

## Section 5 – Operations with Fractions

This book belongs to: \_\_\_\_\_ Block: \_\_\_\_\_

Section	Due Date	Questions I Find Difficult	Marked	Corrections Made and Understood

### Self-Assessment Rubric

Category	Sub-Category	Description	
Expert	6	Work meets the objectives; is clear, error free, and demonstrates a mastery of the Learning Targets	“You could teach this!”
	5	Work meets the objectives; is clear, with some minor errors, and demonstrates a clear understanding of the Learning Targets	“Almost Perfect, one little error.”
Apprentice	4	Work almost meets the objectives; contains errors, and demonstrates sound reasoning and thought concerning the Learning Targets	“Good understanding with a few errors.”
	3	Work is in progress; contains errors, and demonstrates a partial understanding of the Learning Targets	“You are on the right track, but key concepts are missing.”
Novice	2	Work does not meet the objectives; frequent errors, and minimal understanding of the Learning Targets is demonstrated	“You have achieved the bare minimum to meet the learning outcome.”
	1	Work does not meet the objectives; there is no or minimal effort, and no understanding of the Learning Targets	“Learning Outcomes not met at this time.”

### Learning Targets and Self-Evaluation

Learning Target	Description	Mark
5 – 1	<ul style="list-style-type: none"> <li>• What fractions are: numerators, denominators etc.</li> <li>• The concept of equivalence and estimation</li> <li>• Converting from improper to mixed and mixed to improper</li> </ul>	
5 – 2	<ul style="list-style-type: none"> <li>• Addition and Subtraction of Fractions</li> <li>• Multiplication and Division of Fractions</li> <li>• Simplifying Fractions</li> </ul>	

### Competency Self-Evaluation

A valuable aspect to the learning process involves self-reflection and efficacy. Research has shown that authentic self-reflection helps improve performance and effort, and can have a direct impact on the growth mindset of the individual. In order to grow and be a life-long learner we need to develop the capacity to monitor, evaluate, and know what and where we need to focus on improvement. Read the following list of Core Competency Outcomes and reflect on your behaviour, attitude, effort, and actions throughout this unit.

Rank yourself with a check mark: E (Excellent), G (Good), S (Satisfactory), N (Needs Improvement)

		E	G	S	N
Personal Responsibility	• I <b>listen</b> during instruction period and come to class ready to ask questions				
	• I am <b>fully prepared</b> for the class, with all the required supplies				
	• I am <b>fully prepared</b> for Quizzes				
	• I <b>follow</b> instructions and <b>assist</b> peers				
	• I am <b>on task</b> during work blocks				
	• I <b>complete</b> assignments <b>on time</b>				
Self-Regulation	• I keep track of my <b>Learning Targets</b>				
	• I take <b>ownership</b> over my goals, learning, and behaviour				
	• I can <b>solve problems</b> myself and know when to ask for help				
	• I can <b>persevere</b> in challenging tasks				
	• I <b>take responsibility</b> to be actively engaged in the lesson and discussions				
	• I only use my phone for school tasks				
Classroom Responsibility and Communication	• I am <b>focused</b> on the discussion and lessons				
	• I <b>ask questions</b> during the lesson and class				
	• I give <b>my best effort</b> and <b>encourage</b> others to work well				
	• I am polite and communicate questions and concerns with my peers and teacher				
Collaborative Actions	• I can <b>work with others</b> to achieve a common goal				
	• I make <b>contributions</b> to my group				
	• I am <b>kind</b> to others, can work collaboratively and <b>build relationships</b> with my peers				
	• I can <b>identify</b> when others need support and provide it				
Communication Skills	• I present informative <b>clearly</b> , in an organized way				
	• I <b>ask and respond</b> to simple direct questions				
	• I am an <b>active listener</b> , I support and encourage the speaker				
	• I <b>recognize</b> that there are different points of view and can disagree respectfully				
	<b>Overall</b>				
Goal for next Unit – refer to the above criteria. Please select (underline/highlight) two areas you want to focus on					

**Pre-Unit Questions**

1. What are fractions connected to in everyday life? Have you seen them before? Give an example of how you have used them.

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2. What skills do I have going into this unit?

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3. What is your learning goal this unit?

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4. How do you plan on accomplishing your learning goals this unit?

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Try every question in this booklet. Show your steps (thinking process) and keep trying until you get the right answer. If you are struggling and would like additional support, ask!

