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STUDENT HANDOUTS

- Reading Comprehension

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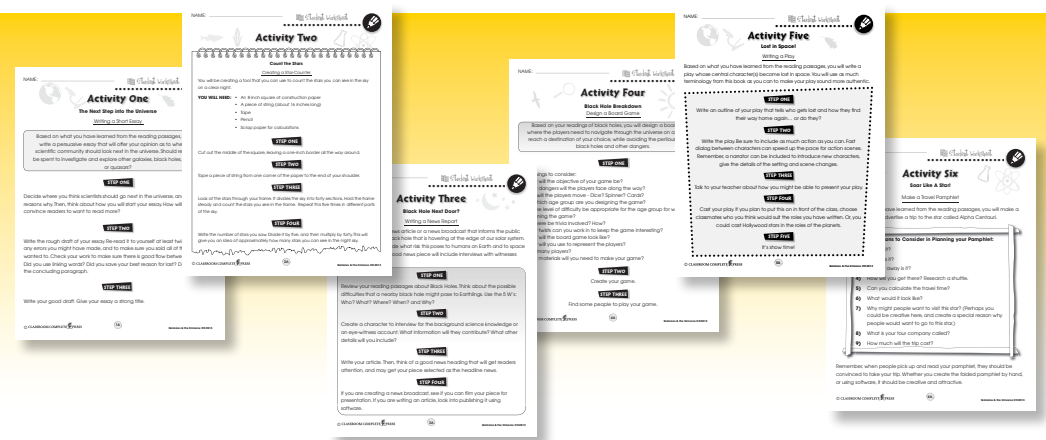
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FREE! 6 Bonus Activities!

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





Nebulae

- What do you know about the clouds in the sky? Draw a cloud on your page and fill it with point-form notes of everything you can think of about clouds.
- Word Study:** Complete the chart below to show the different forms of each word. When you are finished, check your spelling using a dictionary.

| | Root Word | Make it plural. Add -s | Make it past-tense. Add -ed. | Make it a noun. Add -ion. |
|----|-----------|---------------------------|---------------------------------|------------------------------|
| a) | emit | | | |
| b) | collide | | | |
| c) | compress | | | |
| d) | reflect | | | |
| e) | absorb | | | |
| f) | expand | | | |

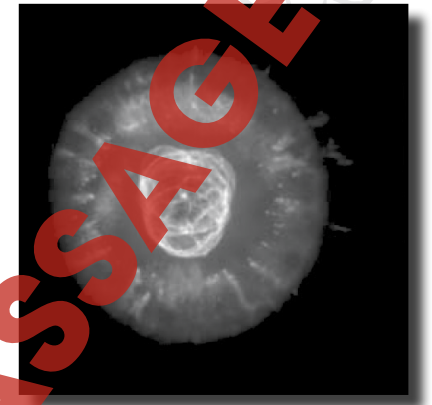
- What part of speech are all of the words in the Root Word column?
a) nouns b) adverbs c) adjectives d) verbs
- Match the definitions below with their words from the Root Word column in #2.

| | | |
|----|----------------------|-------------------|
| a) | <input type="text"/> | to crash into |
| b) | <input type="text"/> | to suck up |
| c) | <input type="text"/> | to spread out |
| d) | <input type="text"/> | to send out |
| e) | <input type="text"/> | to press together |
| f) | <input type="text"/> | to throw back |



Nebulae

A nebula is a cloud of dust and gas in space. (Nebula is the Latin word for cloud. More than one nebula are called **nebulae**.) The clouds can be quite large, spreading across numerous light years. The gas in these clouds is **hydrogen**. Nebulae are interesting because they are the birthplace of stars. Stars are created in some nebula, and stars die in others.



Scientists think that dust and gas get **compressed** (or squished) in the cloud. As they are compressed, they get hotter and hotter. When they are packed and hot enough, they can explode into a new star. This is how stars are formed inside nebula clouds. There are four types of nebulae. They are: 1- **Emission nebulae**, 2- **Reflection nebulae**, 3- **Planetary nebulae**, 4- **Absorption nebulae**.

PREDICTING: Make some predictions about how the four types of nebulae are different. What different jobs do they do? Do the words give you any clues?

STOP

An emission nebula **emits** its own light. The cloud itself actually glows red or pink with the energy it gets from other stars. It takes in the light of nearby stars and reaches very high temperatures. These nebulae are often found in parts of space where new stars are forming.



Nebulae

- Circle the word **TRUE** if the statement is TRUE OR Circle the word **FALSE** if it is FALSE.
 - Reflection nebula make their own light.
TRUE **FALSE**
 - Emission nebula make their own light.
TRUE **FALSE**
 - You cannot see past an Absorption nebula because it is too dense.
TRUE **FALSE**
 - The most common gas found in nebulae is carbon dioxide.
TRUE **FALSE**
 - Stars die in Planetary nebulae.
TRUE **FALSE**

- Cross-out** the words that do not relate to what nebulae do.
emit pull reflect collide absorb expand
 - Circle** the words that show what nebulae are made of.
gas Oxygen dust comets space rock planets
 - Underline** the words that mean the same thing as **compress**.
expand compact squeeze fill freeze flip

- Label the diagrams as either Emission, Reflection, Planetary or Absorption nebulae.

a) b) c) d)

Nebulae

- Answer each question with a complete sentence.

- Describe the size of most nebulae.

- How are stars formed inside nebula clouds?

