Assigned	Assignment (Check due dates and time assignments are due in mathXL)
Mon. 8/12/2024 Tues. 8/13/2024	**Introduction assignment in MathXL:** *Go to **washoeschools.net**, click on **Students and Parents** then scroll down to **envision Mathematics*** ***Syllabus Signed** **Pay $3 Lab Fee to Bookkeeper** 1.1 Day 1
Wed. 8/14/2024 Thur. 8/15/2024	**1.1 Worksheet: Fractions** finish → Day 2
Fri. 8/16/2024 Mon. 8/19/2024	**1.2 MathXL: Order of Operation** Intro MathXL
Tues. 8/20/2024 Wed. 8/21/2024	**1.3 MathXL: Variables, Expressions, and Equations**
Thur. 8/22/2024 Fri. 8/23/2024	**1.4 MathXL: Real Numbers on the Number Line, Absolute Value**
Mon. 8/26/2024 Tues. 8/27/2024	**1.5 MathXL: Add and Subract with Signed Numbers**
Wed. 8/28/2024 Thur. 8/29/2024	**1.6 MathXL: Multiply and Divide with Signed Numbers**
Fri. 8/30/2024 Mon. 9/2/2024	**Ch 1 Practice Test**
Tues. 9/3/2024 Wed. 9/4/2024	**Ch 1 Test**

Paper assg. simplify mult. divide

1.1 Fractions

Factors:
Parts which are multiplied

$2 \cdot 5 = 10$ (product)
(factors)

Product:
Answer to a multiplication problem

Prime Number:
A number only divisible by itself and 1

$13 = 13 \cdot 1$
No other factors

Composite number:
A number made up of multiple factors.

$12 = 3 \cdot 4$
$12 = 3 \cdot 2 \cdot 2$
Not prime

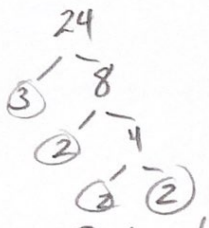
Factoring Numbers

Write each number as the product of prime factors.

(a) 35 $35 = 5 \cdot 7$

(b) 24 $24 = 4 \cdot 6$
$24 = 2 \cdot 2 \cdot 2 \cdot 3$

Factor Trees



Same factors!

Vocabulary:

Fraction: Ex. $\frac{2}{5}$ part / whole

Mixed number: $2\frac{1}{3} = 2 + \frac{1}{3}$

Proper fraction: top is small  $\frac{2}{3}$

Improper fraction: top is large $\frac{5}{3} = 2\frac{2}{3}$

Numerator: top #

Denominator: bottom #

Reciprocals: one is flipped

$\frac{2}{7}$ & $\frac{7}{2}$; 3 & $\frac{1}{3}$; $\frac{3}{1}$ & $\frac{1}{3}$

Zero vs Undefined!

$\frac{0}{4} = 0$ $\frac{4}{0}$ is undef.

Writing Fractions in Lowest Terms

Simplify each fraction / Write each in lowest terms:

a) $\frac{12 \div 3}{15 \div 3} = \frac{4}{5}$ OR $\frac{12}{15} = \frac{3 \cdot 4}{3 \cdot 5} = \frac{4}{5}$

b) $\frac{15 \div 5}{45 \div 5} = \frac{3 \div 3}{9 \div 3} = \frac{1}{3}$ OR $\frac{15}{45} = \frac{5 \cdot 3}{5 \cdot 3 \cdot 3} = \frac{1}{3}$

Multiplying Fractions

Find each product and write it in lowest terms:

To multiply fractions, multiply numerators and multiply denominators. (Go straight across!)

a) $\frac{3}{8} \cdot \frac{4}{9} = \frac{3 \cdot 4}{8 \cdot 9} = \frac{12}{72} \overset{\div 2}{=} \frac{6}{36} \overset{\div 6}{=} \frac{1}{6}$

OR $\frac{3}{4 \cdot 2} \cdot \frac{4}{3 \cdot 3} = \frac{1}{6}$

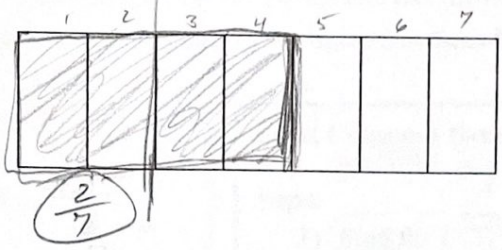
Another option is to break the numbers into FACTORS, then CANCEL any factor that is in the numerator and denominator.

b) $\frac{4}{7} \cdot \frac{5}{12} = \frac{20}{84} \overset{\div 4}{=} \frac{5}{21}$

OR $\frac{4}{7} \cdot \frac{5}{4 \cdot 3} = \frac{5}{21}$

Consider this:

What is half of $\frac{4}{7}$?



