

Intro to college math: Chapter 0.1
Fraction Basics

- * Prime number — any whole number greater than 1 that has exactly 2 divisions - itself and 1.
 - * prime numbers = 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37,...
- * Composite number — any whole number greater than 1 that is not a prime number. Always has at least one divisor other than itself and 1.
- * Fraction — rational number; where the top number is called the numerator, and the bottom number is called the denominator. (You can not have a 0 on the bottom of a fraction. It is undefined.)

ex.) $\frac{1}{2}$ ← numerator
 ← denominator

- * Fraction in lowest terms — fraction is in lowest terms if the numerator and the denominator have no factors in common other than the number 1.

ex.) $\frac{1}{2}, \frac{1}{4}, \frac{2}{3}, \frac{3}{4}, \frac{4}{5}$

- * Equivalent fractions — fractions that represent the same number are equivalent.

ex.) $\frac{1}{2} = \frac{2}{4}$

- * Equivalent fractions using multiplication — multiplying the numerator and denominator by the same number never changes the value of the fraction.

ex.) $\frac{3}{4} = \frac{3 \cdot 5}{4 \cdot 5} = \frac{15}{20}$ so... $\frac{3}{4} = \frac{15}{20}$

- * Equivalent fractions using division — dividing the numerator and denominator by the same number never changes the value of the fraction.

ex.) $\frac{6}{8} = \frac{6 \div 2}{8 \div 2} = \frac{3}{4}$ so... $\frac{6}{8} = \frac{3}{4}$ ← in lowest terms

- * Improper fraction — where the numerator is greater than the denominator.

ex.) $\frac{7}{3}$

- * Proper fraction — numerator is less than the denominator.

ex.) $\frac{3}{7}$

- * Least common multiple (LCM) — the smallest number that the numbers can divide into evenly.

ex.) 3 and 6

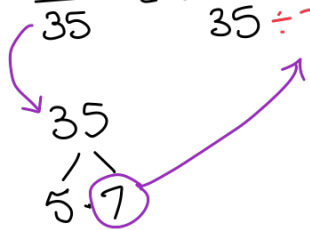
6 is the LCM, because it is the smallest number they can both divide into evenly.

To type fraction into calculator:

1. Press fraction button 
2. Type in numerator
3. Press down button, which is on the big oval button.  ← This one
4. Type in denominator
5. Press over (right) button, which is on the big oval button
6. Press enter.  ← This one

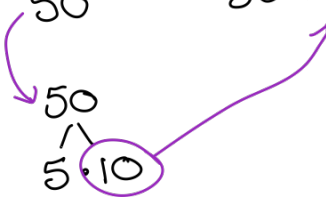
1. Reduce $\frac{119}{35}$ to lowest terms.

* all of the follow problems can be solved on the calculator *

$$\frac{119}{35} = \frac{119 \div 7}{35 \div 7} = \boxed{\frac{17}{5}}$$


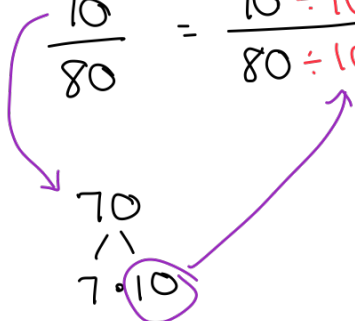
- * Write down the smallest number of your fraction.
- * Then think of numbers that multiply together to get that number.
- * Then pick the largest number that will divide into the bigger number of your fraction evenly.
- * Then divide the top and bottom of your fraction by that number.
- * The answer is the simplified form.

2. Reduce $\frac{140}{50}$ to lowest terms.

$$\frac{140}{50} = \frac{140 \div 10}{50 \div 10} = \boxed{\frac{14}{5}}$$


- * Write down the smallest number of your fraction.
- * Then think of numbers that multiply together to get that number.
- * Then pick the largest number that will divide into the bigger number of your fraction evenly.
- * Then divide the top and bottom of your fraction by that number.
- * The answer is the simplified form.

3. Reduce $\frac{70}{80}$ to lowest terms.

$$\frac{70}{80} = \frac{70 \div 10}{80 \div 10} = \boxed{\frac{7}{8}}$$


- * Write down the smallest number of your fraction.
- * Then think of numbers that multiply together to get that number.
- * Then pick the largest number that will divide into the bigger number of your fraction evenly.
- * Then divide the top and bottom of your fraction by that number.
- * The answer is the simplified form.

4. Reduce $\frac{273}{651}$ to lowest terms.

$$\frac{273}{651} = \frac{273 \div 21}{651 \div 21} = \frac{13}{31}$$

273
 $\swarrow \searrow$
 $3 \cdot 91$
 $7 \cdot 39$
 $13 \cdot 21$

- * Write down the smallest number of your fraction.
- * Then think of numbers that multiply together to get that number.
- * Then pick the largest number that will divide into the bigger number of your fraction evenly.
- * Then divide the top and bottom of your fraction by that number.
- * The answer is the simplified form.

5. Reduce each fraction to lowest terms.

a.) $\frac{6}{39} = \frac{6 \div 3}{39 \div 3} = \frac{2}{13}$

6
 $\swarrow \searrow$
 $2 \cdot 3$

d.) $\frac{6}{42} = \frac{6 \div 6}{42 \div 6} = \frac{1}{7}$

6
 $\swarrow \searrow$
 $1 \cdot 6$
 $2 \cdot 3$

b.) $\frac{6}{40} = \frac{6 \div 2}{40 \div 2} = \frac{3}{20}$

6
 $\swarrow \searrow$
 $2 \cdot 3$

e.) $\frac{6}{43} = \frac{6}{43}$

6
 $\swarrow \searrow$
 $2 \cdot 3$

c.) $\frac{6}{41} = \frac{6}{41}$

6
 $\swarrow \searrow$
 $2 \cdot 3$

* Since no number will divide into both terms evenly, then the fraction can't be reduced. It's in its lowest terms.

6. Reduce each fraction to lowest terms.

a) $\frac{2}{110} = \frac{2 \div 2}{110 \div 2} = \boxed{\frac{1}{55}}$

Factor tree for 2: $2 = 1 \cdot 2$

b) $\frac{5}{110} = \frac{5 \div 5}{110 \div 5} = \boxed{\frac{1}{22}}$

Factor tree for 5: $5 = 1 \cdot 5$

c) $\frac{10}{110} = \frac{10 \div 10}{110 \div 10} = \boxed{\frac{1}{11}}$

Factor tree for 10: $10 = 1 \cdot 10 = 2 \cdot 5$

d) $\frac{11}{110} = \frac{11 \div 11}{110 \div 11} = \boxed{\frac{1}{10}}$

Factor tree for 11: $11 = 1 \cdot 11$

e) $\frac{22}{110} = \frac{22 \div 22}{110 \div 22} = \boxed{\frac{1}{5}}$

Factor tree for 22: $22 = 1 \cdot 22 = 2 \cdot 11$

- * Write down the smallest number of your fraction.
- * Then think of numbers that multiply together to get that number.
- * Then pick the largest number that will divide into the bigger number of your fraction evenly.
- * Then divide the top and bottom of your fraction by that number.
- * The answer is the simplified form.