## Section 5.1 – Fractions

### What are they?

- They are **rational numbers**, which means they can be written as a **terminating (stops) or repeating decimal or as a percentage**

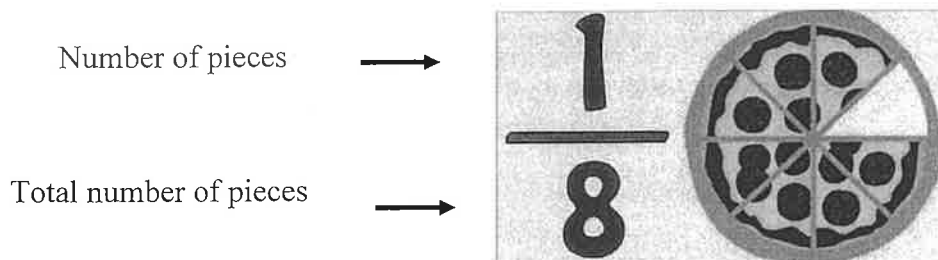
Example:  $1/2 = 0.5 = 50\%$

- BUT everything we do with fractions is dependent on us knowing what a fraction is to begin with.

### What are fractions??

- Pieces of a whole
- Pieces of something
- Something broken into pieces

And this is the representation...



### Consider this...

If you have 4 pieces, they are **all the same size**, and they **make up a whole** item, each piece is?

**ONE FOURTH IN SIZE.**

Example:  $\frac{4}{4}$  If you have all 4 pieces of a KitKat bar, then you have **one** entire KitKat!

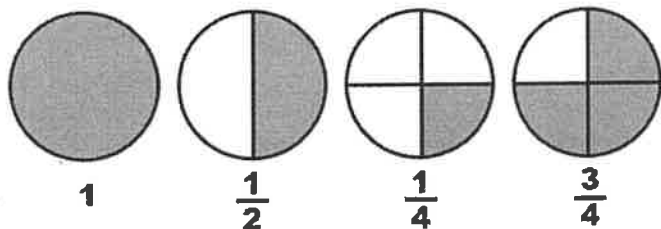
Example:  $\frac{3}{8}$  If you have all 3 pieces of a pizza left, then you have eaten 5 slices!

That example is the basis behind addition and subtraction of fractions.

**So how do we visualize this relationship?**

Remember that the...

- **Numerator** is the number on the **top** of the line (the pieces you have)
- **Denominator** is the number on the **bottom** of the line (total number it takes to make a whole)



Let's practice with candy!

**The Importance of Estimation**

- **Estimation** is a **very important** part of the thought process
- When we **estimate** we make **educated inferences** (fancy word for guess)
- This allows us to **understand** what our answer should be close too
  - So when a calculator gives you an answer or you calculate...
  - You can stop if the calculation you make or calculator is way off

**So let's estimate some fractions**

- Place these numbers on the line.
- Underneath the number line, explain why you organized them in that order.

$$\frac{1}{3} \quad \frac{5}{5} \quad \frac{11}{12} \quad \frac{4}{3}$$



Explanation of where you put your fractions:

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## Equivalence

Equivalence is a term that means **'the same value'**

- Two or more fractions can be **equivalent**, which means they have the **same value**, but they **look different**

**Example:**  $\frac{1}{2}$  is the same as  $\frac{2}{4}$   $\frac{3}{6}$   $\frac{4}{8}$   $\frac{15}{30}$  etc.

The question is now do we get there?

- We **multiply the original fraction by 1**. The catch is that **anything divided by itself** is one. So by multiplying by 1, we use a fraction instead, that will give us the desired denominator.

$$1 = \frac{3}{3} = \frac{5}{5} = \frac{21}{21} = \frac{-4}{-4} = \frac{156}{156} \text{ etc}$$

So to make equivalent fractions we **multiply the original fraction by 1**, in the form of a fraction.

**Example:**

$$\frac{1}{3} = \frac{?}{6} \rightarrow \frac{1}{3} * \frac{2}{2} = \frac{2}{6} \qquad \frac{5}{7} = \frac{15}{?} \rightarrow \frac{5}{7} * \frac{3}{3} = \frac{15}{21}$$

## Comparing Fractions

- ✓ In order to **accurately compare** two or more fractions we need to make sure **all the pieces are the same size**. That means we need a **common denominator**.