Half is $\frac{2}{7}$

$\frac{1}{2} \cdot \frac{4}{7} = \frac{4}{14} = \frac{2}{7}$

What is $\frac{4}{7}$ divided by 2? Same as half!

So, $\frac{4}{7} \div \frac{2}{1}$ is the same thing as $\frac{4}{7} \cdot \frac{1}{2}$!

To divide fractions, rewrite the problem as **multiplying by the reciprocal.**

- Keep the first fraction
- Flip the second fraction
- Multiply!

Dividing Fractions

Find each quotient and write it in lowest terms.

a) $\frac{3}{4} \div \frac{8}{5}$

$= \frac{3}{4} \cdot \frac{5}{8}$

$= \frac{15}{32}$

b) $\frac{5}{6} \div \frac{30}{1}$

$= \frac{5}{6} \cdot \frac{1}{30}$

$= \frac{\cancel{5}}{6} \cdot \frac{1}{\cancel{5} \cdot 6}$

$= \frac{1}{36}$

c) $\frac{2}{7} \div \frac{8}{9}$

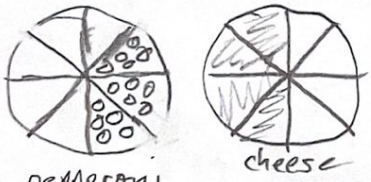
$= \frac{2}{7} \cdot \frac{9}{8}$

$= \frac{2}{7} \cdot \frac{9}{\cancel{2} \cdot 4}$

$= \frac{9}{28}$

Now consider this one:

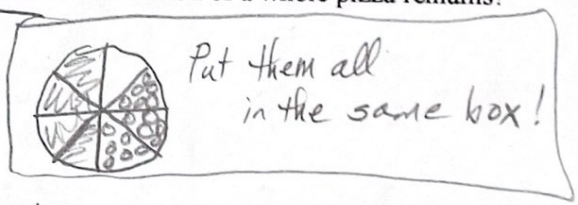
Your take-out pizzas are cut in 8 slices. Everyone eats what they want and you are putting leftovers away. There are 3 slices left of pepperoni and 4 slices left of cheese pizza. What fraction of a whole pizza remains?



pepperoni

cheese

$\frac{3}{8} + \frac{4}{8} = \frac{7}{8}$



Adding Fractions with the Same Denominator

Find each sum, and write it in lowest terms.

(a) $\frac{3}{7} + \frac{2}{7} = \frac{5}{7}$

(b) $\frac{2}{10} + \frac{3}{10} = \frac{5}{10} = \frac{5 \div 5}{10 \div 5} = \frac{1}{2}$

To add fractions with the same denominator:

- **Keep the denominator** (treat it as the "size" of the pieces)
- **Add the numerators** (how many pieces total of that size)

Adding Fractions with Different Denominators

Find a common denominator and build one or more fractions bigger so that you can add them:

(a) $\frac{4}{15}+\frac{5}{9}$

$\frac{4\cdot3}{15\cdot3}+\frac{5\cdot5}{9\cdot5}$

$=\frac{12}{45}+\frac{25}{45}$

$=\boxed{\frac{37}{45}}$

15 = 5 · 3 · 3

9 = 3 · 3

LCD = 5 · 3 · 3 = 45

Least Common Denominator (LCD): smallest big thing they both go into

Steps:

1) Find the LCD — Need factors from each! Use common factors ONCE
2) Multiply numerator & denominator by the same thing to build one (or more) fraction(s) bigger so you have the same denominator in all fractions.
3) Keep the denominator and add the numerators.
4) Write your answer in lowest terms. (Simplify)

c) $\frac{3}{7}+\frac{1}{14}$ Do this one 1st!

