

**Adult Learning**

**Academy**

**Pre**-**Algebra Workbook**

**Unit 2: Fractions**

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First Version: 01/12/2015

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|  | *MoHealthWINs* |
| *This workforce solution was funded by a grant awarded by the U.S. Department of Labor’s Employment and Training Administration. The solution was created by the grantee and does not necessarily reflect the official position of the U.S. Department of Labor. The Department of Labor makes no guarantees, warranties, or assurances of any kind, express or implied, with respect to such information, including any information on linked sites and including, but not limited to, accuracy of the information or its completeness, timeliness, usefulness, adequacy, continued availability, or ownership.* | |
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|  | **Adult Learning Academy**  **Pre-Algebra Workbook**  **Unit 2: Fractions** |  |

**Learning Objectives**

1. **Understanding & Identification:**

* Recognize proper fractions, improper fractions, and mixed numbers
* Identify the numerator and denominator of fractions; understand how they relate to part and whole
* Plot Fractions on a number line

1. **Conversions & Comparisons:**

* Recognize and write equivalent fractions
* Reduce fractions and simplify to lowest possible terms
* Convert between improper fractions and mixed numbers
* Rewrite unlike fractions, using the lowest common denominator (LCD)
* Describe, order and compare fractions

1. **Operations with Like and Unlike Fractions:**

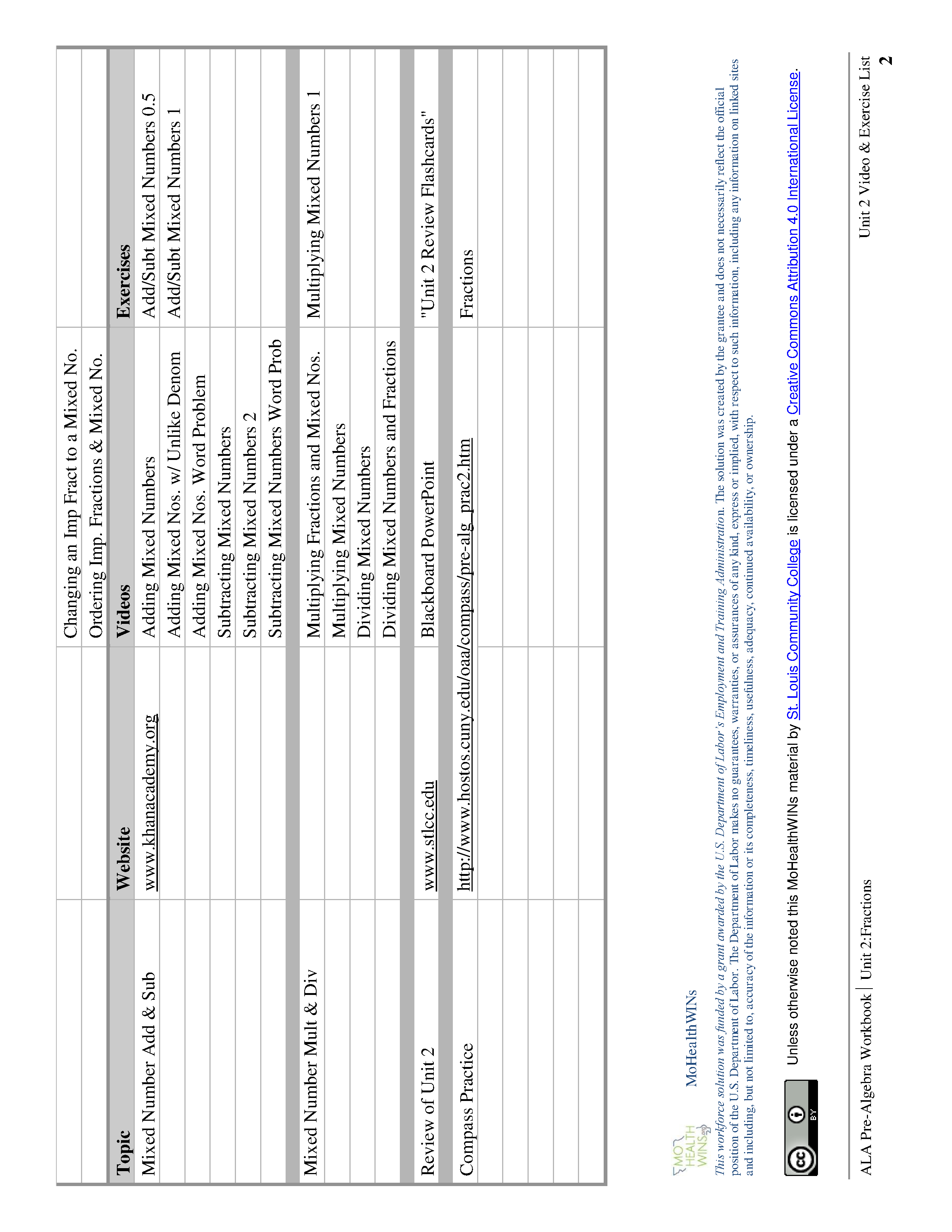
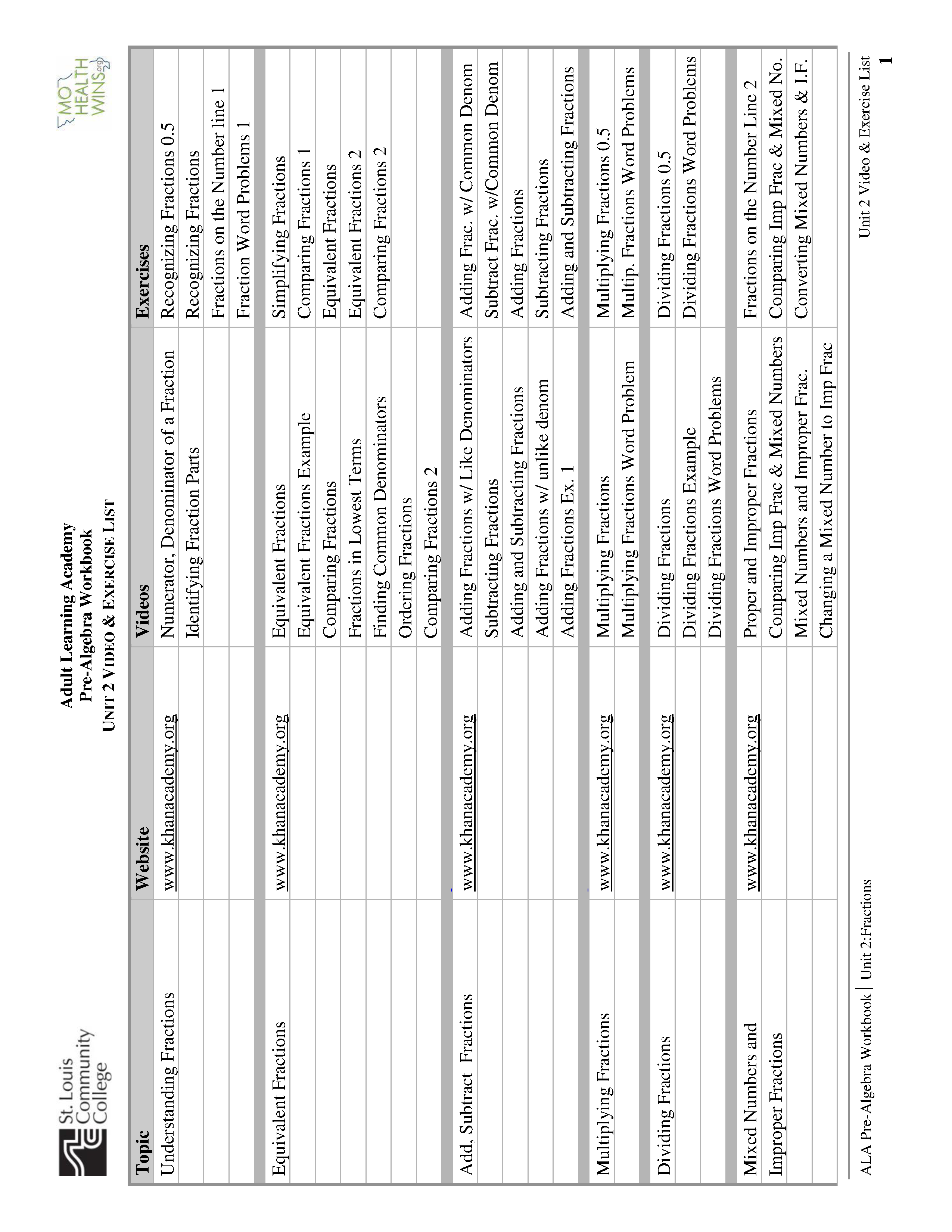
* Add fractions
* Subtract Fractions
* Multiply Fractions
* Divide Fractions
* Follow order of operations rules when performing calculations with fractions