**Example:**  $\frac{2}{3}$  and  $\frac{3}{4}$   $\frac{6}{7}$  and  $\frac{7}{8}$

$$\frac{2}{3} * \frac{4}{4} = \frac{8}{12}, \quad \frac{3}{4} * \frac{3}{3} = \frac{9}{12} \qquad \frac{6}{7} * \frac{8}{8} = \frac{48}{56}, \quad \frac{7}{8} * \frac{7}{7} = \frac{49}{56}$$

Since  $\frac{9}{12}$  bigger than  $\frac{8}{12}$  Since  $\frac{49}{56}$  bigger than  $\frac{48}{56}$

$\frac{3}{4}$  is bigger than  $\frac{2}{3}$   $\frac{7}{8}$  is bigger than  $\frac{6}{7}$

## Mixed vs Improper Fractions

**Improper fractions:** are fractions where the numerator (top number) is bigger than the denominator (bottom number)

**Example:**  $\frac{13}{5}$ ,  $\frac{11}{3}$

**Mixed fractions:** are fractions with a whole number and a proper fraction

**Example:**  $3\frac{1}{4}$ ,  $7\frac{2}{3}$ ,  $2\frac{5}{6}$

## Converting from Mixed to Improper and Vice-Versa

- Again, think about your pieces (size and number)

So,  $\frac{11}{4}$  means that you have 11 pieces and 4 make a whole

- Let's break that down then,

$$4 + 4 + 3 = 11 \quad \text{So we can have} \quad \frac{4}{4} + \frac{4}{4} + \frac{3}{4}$$

- We still have 11 pieces of size 4.

$$\text{And since } \frac{4}{4} \text{ is } 1 \quad \text{We can write it as } 1 + 1 + \frac{3}{4} \text{ or } 2\frac{3}{4}$$

$$\frac{11}{4} = 2\frac{3}{4}$$

### Vice Versa

$3\frac{2}{5}$  means we have  $1 + 1 + 1 + \frac{2}{5}$  but since we can write 1 as  $\frac{5}{5}$

$$\text{We can say we have, } \frac{5}{5} + \frac{5}{5} + \frac{5}{5} + \frac{2}{5} = \frac{17}{5}$$

$$3\frac{2}{5} = \frac{17}{5}$$

**Equivalent Fractions**

1)  $\frac{2}{5} = \frac{6}{\square}$

Diagram: A circle with an equals sign in the center. The left side is  $\frac{2}{5}$ . The right side is  $\frac{6}{\square}$ . An arrow on the top arc points from the numerator 2 to the numerator 6, with an 'x' next to it. An arrow on the bottom arc points from the denominator 5 to the denominator  $\square$ , with an 'x' next to it.

2)  $\frac{1}{3} = \frac{\square}{6}$

Diagram: A circle with an equals sign in the center. The left side is  $\frac{1}{3}$ . The right side is  $\frac{\square}{6}$ . An arrow on the top arc points from the numerator 1 to the numerator  $\square$ , with an 'x' next to it. An arrow on the bottom arc points from the denominator 3 to the denominator 6, with an 'x' next to it.

3)  $\frac{7}{4} = \frac{\square}{20}$

Diagram: A circle with an equals sign in the center. The left side is  $\frac{7}{4}$ . The right side is  $\frac{\square}{20}$ . An arrow on the top arc points from the numerator 7 to the numerator  $\square$ , with an 'x' next to it. An arrow on the bottom arc points from the denominator 4 to the denominator 20, with an 'x' next to it.

4)  $\frac{5}{8} = \frac{30}{\square}$

Diagram: A circle with an equals sign in the center. The left side is  $\frac{5}{8}$ . The right side is  $\frac{30}{\square}$ . An arrow on the top arc points from the numerator 5 to the numerator 30, with an 'x' next to it. An arrow on the bottom arc points from the denominator 8 to the denominator  $\square$ , with an 'x' next to it.

5)  $\frac{1}{2} = \frac{9}{\square}$

Diagram: A circle with an equals sign in the center. The left side is  $\frac{1}{2}$ . The right side is  $\frac{9}{\square}$ . An arrow on the top arc points from the numerator 1 to the numerator 9, with an 'x' next to it. An arrow on the bottom arc points from the denominator 2 to the denominator  $\square$ , with an 'x' next to it.

6)  $\frac{9}{4} = \frac{\square}{16}$

Diagram: A circle with an equals sign in the center. The left side is  $\frac{9}{4}$ . The right side is  $\frac{\square}{16}$ . An arrow on the top arc points from the numerator 9 to the numerator  $\square$ , with an 'x' next to it. An arrow on the bottom arc points from the denominator 4 to the denominator 16, with an 'x' next to it.

