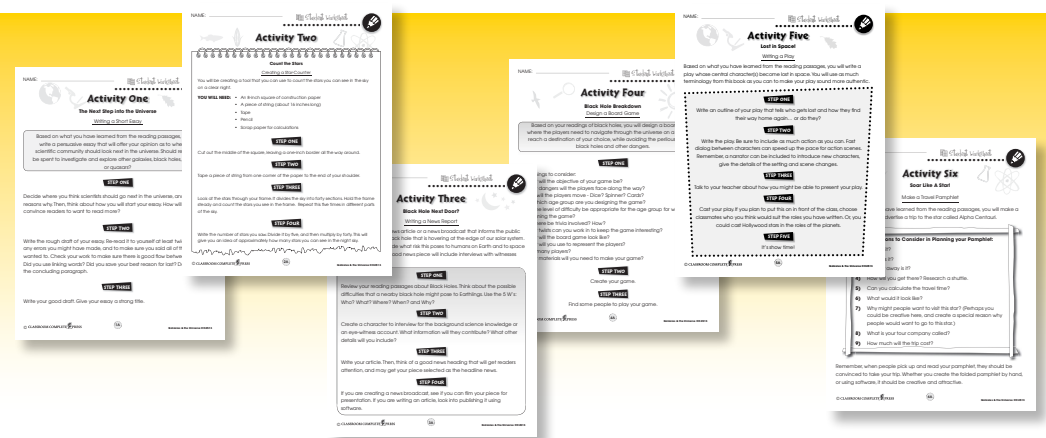
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FREE!

6 Bonus Activities!

3 EASY STEPS to receive your 6 Bonus Activities!

- Go to our website:
www.classroomcompletepress.com/bonus
- Click on item CC4513 – Galaxies & the Universe
- Enter pass code CC4513D





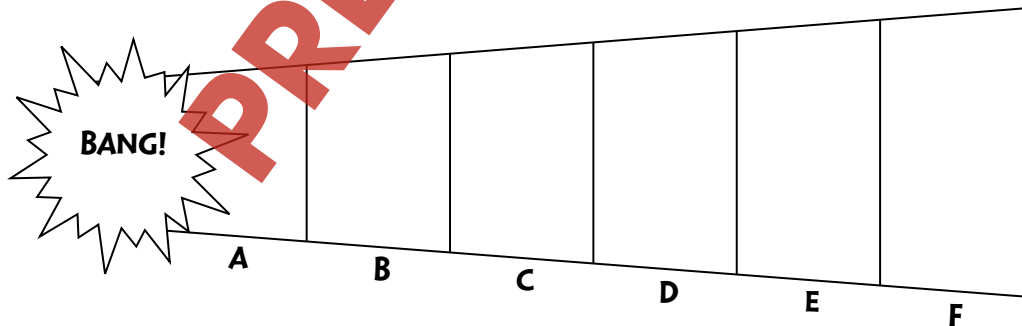
An Introduction to the Universe

- A **theory** is an idea about why something happens. You may not be able to prove it completely, but it makes sense based on what you know. Think about theories that you have about why some things happen. Share one of them in your response journal. Be sure to tell what your theory is, and what makes you think it is true.
- Write the number from the matching definition beside the correct term.

A	_____ universe	1. the path of one object as it revolves around another
B	_____ solar system	2. the word used to describe everything that exists in space
C	_____ telescope	3. a group of stars, star clusters and other matter
D	_____ galaxy	4. the name given to scientists who study the universe and objects in it
E	_____ orbit	5. the Sun and all of the objects that orbit it
F	_____ astronomer	6. a device used for looking at objects that are too far away to see with the naked eye

- Copy and color the zones in the diagram below as follows:

A - bright red, B - orange, C - yellow, D - light blue, E - dark blue, F - purple



You will need to refer to this diagram later.



An Introduction to the Universe

The universe is still expanding from the Big Bang. As matter continues to fly away from the explosion, the universe keeps getting bigger. It is getting bigger all of the time. Scientists know this because the galaxies keep getting further and further away. That is why it is hard to even imagine how big the universe is.



The universe contains millions and millions of **galaxies** (groups of millions of stars). Scientists who study the universe, astronomers, can see galaxies that are very far away. Each time they invent new, more powerful, **telescopes** they can see even more galaxies. There seems to be no end to the universe! In fact, we may only know about 10% of it.

