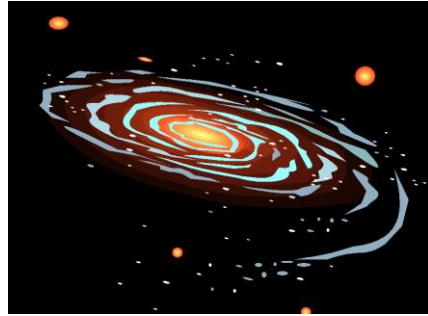




## *Civil Air Patrol's ACE Program*

### **Milky Way Fraction Hunt Grade 6 Academic Lesson #9**



**Topic:** galaxy, fractions (science, math)

**Lesson Reference:** NASA Explores

**Length of Lesson:** 30-50 minutes

#### **Objectives:**

- Students will divide words into fractional parts.
- Students will use ordinal numbers such as, first, second, etc., to decode a message.
- Students will define galaxy.

#### **Next Generation Science Standards:**

- MS-ESS1-1. Develop and use a model of the Earth-sun-moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons.
- MS-ESS1-3. Analyze and interpret data to determine scale properties of objects in the solar system.

#### **CCSS Math:**

- 6.NS.1 - Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

#### **CCSS ELA:**

- L 6.6 - Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level.

#### **Background Information:** (from NASA Explores)

The night sky is full of objects that can be seen with the naked eye. The newest of these is of course the International Space Station (ISS). Many objects have been talked about for thousands of years. The Moon, planets, and the nearest stars all have their places in various cultures, which observed and came up with explanations for their places in the sky. The Milky Way galaxy, of which our solar system is part, looked to the ancient Greeks as a milky smudge on the backdrop of the night sky. We now know that the Milky Way is actually made up of stars that are too numerous to count. Their combined glow, along with the fact of their great distance from Earth, makes them appear as that smudge. The students should easily be able to see the Milky Way, especially on a dark night with no Moon.

You may wish to watch these videos (or share them with your class): ["What is a Galaxy?"](#)  
["The Milky Way for Children"](#)

**Materials:** dry erase board or chalkboard and marker or chalk

- "Milky Way Fraction Hunt" student copies
- 2 Milky Way candy bars (for winners)
- miniature Milky Way candy bars (for class)

**NOTE:** Consider projecting the sample word fraction problems in step 5, or consider having the problems already written on the board prior to starting the lesson.

The "Where is the Milky Way?" worksheet is an easier, short version of the "Milky Way Fraction Hunt" worksheet. You may choose to use the easier version if time is an issue or if you have students who need a simplified version of the assignment.

**Lesson Presentation:**

1. Make sure the two Milky Way candy bars are already under the globe.
2. Ask students if they know in which galaxy we live. (Milky Way)
3. Ask students if they can define "galaxy." Explain the following: A galaxy is one very large group of gas, dust, and millions or billions of stars found in the universe. The universe is made up of all the galaxies. The Milky Way is only one of hundreds of galaxies in our universe. The Milky Way Galaxy contains our solar system as well as other planets and stars like our sun.
4. Tell students that they will use the term "Milky Way" to get some practice with fractions.
5. Go over the following examples as needed with the class. Be sure to visually show how the letters of the words are arranged into fractional parts. For example, in demonstrating the second  $\frac{1}{4}$  of the word "planning," divide the letters into fourths: pl/an/ni/ng. The second  $\frac{1}{4}$  of "planning," is "an." Point out that the denominator indicates the number of parts into which the whole is divided.
  - a. Write "the first  $\frac{4}{5}$  of Milky" on the board. Ask students what word this makes when using the first  $\frac{4}{5}$  of "Milky." (milk)
  - b. Write "the fourth  $\frac{1}{5}$  of Milky + the last  $\frac{2}{3}$  of Way" on the board? Ask students what name this makes. (Kay)
  - c. Write "the third  $\frac{1}{5}$  of Milky + the last  $\frac{2}{3}$  of Way" on the board. Ask students what word this makes. (lay)
  - d. Write "the first  $\frac{2}{5}$  of Milky + the fourth  $\frac{1}{5}$  of Milky + the second  $\frac{1}{3}$  of way" on the board. Ask students what name this makes. (Mika)
  - e. For more practice, try the following on the board:
    - first quarter of homework + the first  $\frac{2}{3}$  of pet = hope

- first half of tree + last half of play = tray
  - first  $\frac{1}{2}$  of greedy + second  $\frac{1}{3}$  of plenty = green
  - the second  $\frac{1}{4}$  of clapping + the first half of please = apple
6. Tell students that they will now put their decoding skills and fraction skills to work to decode a secret message. (Allow students to work individually or with a partner.)
  7. Distribute a copy of the worksheet to each student (or pair of students).
  8. Tell them to do their best to decode the secret message. When they are finished, they should refer to the message to figure out what to do next.
  9. After the first student (or pair of students) decodes the message and finds the two hidden candy bars under the globe, instruct them to work quietly on their own secret message using fractional parts of words while the rest of the class tries to figure out the hidden message. As other students learn the correct message, reward them with a miniature Milky Way candy bar.
  10. Have the first student (or pair of students) who deciphered the message read the message to the class.

Message Answers:

"Milky Way Fraction Hunt" - For the first one to finish this, there waits a prize if you use your head. The Milky Way is directly beneath the South Pole. Quietly, go look.

"Where is the Milky Way?" - "The Milky Way is directly below the Earth. Go look."