7)  $\frac{3}{5} = \frac{6}{\square}$

Diagram: A circle with an equals sign in the center. The left side is  $\frac{3}{5}$ . The right side is  $\frac{6}{\square}$ . An arrow on the top arc points from the numerator 3 to the numerator 6, with an 'x' next to it. An arrow on the bottom arc points from the denominator 5 to the denominator  $\square$ , with an 'x' next to it.

8)  $\frac{5}{7} = \frac{\square}{21}$

Diagram: A circle with an equals sign in the center. The left side is  $\frac{5}{7}$ . The right side is  $\frac{\square}{21}$ . An arrow on the top arc points from the numerator 5 to the numerator  $\square$ , with an 'x' next to it. An arrow on the bottom arc points from the denominator 7 to the denominator 21, with an 'x' next to it.

9)  $\frac{1}{4} = \frac{\square}{28}$

Diagram: A circle with an equals sign in the center. The left side is  $\frac{1}{4}$ . The right side is  $\frac{\square}{28}$ . An arrow on the top arc points from the numerator 1 to the numerator  $\square$ , with an 'x' next to it. An arrow on the bottom arc points from the denominator 4 to the denominator 28, with an 'x' next to it.

10)  $\frac{8}{3} = \frac{40}{\square}$

Diagram: A circle with an equals sign in the center. The left side is  $\frac{8}{3}$ . The right side is  $\frac{40}{\square}$ . An arrow on the top arc points from the numerator 8 to the numerator 40, with an 'x' next to it. An arrow on the bottom arc points from the denominator 3 to the denominator  $\square$ , with an 'x' next to it.



### Equivalent Fractions

1)  $\frac{35}{20} = \frac{\square}{4}$

÷  $\frac{\square}{\square}$  (top)

÷  $\frac{\square}{\square}$  (bottom)

2)  $\frac{1}{9} = \frac{6}{\square}$

×  $\frac{\square}{\square}$  (top)

×  $\frac{\square}{\square}$  (bottom)

3)  $\frac{8}{3} = \frac{\square}{12}$

×  $\frac{\square}{\square}$  (top)

×  $\frac{\square}{\square}$  (bottom)

4)  $\frac{14}{63} = \frac{2}{\square}$

÷  $\frac{\square}{\square}$  (top)

÷  $\frac{\square}{\square}$  (bottom)

5)  $\frac{2}{5} = \frac{16}{\square}$

×  $\frac{\square}{\square}$  (top)

×  $\frac{\square}{\square}$  (bottom)

6)  $\frac{24}{15} = \frac{\square}{5}$

÷  $\frac{\square}{\square}$  (top)

÷  $\frac{\square}{\square}$  (bottom)

7)  $\frac{27}{45} = \frac{\square}{5}$

÷  $\frac{\square}{\square}$  (top)

÷  $\frac{\square}{\square}$  (bottom)

8)  $\frac{1}{8} = \frac{2}{\square}$

×  $\frac{\square}{\square}$  (top)

×  $\frac{\square}{\square}$  (bottom)

9)  $\frac{3}{2} = \frac{18}{\square}$

×  $\frac{\square}{\square}$  (top)

×  $\frac{\square}{\square}$  (bottom)

10)  $\frac{32}{28} = \frac{\square}{7}$

÷  $\frac{\square}{\square}$  (top)

÷  $\frac{\square}{\square}$  (bottom)

**Equivalent Fractions**

1)  $\frac{10}{6} = \frac{5}{\square}$

2)  $\frac{20}{35} = \frac{\square}{7}$

3)  $\frac{63}{28} = \frac{\square}{4}$

4)  $\frac{3}{24} = \frac{1}{\square}$

5)  $\frac{12}{30} = \frac{2}{\square}$

6)  $\frac{28}{8} = \frac{\square}{2}$

7)  $\frac{24}{32} = \frac{\square}{4}$

8)  $\frac{72}{63} = \frac{8}{\square}$

9)  $\frac{3}{6} = \frac{1}{\square}$

10)  $\frac{12}{10} = \frac{\square}{5}$

Student Name: \_\_\_\_\_

Score: \_\_\_\_\_

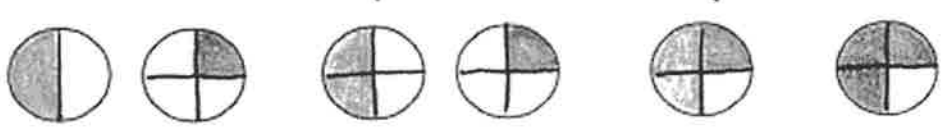
**Circle the Largest Fraction in each Pair**