$=\frac{3\cdot2}{7\cdot2}+\frac{1}{14}$

$=\frac{6}{14}+\frac{1}{14}=\frac{7}{14}\div\frac{7}{7}=\boxed{\frac{1}{2}}$

Subtracting Fractions

Find each difference, and write it in lowest terms.

(a) $\frac{15}{8}-\frac{3}{8}=\frac{12}{8}$

$\frac{12}{8}\div\frac{4}{4}=\boxed{\frac{3}{2}}$

(b) $\frac{7}{18}-\frac{4}{15}$

$\frac{7\cdot5}{18\cdot5}-\frac{4\cdot6}{15\cdot6}$

$=\frac{35}{90}-\frac{24}{90}$

$=\boxed{\frac{11}{90}}$

LCD:

18 = 6 · 3

15 = 5 · 3

LCD = 6 · 3 · 5 = 90

c) $\frac{7}{9}-\frac{1}{3}+\frac{1}{9}$

$\frac{7}{9}-\frac{1\cdot3}{3\cdot3}+\frac{1}{9}$

$=\frac{7}{9}-\frac{3}{9}+\frac{1}{9}$

$=\frac{7-3+1}{9}$

$=\boxed{\frac{5}{9}}$

One last thing to consider:

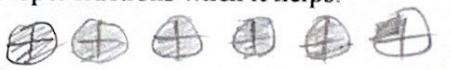
Your take-out pizzas are cut in 8 slices. You are gathering up leftovers after dinner.
There are 5 slices left of pepperoni, and 6 slices left of cheese pizza. What fraction of a whole pizza remains?

$\frac{5}{8} + \frac{6}{8} = \boxed{\frac{11}{8}} \Rightarrow 11 \div 8 = 1R3 \text{ or } 1\frac{3}{8}$

Try drawing a picture and putting the pieces back in 1 box. See how many don't fit!

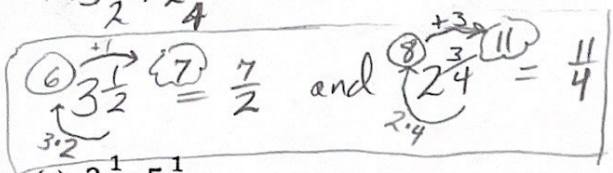
Example 8: Working with Mixed Numbers

Change mixed numbers to improper fractions when it helps:

(a) $5\frac{1}{4} =$ 5 whole + $\frac{1}{4} =$ 

$\frac{4}{4} + \frac{4}{4} + \frac{4}{4} + \frac{4}{4} + \frac{4}{4} + \frac{1}{4} = \frac{4+4+4+4+4+1}{4} = \boxed{\frac{21}{4}}$

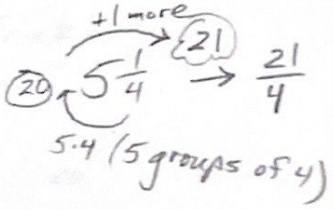
(b) $3\frac{1}{2} + 2\frac{3}{4}$



$\frac{7}{2} + \frac{11}{4}$

$\frac{7 \cdot 2}{2 \cdot 2} + \frac{11}{4}$

$\frac{14}{4} + \frac{11}{4} = \boxed{\frac{25}{4}}$



(c) $2\frac{1}{3} \cdot 5\frac{1}{4}$

$\frac{7}{3} \cdot \frac{21}{4} = \frac{7}{3} \cdot \frac{3 \cdot 7}{4} = \boxed{\frac{49}{4}}$

(d) $3\frac{3}{4} \div 4\frac{2}{5}$

$\frac{15}{4} \div \frac{22}{5} = \frac{15}{4} \cdot \frac{5}{22} = \boxed{\frac{75}{88}}$

$\begin{array}{r} 3 \\ 15 \\ 5 \\ \hline 75 \end{array}$

(e) A board is $10\frac{1}{2}$ feet long. If it must be sectioned off into four pieces of equal length for shelves, how long must each piece be?

division

$10\frac{1}{2} \div 4$

$\frac{21}{2} \div 4$

$\frac{21}{2} \cdot \frac{1}{4} = \boxed{\frac{21}{8}}$ $\quad 21 \div 8 = \boxed{2\frac{5}{8}}$ feet

$\begin{array}{r} 2\frac{5}{8} \\ 8\overline{)21} \\ -16 \\ \hline 5 \end{array}$