- Why can't you see what is behind an Absorption nebula?

Research & Extension

There are many famous nebulae that scientists have closely observed and photographed. Some of the most famous ones are called: *Crab Nebula*, *Pleiades Cluster*, *Horsehead Nebula*, *Eagle Nebula*, *Cygnus Loop*, *Orion Nebula*. Research three of them. For each nebula, include a sketch, the type that it is and a description of it in your notes. Think about how you will format your notes. A table could work with headings in the columns and rows. Are there other ways you could creatively present this information?

- Ideas:
- a chart
 - a team of four superheroes
 - a model of four different nebulae
 - a computer slideshow
 - other:

Prepare to orally present your three nebula to the class.



Build It!

MAKE A NEBULA

You need:

- 1 casserole dish (or other clear dish of a similar size)
- 1 pipette
- 1 sheet black construction paper
- 1 bottle clear nail polish
- newspaper
- water

Steps

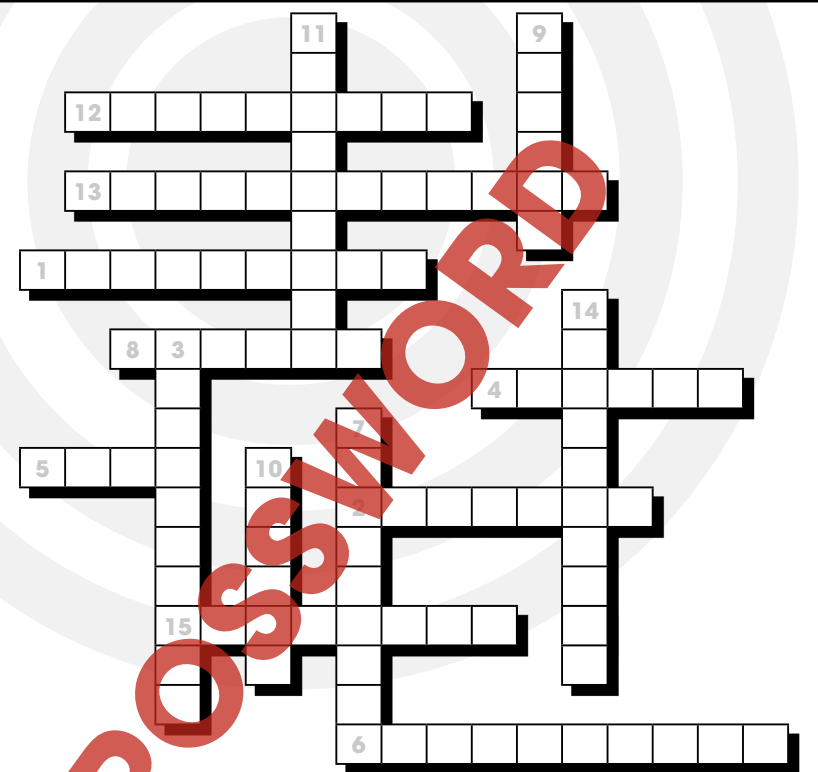
- STEP ONE:** Fill the dish halfway with water and soak the paper in it. Make sure the paper is at the bottom of the dish.
- STEP TWO:** Fill the pipette with polish and place one drop in the center of the dish. Wait for the nebula to form.
- STEP THREE:** When it forms, wait about 5 seconds for it to harden on the surface of the water.
- STEP FOUR:** Lift the paper to catch the nebula and wait for it to dry on the paper.
- STEP FIVE:** Examine the nebula that formed.



Crossword Puzzle!

Word List

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



Across

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

Down

3. A scientist who studies the universe
7. A unit used to measure distance in space (2 words)
9. The most distant objects in the universe that we can see
10. A cloud of dust and gas
11. A tool used to see objects in space
14. One of the shapes that a galaxy may take



Comprehension Quiz

Part C

Answer the questions in complete sentences.

1. Outline the most commonly-accepted theory of how the universe began. 4

2. Give two roles that gravity plays in the universe. 2

3. What is the difference between *rotate* and *orbit*? Give an example of an object that does each to show your understanding. 4

4. Why can't we see black holes? 3

5. Why is it important to study *quasars*? 3

SUBTOTAL: /16

The Milky Way Galaxy



NAME: _____

After You Read 



Nebulae

4. Answer each question with a complete sentence.

a) Describe the size of most nebulae.

b) How are stars formed inside nebula clouds?

c) Why can't you see what is behind an Absorption nebula?

Research & Extension

There are many famous nebulae that scientists have closely observed and photographed. Some of the most famous ones are called: *Crab Nebula, Pleiades Cluster, Horsehead Nebula, Eagle Nebula, Cygnus Loop, Orion Nebula*

Research three of them. For each nebula, include a sketch, the type that it is and a description of it in your notes. Think about how you will format your notes. A table could work with headings in the columns and rows. Are there other ways you could creatively present this information?

Ideas:

- a chart
- a team of four superheroes
- a model of four different nebulae
- a computer slideshow
- other:

Prepare to orally present your three nebula to the class.

4.

a) They can be quite large, spreading across numerous light years.

b) Dust and gas get compressed in the cloud and as they are compressed they get very hot. When they are packed and hot enough they can explode creating a new star.

c) They have a lot of stuff packed into them. There is so much gas and dust in them they block out all light from behind.

Crossword Puzzle!



EASY MARKING ANSWER KEY