1) $\frac{1}{3}$ $\frac{1}{5}$	2) $\frac{3}{4}$ $\frac{3}{2}$	3) $\frac{5}{3}$ $\frac{7}{6}$
4) $\frac{9}{10}$ $\frac{1}{4}$	5) $\frac{11}{2}$ $\frac{13}{3}$	6) $\frac{4}{5}$ $\frac{6}{10}$
7) $\frac{7}{8}$ $\frac{7}{4}$	8) $\frac{1}{6}$ $\frac{2}{9}$	9) $\frac{6}{7}$ $\frac{4}{5}$
10) $\frac{5}{6}$ $\frac{4}{8}$	11) $\frac{4}{3}$ $\frac{8}{7}$	12) $\frac{1}{2}$ $\frac{2}{3}$
13) $\frac{3}{8}$ $\frac{4}{9}$	14) $\frac{7}{4}$ $\frac{11}{6}$	15) $\frac{2}{3}$ $\frac{3}{5}$

**Section 5.2 – Operations with Fractions**

**Adding & Subtracting Fractions**

- you need a common denominator
- add (or subtract) numerators; denominator stays the same

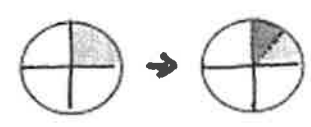
$$\frac{1}{2} + \frac{1}{4} = \frac{2}{4} + \frac{1}{4} = \frac{2+1}{4} = \frac{3}{4}$$



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**Multiplying Fractions**

- top x top, bottom x bottom

$$\frac{1}{2} \times \frac{1}{4} = \frac{1 \times 1}{2 \times 4} = \frac{1}{8}$$



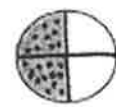
$\frac{1}{2}$  of  $\frac{1}{4}$   "of" means "times"

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**Dividing Fractions**

- Invert (the SECOND fraction) & Multiply

$$\frac{1}{2} \div \frac{1}{4} = \frac{1}{2} \times \frac{4}{1} = \frac{1 \times 4}{2 \times 1} = \frac{4}{2} = \frac{2}{1} = 2$$

how many  fit into  ?  2!

- You can also divide by making equivalent fractions
- Then divide the first numerator by the second numerator, and the denominators divide out to 1

**ALWAYS REDUCE YOUR ANSWER TO THE LOWEST TERMS!!!**

Name : \_\_\_\_\_

Score : \_\_\_\_\_

## Adding Proper Fractions

1)  $\frac{3}{4} + \frac{2}{4} =$

2)  $\frac{9}{15} + \frac{12}{15} =$

3)  $\frac{12}{18} + \frac{15}{18} =$

4)  $\frac{5}{7} + \frac{6}{7} =$

5)  $\frac{8}{10} + \frac{6}{10} =$

6)  $\frac{11}{17} + \frac{10}{17} =$

7)  $\frac{3}{9} + \frac{8}{9} =$

8)  $\frac{1}{2} + \frac{1}{2} =$

9)  $\frac{6}{12} + \frac{3}{12} =$

10)  $\frac{5}{8} + \frac{2}{8} =$

11)  $\frac{4}{6} + \frac{1}{6} =$

12)  $\frac{8}{13} + \frac{12}{13} =$

13)  $\frac{16}{20} + \frac{3}{20} =$

14)  $\frac{10}{15} + \frac{8}{15} =$

Name: \_\_\_\_\_

Score: \_\_\_\_\_

## Adding Proper Fractions

1)  $\frac{3}{8} + \frac{10}{16} =$

2)  $\frac{7}{12} + \frac{5}{6} =$

3)  $\frac{19}{20} + \frac{4}{5} =$

4)  $\frac{4}{9} + \frac{1}{2} =$

5)  $\frac{7}{12} + \frac{6}{16} =$

6)  $\frac{3}{7} + \frac{8}{14} =$

7)  $\frac{3}{4} + \frac{2}{3} =$

8)  $\frac{13}{15} + \frac{11}{20} =$

9)  $\frac{1}{5} + \frac{1}{8} =$

10)  $\frac{5}{6} + \frac{3}{4} =$

11)  $\frac{3}{9} + \frac{9}{12} =$

12)  $\frac{1}{3} + \frac{2}{7} =$

13)  $\frac{7}{10} + \frac{1}{2} =$

14)  $\frac{5}{8} + \frac{4}{9} =$

## Adding Fractions (A)

Find the value of each expression in lowest terms.