1. **Operations with Mixed Numbers:**

* Add mixed numbers
* Subtract mixed numbers
* Multiply mixed numbers
* Divide mixed numbers
* Follow order of operations rules when performing operations involving mixed number

1. **Word Problems:**

* Solve basic word problems that use fractions and mixed numbers, including applications to the healthcare industry, and those involving area and perimeter



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|  | **Adult Learning Academy**  **Pre-Algebra Workbook**  **2.1 Famous Equivalent Fractions** |  |

Write five fractions that are equivalent to each number:

|  |  |  |
| --- | --- | --- |
|  |  | |
|  | **0** | |
| **1** | **2** |

**To create equivalent fractions, M\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the N\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the D\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ by the S\_\_\_\_\_\_\_\_\_\_\_\_\_ number. This is the same as multiplying the fraction by \_\_\_\_\_\_\_, which does not change its value.**

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|  | **Adult Learning Academy**  **Pre-Algebra Workbook**  **2.2 Color Matching: Equivalent Fractions** |  |

Color all equivalent fractions the same color.

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|  | **Adult Learning Academy**  **Pre-Algebra Workbook**  **2.3 Fraction Mnemonics** |  |

**FRACTION RAP**

When you’re adding up or taking away fractions, don’t be a hater!

Bottom number’s got to be the same—COMMON DENOMINATOR!

Multiply fractions, no big problem

Top times top and bottom times bottom

Dividing fractions, easy as pie

Flip the second and multiply!

**THE BIRTHDAY SONG:**

You must have common denominators

You must have common denominators

To ADD or SUBTRACT,

You must have common denominators!

**KFC**

To Divide Fractions, remember... KFC!!

**K**eep the first fraction the same.

**F**lip the second fraction.

**C**hange the division to multiplication.

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|  | **Adult Learning Academy**  **Pre-Algebra Workbook**  **2.4 Fraction Quiz** |  |

1. Circle the GREATER number from each pair:

a)

b)

c)

d) 1

e)

f)

1. Color of the candy bar:
2. Color of the candy bar:
3. Color of the candy bar:
4. Cross out the fraction that is UNDEFINED:

1. What is half of ?
2. Circle ALL the fractions that equal one half:

2 1 8 10

1 2 16 20

1. Simplify. Write your answer in simplest form:

a) 1 + 3

4 4

b) 2 - 1

3 4

c) 2 • 3

3 4

d) 2 ÷ 3

3 4

e)

f)

g)

|  |  |  |
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|  | **Adult Learning Academy**  **Pre-Algebra Workbook**  **2.5 Incredible Growing and Shrinking Numbers** |  |

**Grew or shrunk?** **Grew or shrunk?**

\_\_\_\_\_\_ = \_\_\_\_\_\_\_

= \_\_\_\_\_\_ \_\_\_\_\_\_\_

\_\_\_\_\_\_ = \_\_\_\_\_\_\_

\_\_\_\_\_\_ = \_\_\_\_\_\_\_

\_\_\_\_\_\_ \_\_\_\_\_\_\_

OBSERVATIONS:

When you multiply a number by a fraction < 1, it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When you divide a number by a fraction < 1, it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When you multiply a number by 1, it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When you divide a number by 1, it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When you multiply a number by a fraction > 1, it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

When you divide a number by a fraction > 1, it \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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|  | **MoHealthWINs Adult Learning Academy**  **Pre-Algebra Workbook**  **2.6 Healthcare Applications** |  |

**Scenario I:** On the days when you are working as a CNA, this graph shows how your time breaks down for a 24-hour day:

a) Write each fraction and simplify:

What fraction of your time do you spend working?