MAKE A CONNECTION: You've heard a lot of big numbers so far. What is the biggest number you know? How would you write it using numbers and words?

STOP

Our solar system is just debris blown out of the explosion? You may wonder how scientists prove this. Well, it starts by looking out into the universe. The further you look out, the farther back in time you are seeing. The farthest things that we can see in the universe from Earth, using the most powerful telescopes, are the oldest things! And we can see pretty far! In fact, we can see almost back to the big bang itself. Only the first 300,000 years of the universe remain unseen to scientists. We cannot quite see the big bang itself, but we can see a faint glow from it.

It seems like it is only a matter of time for humans to develop the technology to see right back to the beginning. Scientists could unlock the secrets to the beginning of time in your own lifetime! What do you think scientists might discover in the space of those first 300,000 years? Perhaps you will become an astronomer and be the one to unlock the mysteries that are still waiting to be solved.



An Introduction to the Universe

- Number the events from 1 to 5 in the order they occur.

- a) The Milky Way galaxy is formed.
- b) There was nothing.
- c) A fireball was caused from the explosion known as The Big Bang.
- d) The solar system was formed.
- e) Tiny particles spread out from the fireball.

- Circle the word **TRUE** if the statement is TRUE or **FALSE** if it is FALSE.

- a) The universe began with a massive explosion.
TRUE **FALSE**
- b) The universe is one part of the big solar system.
TRUE **FALSE**
- c) The Earth and all of the other planets were caused as particles from the fireball spread out and cooled off.
TRUE **FALSE**
- d) The universe continues to expand and get larger all of the time.
TRUE **FALSE**
- e) Scientists can see every part of the universe using telescopes.
TRUE **FALSE**

- Cross out** the words that do not relate directly to the Big Bang.
explosion expand particles telescope fireball matter shuttle
 - Circle** the words that describe the size of the universe.
minuscule enormous tiny vast massive constant small
 - Underline** the items that are debris from the Big Bang.
planets dinosaurs craters stars oceans rockets asteroids



An Introduction to the Universe

- Answer each question with a complete sentence.

- a) Why is it so hard to tell the size of the universe?

- b) Why is it dark in space?

- c) Why isn't the Milky Way galaxy a part of the solar system?

Research & Extension

Scientists develop new theories all of the time. They once thought that Pluto was a planet like the rest of the planets in the solar system. As they learn more, scientists must continue to adjust their own theories. Recently Pluto has been downgraded to a *dwarf* planet. There are other theories about how things began. In fact, each culture has their own version of a creation story to explain how their people came to be. Research the creation stories from three different cultures.

- a) Prepare an oral retelling of each of the three stories.
- b) Draw a picture to represent each story, and include a heading and a caption for each one.
- c) Create a storybook to retell one of the creation stories.
- d) Create a comic strip version of two of the stories.



WEB CONNECTION

To read more about many different creation stories from around the world, visit: www.magictails.com/creationlinks.html



Graph It!

HOW MUCH WOULD YOU WEIGH ON THE MOON?

When you consider the force of gravity with the distance to the center of a planet, you can create equations to figure out how much you would weigh at different places in the universe. What you weigh on Earth is not necessarily what you would weigh on other planets with different gravitational forces. Complete the table below to compare how much you would weigh in the places listed.

Places in the Universe	Your weight on Earth (in lbs)	Math operation	Your new weight
Sun		÷ 0.03	=
Mercury		X 0.4	=
Venus		X 0.9	=
Mars		X 0.4	=
Jupiter		X 2.5	=
Saturn		X 1.1	=
Uranus		X 0.8	=
Neptune		X 1.2	=
Pluto		X 0.01	=
Moon		X 0.17	=

An average male African elephant weighs 15,400 lbs. The female weighs 7,900 lbs. If an elephant could choose which planet they would like to give you an elephant-back ride on, which would it be and why?