**Summarization:**

Ask students why they did or did not like the activity. Ask students to define galaxy. State that learning math skills is important. Knowing how to do math correctly can result in some "sweet" rewards. Tell the students that this was just a fun activity to get them thinking (and practicing with fractions). The Milky Way is visible as the numerous stars blend together to make a milky white path through the night sky. Encourage students to look for the Milky Way galaxy in which we live on a very dark night in a place where there are no street lights. It really is a beautiful sight!

**Character Connection:** Remind students that each part that makes up a whole is important. For example, each one of them is an important part of the class. They each have special gifts, talents, and abilities, and their talents and skills will continue to mature. Eventually, they should become productive, contributing members of a company /organization. They will play an important role in the operation of the company/organization. Encourage them to use their strengths now to help others in the class. Encourage them to learn and grow so they can continue helping and contributing to others throughout their adult lives.

**Assessment:**

- teacher observation
- "Milky Way Fraction Hunt" math sheet

**Additional activity idea to enrich and extend the primary lesson (optional):**

- Have students create their own messages using fractional parts of words. Allow students to exchange messages and try to decode them.

# Where is the Milky Way?



Names \_\_\_\_\_

Directions: Use the clues to form new words. Follow the directions to get your prize!

1. The first 1/2 of this + the last 1/4 of case: \_\_\_\_\_

2. The first 1/2 of Milton + the last 2/5 of dinky: \_\_\_\_\_

3. The last 1/3 of saw + the second 1/4 of crayfish: \_\_\_\_\_

4. The second 1/3 of crisis: \_\_\_\_\_

5. The first 3/5 of dirty + the last 3/7 of perfect + the first 2/5 of Lynda:  
\_\_\_\_\_

6. The first 3/4 of belt + the last 2/3 of cow: \_\_\_\_\_

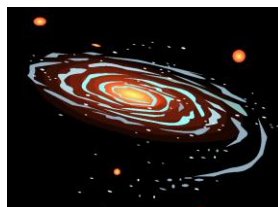
7. The first 3/5 of there: \_\_\_\_\_

8. The last 3/4 of dear + the last 2/5 of birth: \_\_\_\_\_

9. The first 1/3 of get + the second 1/4 of Cody: \_\_\_\_\_

10. The first 1/2 of loop + the second 1/3 of cookie: \_\_\_\_\_

In the space below, write the words above in the order in which they appear in order to read the hidden message.





Name \_\_\_\_\_ Date \_\_\_\_\_

# Milky Way Fraction Hunt

Write the appropriate parts of the words on the line to form a new word.

1. The first half of food + the last quarter of door.  
\_\_\_\_\_
2. The last third of hat + the first  $\frac{2}{5}$  of heavy.  
\_\_\_\_\_
3. The second  $\frac{1}{3}$  of office + the last  $\frac{1}{4}$  of door + the first  $\frac{1}{3}$  of street.  
\_\_\_\_\_
4. The last half of go + the last  $\frac{1}{2}$  of done.  
\_\_\_\_\_
5. The last  $\frac{1}{8}$  of elephant + the first  $\frac{1}{5}$  of order.  
\_\_\_\_\_
6. The first  $\frac{3}{4}$  of fine + the last  $\frac{3}{4}$  of dish.  
\_\_\_\_\_
7. The last  $\frac{1}{6}$  of cement + the first of  $\frac{3}{7}$  of history.  
\_\_\_\_\_
8. The last half of bath + the finest  $\frac{1}{3}$  of end + the last  $\frac{2}{7}$  of require.  
\_\_\_\_\_
9. The first  $\frac{2}{5}$  of water + the last  $\frac{3}{4}$  of fits.  
\_\_\_\_\_
10. The last  $\frac{1}{6}$  of Glenda.  
\_\_\_\_\_
11. The first  $\frac{1}{3}$  of principal + the first half of zero.  
\_\_\_\_\_
12. The first  $\frac{1}{7}$  of instant + the first third of fat.  
\_\_\_\_\_
13. The first  $\frac{2}{5}$  of young + the first  $\frac{1}{10}$  of understand.  
\_\_\_\_\_
14. The first  $\frac{1}{4}$  of ugly + the first  $\frac{1}{5}$  of settlement.  
\_\_\_\_\_
15. The first  $\frac{1}{4}$  of youthful + the last half of pour.  
\_\_\_\_\_

16. The first  $\frac{1}{4}$  of hesitate + the last  $\frac{2}{3}$  of sad.

---

17. The last  $\frac{1}{3}$  of rat + the first  $\frac{2}{5}$  of heart.

---

18. The first  $\frac{3}{7}$  of mileage + the last  $\frac{2}{3}$  of sky.

---

19. The first  $\frac{1}{5}$  of white + the last  $\frac{1}{3}$  of Friday.

---

20. The last  $\frac{1}{4}$  of Meri + the first  $\frac{1}{5}$  of Susan.

---

21. The first  $\frac{3}{5}$  of dirty + the last  $\frac{3}{7}$  of perfect + the first  $\frac{2}{5}$  of Lynda.

---

22. The first  $\frac{3}{4}$  of bent + the last  $\frac{2}{3}$  of breath.

---

23. The first  $\frac{1}{3}$  of Thomas + the first  $\frac{1}{8}$  of Endicott.

---

24. The first  $\frac{3}{5}$  of sound + the last  $\frac{2}{9}$  of Aylsworth.

---

25. The first quarter of positive + the first two thirds of Lee.

---

26. The first  $\frac{3}{5}$  of quick + the second  $\frac{1}{4}$  of meat + the last  $\frac{1}{3}$  of patiently.

---

27. The first third of get + the second fourth of Jody.

---

28. The first half of loud + the last half of book.

---

Write the clues in numerical order:

---

---

---