What fraction of your time do you spend sleeping?

What fraction of your time do you have free?

Add the three fractions above. What is the total? Why does this total make sense?

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b) According to the graph, what fraction of the day are you AWAKE?

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c) What fraction of your DAY OFF do you spend working?

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d) Your friend spends of her day at work. How long is her shift?

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e) Your friend has of her day for free time. Who has more free time—you or her?

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f) You spend of your work time doing direct patient care. How many hours is this?

**Scenario II:** The storage shelf at work measures 6 feet by 1 feet.

1 feet

6 feet

a) You decide to attach a rim to go around the edge of the shelf to keep items from falling off. How many feet of rim should you order?

(*Note: You are finding the PERIMETER of the rectangle. You can find it by adding up the lengths of ALL four of the sides*.)

b) Rim material costs $4 per foot. How much will your rim cost?

c) You also choose to buy water-resistant shelf paper to protect the surface of the shelf. A roll of shelf paper covers 5 square feet. How many of rolls will you need?

(*Note: You are finding the AREA of a rectangle. You can find it by multiplying the length of the rectangle by its width*. *Area is always measured in square units.)*

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**III. FACT:**  Cigarette smoke contains 4,800 chemicals, 69 of which cause cancer.

a) What fraction of the chemicals in cigarette smoke are carcinogenic?

b) What fraction of the chemicals in cigarette smoke are non-carcinogenic?

**Scenario IV:** As a therapist’s assistant, you need to make sure that patients get the exercise ordered by the therapist.

Your patient Fiona is supposed to get ¾ of an hour of exercise, 5 days per week. How much time should she spend exercising in a week?

This week, Fiona kept track of her hours of exercise in this table:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Monday | Tuesday | Wednesday | Thursday | Friday | Saturday | Sunday |
|  |  |  |  |  |  |  |

How many hours did Fiona exercise this week?

How many *minutes* of exercise did Fiona get this week?

What fraction of Fiona’s total exercise was done over the weekend?

Did Fiona get enough exercise this week? If not, how much more would she have needed to meet the therapist’s recommendation?

What is the MEAN amount of time Fiona exercised each of the five weekdays? (Don’t count the weekend!)

Fiona’s best friend Sharona got half as much exercise as Fiona did this week. How many hours did Sharona exercise?

**Scenario V:** You are in charge of medication. Fill in the following table:

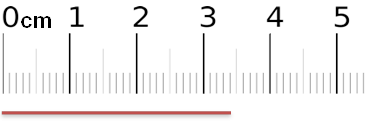
|  |  |  |  |
| --- | --- | --- | --- |
| **Patient**  **Name** | **Number of**  **Doses Per day** | **Number of Pills per dose** | **Total number of pills**  **Per day** |
| Foster | 3 | 1 ½ tablets |  |
| Grimes | 7 | ¾ tablet |  |
| Haike |  | 1 ½ tablets | 9 tablets |
| Iona |  | ¾ tablet | 6 ¾ tablets |
| Jones | 5 |  | 17 ½ tablets |
| Koric | 4 |  | 3 tablets |

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**VI. Graphic Practice**:

a) How much does the item weigh? b) How full is the gas tank?





c) How long is the line segment?

**Resources**

**Works used in VI. Graphic Practice**

a) [Fraction Scale](https://www.flickr.com/photos/123611806@N07/16598361218/) by [OER\_Training](https://www.flickr.com/photos/123611806@N07/) is licensed under [CC BY 4.0](http://creativecommons.org/licenses/by/4.0/)

b) [Gas Gauge](https://www.flickr.com/photos/123611806@N07/16760087246/) is a derivative of [Fuel Gauge](http://pixabay.com/en/fuel-gauge-petrol-gauge-fuel-petrol-163728/), which is available in the public domain under [CC0 Public Domain](http://creativecommons.org/publicdomain/zero/1.0/deed.en)

c) [Line Segment](https://www.flickr.com/photos/123611806@N07/16784859612/) is a derivative of [10cm ruler](https://openclipart.org/detail/170976/10cm%20ruler), which is available in the public domain