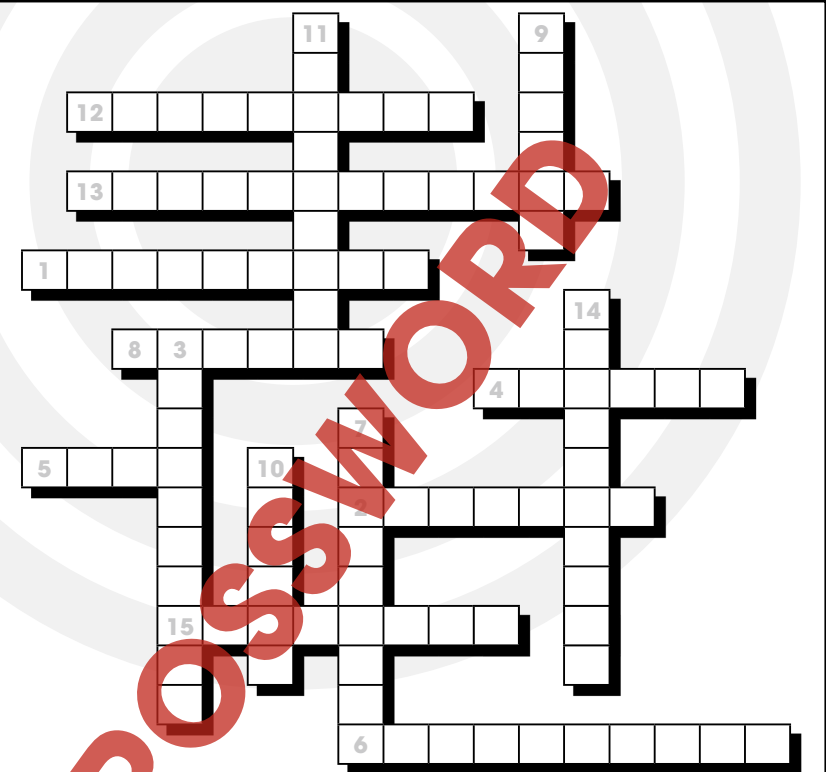
If you had to give an elephant a ride, which planet would you prefer to do it on? Why? How much would the elephant weigh there?



Crossword Puzzle!

Word List

- Astronomer
- Black Hole
- Elliptical
- Galaxy
- Gravity
- Interstellar
- Light Year
- Matter
- Milky Way
- Nebula
- Quasar
- Reflection
- Satellite
- Star
- Telescope



Across

- An object that you cannot really see in space (2 words)
- A force that tries to pull two objects together
- An enormous group of star clusters
- A ball of hot gas
- One of the types of nebulae
- The whole universe is made up of these tiny particles
- The moon is a _____ of the Earth because it orbits around it
- The space between stars is called this
- The name of the galaxy that our solar system rotates across (2 words)

Down

- A scientist who studies the universe
- A unit used to measure distance in space (2 words)
- The most distant objects in the universe that we can see
- A cloud of dust and gas
- A tool used to see objects in space that we can see



Part A

Comprehension Quiz

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Circle the word **TRUE** if the statement is TRUE or Circle the word **FALSE** if it is FALSE.

- The solar system consists of the Sun and everything that orbits it.
TRUE **FALSE**
- Looking out into the universe is like looking back in time.
TRUE **FALSE**
- A light year is not quite as long as a year. It is only 300 days.
TRUE **FALSE**
- A nebula is a cloud of dust and gas in space.
TRUE **FALSE**
- Gravity is a force that pushes two objects away from each other.
TRUE **FALSE**
- The Sun is a star in the Milky Way galaxy.
TRUE **FALSE**
- The force of gravity is so weak near black holes that they are invisible.
TRUE **FALSE**
- Scientists continue to discover new things about the universe.
TRUE **FALSE**

Part B

Sort the words in the Word Bank into logical groups by writing each word into a space that makes the best fit. (e.g. PETS: cat, dog, rabbit)

- Quasar: old far a) _____
- Galaxies: elliptical barred b) _____
- Big Bang: explosion fireball c) _____
- Light year: measure travel d) _____
- Nebula: gas dust e) _____
- Milky Way: Local Group stars f) _____

WORD BANK
distance
spiral
cloud
galaxy
bright
theory

The Andromeda Galaxy



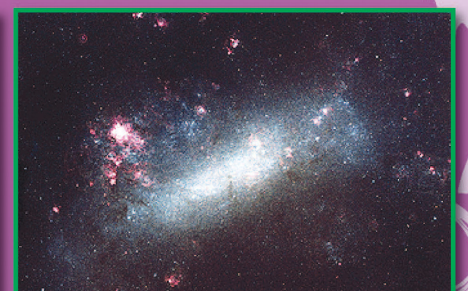
Different Shapes of Galaxies



BARRED SPIRAL



ELLIPTICAL



IRREGULAR

NAME: _____

After You Read 



An Introduction to the Universe

4. Answer each question with a complete sentence.

a) Why is it so hard to tell the size of the universe?

b) Why is it dark in space?

c) Why isn't the Milky Way galaxy a part of the solar system?