1.  $\frac{7}{3} + \frac{23}{7}$

5.  $\frac{7}{4} + \frac{5}{8}$

9.  $\frac{3}{5} + \frac{1}{3}$

2.  $\frac{17}{10} + \frac{11}{20}$

6.  $\frac{15}{7} + \frac{12}{5}$

10.  $\frac{13}{16} + \frac{3}{4}$

3.  $\frac{17}{9} + \frac{3}{2}$

7.  $\frac{19}{8} + \frac{13}{14}$

11.  $\frac{32}{15} + \frac{10}{3}$

4.  $\frac{27}{16} + \frac{19}{16}$

8.  $\frac{13}{5} + \frac{2}{9}$

12.  $\frac{6}{5} + \frac{13}{10}$

## Subtracting Fractions (A)

Find the value of each expression in lowest terms.

1.  $\frac{31}{9} - \frac{19}{15}$

5.  $\frac{7}{2} - \frac{4}{3}$

9.  $\frac{13}{5} - \frac{7}{4}$

2.  $\frac{27}{13} - \frac{1}{4}$

6.  $\frac{2}{5} - \frac{4}{15}$

10.  $\frac{25}{12} - \frac{1}{2}$

3.  $\frac{17}{2} - \frac{3}{5}$

7.  $\frac{21}{11} - \frac{13}{11}$

11.  $\frac{7}{6} - \frac{7}{10}$

4.  $\frac{27}{10} - \frac{37}{18}$

8.  $\frac{37}{20} - \frac{11}{6}$

12.  $\frac{22}{3} - \frac{27}{4}$



## Adding and Subtracting Mixed Fractions (A)

Find the value of each expression in lowest terms.

1.  $2\frac{1}{5} + 1\frac{3}{4}$

5.  $1\frac{1}{2} + 2\frac{3}{5}$

9.  $3\frac{1}{2} - 1\frac{1}{2}$

2.  $3\frac{1}{2} - 2\frac{2}{3}$

6.  $3\frac{1}{2} - 2\frac{5}{9}$

10.  $5\frac{1}{2} + 5\frac{1}{4}$

3.  $3\frac{1}{2} - 3\frac{1}{2}$

7.  $2\frac{3}{4} + 1\frac{1}{5}$

11.  $1\frac{10}{11} - 1\frac{1}{3}$

4.  $5\frac{3}{4} - 5\frac{1}{4}$

8.  $3\frac{1}{4} - 2\frac{3}{8}$

12.  $1\frac{5}{12} + 3\frac{1}{3}$

## Multiplying Fractions (A)

Find the value of each expression.

1.  $\frac{5}{6} \times \frac{1}{2}$

5.  $\frac{7}{9} \times \frac{1}{2}$

9.  $\frac{1}{2} \times \frac{1}{3}$

2.  $\frac{4}{9} \times \frac{2}{3}$

6.  $\frac{5}{11} \times \frac{1}{3}$

10.  $\frac{1}{8} \times \frac{1}{4}$

3.  $\frac{3}{5} \times \frac{3}{4}$

7.  $\frac{1}{3} \times \frac{5}{6}$

11.  $\frac{1}{2} \times \frac{5}{6}$

4.  $\frac{5}{6} \times \frac{1}{3}$

8.  $\frac{1}{2} \times \frac{1}{6}$

12.  $\frac{1}{3} \times \frac{4}{5}$

## Multiplying Fractions (F)

Find the value of each expression.

1.  $\frac{1}{3} \times \frac{7}{10}$

5.  $\frac{1}{7} \times \frac{1}{2}$

9.  $\frac{1}{4} \times \frac{7}{9}$

2.  $\frac{1}{3} \times \frac{4}{11}$

6.  $\frac{1}{3} \times \frac{2}{3}$

10.  $\frac{1}{3} \times \frac{11}{12}$

3.  $\frac{1}{4} \times \frac{3}{4}$

7.  $\frac{7}{9} \times \frac{1}{2}$

11.  $\frac{8}{9} \times \frac{2}{3}$

4.  $\frac{1}{7} \times \frac{3}{4}$

8.  $\frac{7}{8} \times \frac{3}{4}$

12.  $\frac{1}{4} \times \frac{1}{3}$

## Multiplying Fractions (A)

Find the value of each expression in lowest terms.

