

4.6 Guided Notes (Multiply Fractions)**Multiplying Fractions:**

- To multiply fractions, multiply the numerators and multiply the denominators.
 - Simplify if necessary.
- There are 12 students at the lunch table. $\frac{2}{3}$ of the students ordered a hamburger for lunch. One half of those students that ordered a hamburger put cheese on it. How many students put cheese on their burger?

$$\frac{2}{3}(12) = 8 \text{ hamburgers}$$
$$\frac{1}{2}(8) = \boxed{4} \text{ cheeseburgers}$$

Practice:

1. $\frac{1}{2} * \frac{1}{3} = \left(\frac{1}{6}\right)$

2. $2 * \left(-\frac{3}{4}\right) = -\frac{6}{4} = -\frac{3}{2} = \left(-1\frac{1}{2}\right)$

3. $\frac{2}{7} * \left(-\frac{3}{8}\right) = \frac{-6}{56} = \boxed{\frac{-3}{28}}$

4. $\frac{3}{5} * \frac{1}{2} = \left(\frac{3}{10}\right)$

5. $\frac{2}{3} * (-4) = \left(\frac{-8}{3}\right) \text{ or } = \left(-2\frac{2}{3}\right)$

6. $-\frac{1}{3} * \left(-\frac{3}{7}\right) = \frac{3}{21} = \left(\frac{1}{7}\right)$

Multiplying Mixed Numbers:

- When multiplying by a mixed number, you can rename the mixed number as an improper fraction.

Practice:

$$7. \frac{1}{2} * 4\frac{2}{5} = \frac{1}{2} \cdot \frac{22}{5} = \frac{22}{10} = \frac{11}{5} = 2\frac{1}{5}$$

$$8. \frac{1}{4} * 8\frac{4}{9} = \frac{1}{4} \cdot \frac{76}{9} = \frac{76}{36} = \frac{38}{18} = \frac{19}{9} = 2\frac{1}{9}$$

$$9. 5\frac{1}{3} * 3 = \frac{16}{3} \cdot 3 = 16$$

$$10. -1\frac{7}{8} * (-2\frac{2}{5}) = -\frac{15}{8} \cdot (-\frac{12}{5}) = \frac{9}{2} = 4\frac{1}{2}$$

11. Humans sleep about $\frac{1}{3}$ of each day. Let each year equal $365\frac{1}{4}$ days. Determine the number of days in a year the average human sleeps.

$$\frac{1}{3} \cdot 365\frac{1}{4} = \frac{1}{3} \cdot \frac{1461}{4} = \frac{1461}{12} = 121\frac{3}{4} \text{ days}$$