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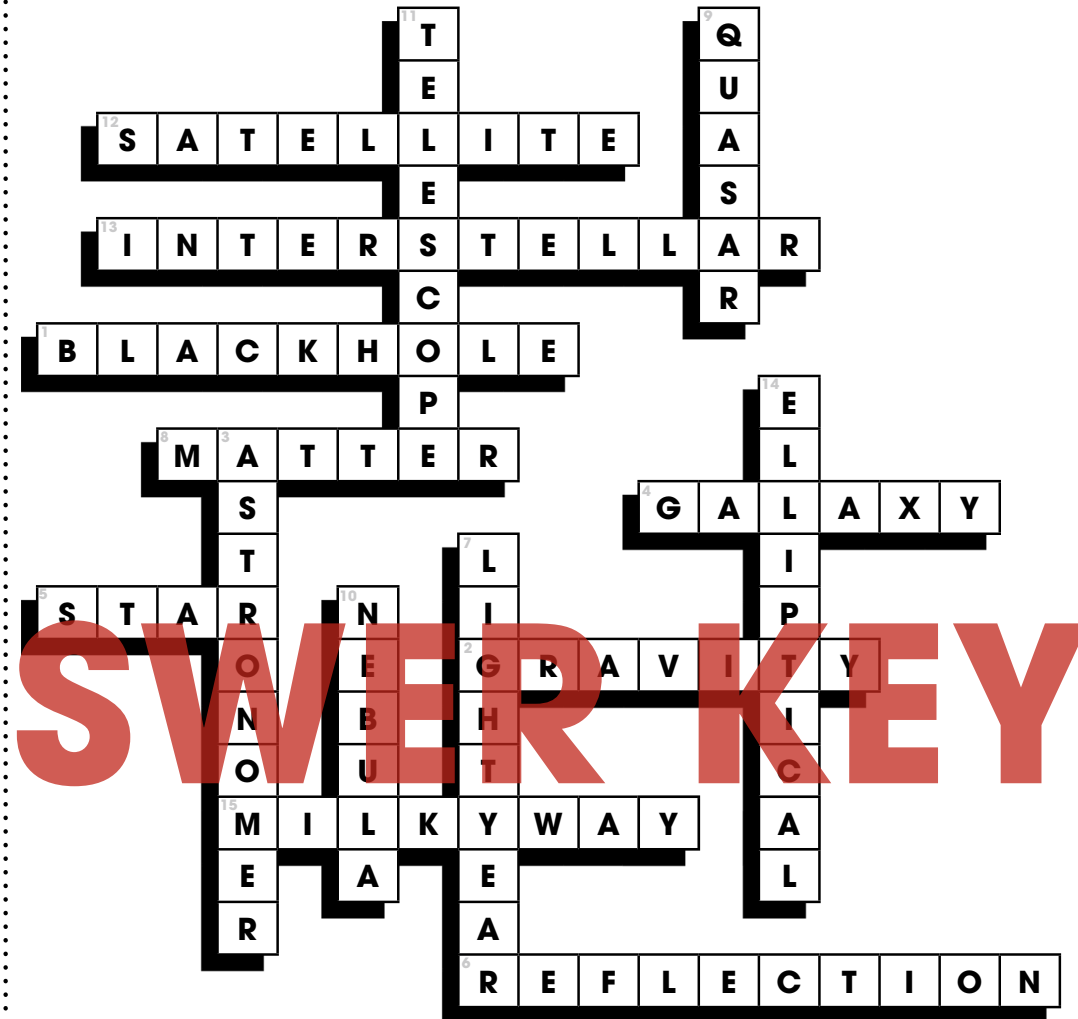
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4.

- a) it is bigger than we can imagine and continues to expand
- b) it has cooled off since the Big Bang
- c) it doesn't orbit the Sun

Crossword Puzzle!



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EASY MARKING ANSWER KEY