1.  $\frac{1}{6} \times \frac{11}{4}$

5.  $\frac{11}{5} \times \frac{1}{3}$

9.  $\frac{14}{3} \times \frac{1}{5}$

2.  $\frac{5}{3} \times \frac{2}{5}$

6.  $\frac{3}{4} \times \frac{8}{9}$

10.  $\frac{5}{2} \times \frac{2}{7}$

3.  $\frac{1}{3} \times \frac{17}{8}$

7.  $\frac{7}{6} \times \frac{9}{11}$

11.  $\frac{1}{2} \times \frac{7}{4}$

4.  $\frac{1}{3} \times \frac{16}{7}$

8.  $\frac{5}{4} \times \frac{1}{4}$

12.  $\frac{3}{5} \times \frac{3}{8}$

## Multiplying Fractions (H)

Find the value of each expression in lowest terms.

1.  $\frac{16}{7} \times \frac{1}{6}$

5.  $\frac{2}{5} \times \frac{10}{9}$

9.  $\frac{5}{7} \times \frac{2}{3}$

2.  $\frac{1}{4} \times \frac{15}{8}$

6.  $\frac{5}{2} \times \frac{1}{6}$

10.  $\frac{23}{10} \times \frac{2}{9}$

3.  $\frac{23}{6} \times \frac{1}{7}$

7.  $\frac{1}{4} \times \frac{3}{2}$

11.  $\frac{6}{11} \times \frac{5}{4}$

4.  $\frac{1}{9} \times \frac{13}{5}$

8.  $\frac{1}{12} \times \frac{9}{5}$

12.  $\frac{1}{3} \times \frac{8}{5}$

## Multiplying Fractions (G)

Find the value of each expression in lowest terms.

1.  $\frac{10}{9} \times \frac{3}{8}$

5.  $1\frac{2}{3} \times \frac{1}{4}$

9.  $3\frac{1}{2} \times \frac{4}{5}$

2.  $1\frac{2}{3} \times 1\frac{2}{11}$

6.  $\frac{7}{4} \times \frac{11}{3}$

10.  $\frac{11}{10} \times 3\frac{1}{2}$

3.  $\frac{15}{2} \times 1\frac{1}{3}$

7.  $1\frac{1}{6} \times \frac{7}{4}$

11.  $\frac{1}{5} \times 1\frac{4}{9}$

4.  $3\frac{3}{5} \times \frac{19}{12}$

8.  $\frac{5}{3} \times \frac{18}{11}$

12.  $\frac{7}{6} \times \frac{9}{7}$

## Adding and Subtracting Fractions (A)

Find the value of each expression in lowest terms.

1.  $\frac{7}{4} - \frac{8}{5}$

5.  $\frac{3}{2} - \frac{9}{7}$

9.  $\frac{4}{3} - \frac{2}{5}$

2.  $\frac{23}{2} + \frac{9}{4}$

6.  $\frac{7}{10} + \frac{2}{5}$

10.  $\frac{5}{2} + \frac{2}{3}$

3.  $\frac{8}{3} - \frac{3}{2}$

7.  $\frac{14}{5} - \frac{4}{3}$

11.  $\frac{9}{8} + \frac{5}{6}$

4.  $\frac{5}{2} - \frac{13}{12}$

8.  $\frac{17}{7} - \frac{5}{3}$

12.  $\frac{9}{7} - \frac{5}{6}$

## Subtracting Fractions (E)

Find the value of each expression in lowest terms.

1.  $\frac{29}{9} - \frac{8}{5}$

5.  $\frac{13}{4} - \frac{1}{2}$

9.  $\frac{33}{10} - \frac{16}{9}$

2.  $\frac{7}{3} - \frac{39}{17}$

6.  $\frac{11}{7} - \frac{4}{5}$

10.  $\frac{17}{4} - \frac{2}{3}$

3.  $\frac{23}{9} - \frac{18}{11}$

7.  $\frac{17}{13} - \frac{3}{5}$

11.  $\frac{20}{13} - \frac{9}{13}$

4.  $\frac{21}{2} - \frac{11}{20}$

8.  $\frac{15}{7} - \frac{19}{10}$

12.  $\frac{24}{5} - \frac{3}{2}$



## Adding Fractions (D)

Find the value of each expression in lowest terms.

1.  $\frac{1}{2} + \frac{3}{2}$

5.  $\frac{37}{18} + \frac{13}{3}$

9.  $\frac{3}{20} + \frac{19}{2}$

2.  $\frac{1}{5} + \frac{5}{2}$

6.  $\frac{11}{3} + \frac{26}{15}$

10.  $\frac{10}{3} + \frac{3}{2}$

3.  $\frac{12}{5} + \frac{1}{4}$

7.  $\frac{17}{13} + \frac{29}{13}$

11.  $\frac{11}{3} + \frac{22}{7}$

4.  $\frac{21}{16} + \frac{3}{2}$

8.  $\frac{6}{5} + \frac{14}{9}$

12.  $\frac{2}{5} + \frac{3}{4}$

## Operations with Fractions (B)

Calculate the answer to each question.

$$1. \quad \frac{34}{15} \div \frac{13}{7}$$

$$2. \quad \frac{9}{3} - \frac{12}{5}$$

$$3. \quad \frac{12}{13} + \frac{3}{2}$$

$$4. \quad \frac{37}{14} \div \frac{8}{5}$$

$$5. \quad \frac{1}{3} \times \frac{14}{9}$$

$$6. \quad \frac{2}{3} + \frac{13}{6}$$

$$7. \quad \frac{2}{3} \times \frac{31}{19}$$

$$8. \quad \frac{3}{2} + \frac{11}{7}$$

$$9. \quad \frac{58}{13} - \frac{11}{5}$$

$$10. \quad \frac{16}{4} - \frac{8}{5}$$

## Operations with Fractions (D)

Calculate the answer to each question.

1.  $\frac{28}{11} - \frac{16}{11}$

2.  $\frac{41}{20} \div \frac{23}{8}$

3.  $\frac{39}{14} - \frac{46}{17}$

4.  $\frac{11}{9} + \frac{15}{7}$

5.  $\frac{8}{5} + \frac{26}{9}$

6.  $\frac{1}{6} \times \frac{8}{3}$

7.  $\frac{11}{14} \times \frac{1}{16}$

8.  $\frac{13}{3} - \frac{57}{20}$

9.  $\frac{1}{13} + \frac{5}{2}$

10.  $\frac{8}{11} \div \frac{1}{14}$

## Operations with Fractions (E)

Calculate the answer to each question.

1.  $\frac{3}{4} \times \frac{19}{16}$

2.  $\frac{4}{2} - \frac{1}{3}$

3.  $\frac{4}{3} \div \frac{2}{7}$

4.  $\frac{13}{12} \times \frac{9}{5}$

5.  $\frac{7}{3} + \frac{13}{8}$

6.  $\frac{13}{8} - \frac{1}{2}$

7.  $\frac{21}{6} - \frac{17}{13}$

8.  $\frac{46}{19} + \frac{11}{14}$

9.  $\frac{25}{17} \div \frac{45}{16}$

10.  $\frac{27}{16} + \frac{12}{11}$

## Operations with Fractions (C)

Calculate the answer to each question.

1.  $\frac{4}{3} \times \frac{13}{19}$

2.  $\frac{4}{3} + \frac{28}{11}$

3.  $\frac{35}{13} - \frac{7}{3}$

4.  $\frac{13}{9} \times \frac{1}{4}$

5.  $\frac{17}{7} \div \frac{11}{8}$

6.  $\frac{11}{2} - \frac{53}{19}$

7.  $\frac{16}{15} \div \frac{23}{17}$

8.  $\frac{17}{19} + \frac{4}{19}$

9.  $\frac{11}{5} + \frac{33}{14}$

10.  $\frac{8}{3} - \frac{9}{5}$

## Multiplying Fractions (A)

Find the value of each expression in lowest terms.

1.  $1\frac{3}{4} \times 4\frac{4}{5}$

5.  $\frac{5}{3} \times \frac{17}{12}$

9.  $\frac{9}{10} \times \frac{1}{3}$

2.  $\frac{3}{11} \times \frac{1}{2}$

6.  $\frac{5}{6} \times \frac{4}{3}$

10.  $\frac{1}{7} \times \frac{23}{4}$

3.  $\frac{3}{11} \times \frac{5}{3}$

7.  $\frac{7}{3} \times 2\frac{1}{5}$

11.  $\frac{3}{4} \times \frac{7}{5}$

4.  $1\frac{9}{11} \times \frac{5}{2}$

8.  $\frac{6}{7} \times \frac{1}{12}$

12.  $\frac{1}{5} \times 3\frac{2}{7}$

