

Lesson 3: Simplifying

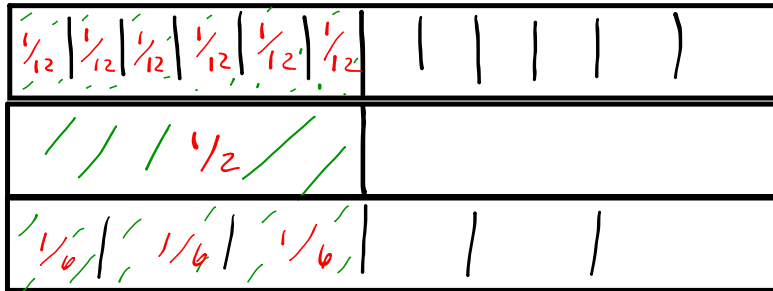
Oct 4th, 2022

Fractions to Lowest Terms Form

Equivalent: Lesson 2

→ equal
but different form

pg 3.2 . Recall Equivalent



Fractions:

(ex $1/2$ → a part w respect to a whole broken up
 $\frac{6}{12}$ } among the equivalent fractions, which one is in lowest terms, that is, irreducible?
 ans: $1/2$

Recall: Simplify:

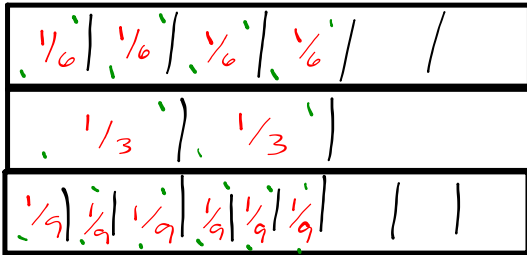
$$\frac{6}{12} \quad \frac{\cancel{6}^2}{\cancel{12}_6^2}$$

$$\frac{3}{6}$$

true but not in lowest terms.

How to know

(use new handout)



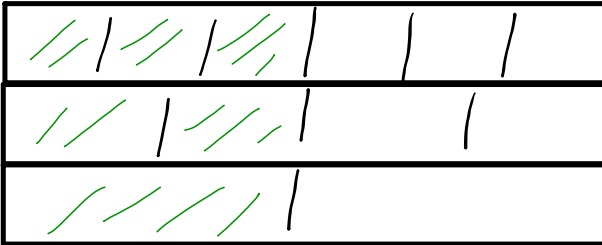
$$\frac{4}{6}$$

$$\frac{2}{3}$$

$$\frac{6}{9}$$

For each group, circle fraction in lowest terms.

← why in lowest terms?



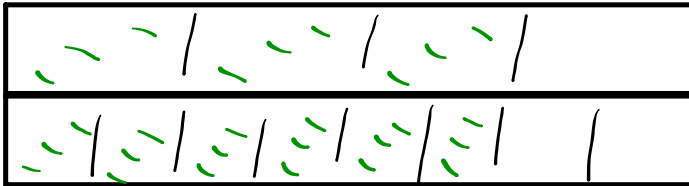
$$\frac{3}{4}$$

$$\frac{2}{4}$$

$$\frac{1}{2}$$

← why not in lowest terms?

- cuz 2 is a divisor/factor of both
- cuz 4 is a multiple of 2.



$$\frac{3}{4}$$

$$\frac{6}{8}$$

← why irreducible?

- cuz 3 is not a divisor/factor of 4
- cuz 4 is not a multiple of 3.

nota bene: a fraction is irreducible if there's a prime # and no multiple of the prime #.

Definition: A Prime Number is a whole number greater than 1 whose only factors are 1 and itself.

What are they?

2 ✓	3 ✓	4 ✗	5 ✓	6 ✗	7 ✓
1 2	1 3	1 4 2 2	1 5	1 6 2 3	1 7
8 ✗	9 ✗	10 ✗	11 ✓	12 ✗	13 ✓
1 8 2 4	1 9 3 3	1 10 2 5	1 11	1 12 2 6 3 4	1 13

Be Familiar w Multiples of Prime #

You do: Write the 1st 10 multiples of prime # 2 - 13

e.x.

2 : 2 / 4 / 6 / 8 / 10 / 12 / 14 / 16 / 18 / 20

3 : 3 / 6 / 9 / 12 / 15 / 18 / 21 / 24 / 27 / 30

5 : 5 / 10 / 15 / 20 / 25 / 30 / 35 / 40 / 45 / 50

7 : 7 / 14 / 21 / 28 / 35 / 42 / 49 / 56 / 63 / 70

11 : 11 / 22 / 33 / 44

13 :

You do
no 1

$\frac{11}{23}$	$\frac{11}{55}$
no - why	yes - why

Question: Determine if the following fractions are in lowest terms. Explain if yes or if no.

a) $\frac{2}{17}$ *yes*

i) $\frac{7}{28}$

b) $\frac{2}{16}$ *no*

j) $\frac{7}{36}$

c) $\frac{5}{36}$ *yes*

k) $\frac{70}{10}$

d) $\frac{5}{60}$ *no*

l) $\frac{11}{17}$

e) $\frac{3}{12}$

m) $\frac{11}{99}$

Special Case: 10

10: 10 / 20 / 30 / 40 / 50 / 60 / 70 / 80 / 90 / 100
 110 120 130 140 150 160 170 180 190 200

nota bene: when the last digits in Fractions are zero you can cross them out.

example:

$$\frac{10}{20} \quad \begin{array}{l} \div 10 \\ \div 10 \end{array}$$

$$\frac{1}{2} \quad \begin{array}{l} \text{true} \\ \text{but} \\ \text{slow} \end{array}$$

ex

$$\frac{10}{20}$$

$$\frac{1}{2}$$

ex

$$\frac{30}{60}$$

$$\frac{3}{6} \quad \begin{array}{l} \div 3 \\ \div 3 \end{array}$$

$$\frac{1}{2}$$

ex

$$\frac{70}{210}$$

$$\frac{7}{21} \quad \begin{array}{l} \div 7 \\ \div 7 \end{array}$$

$$\frac{1}{3}$$

$$\frac{500}{4000}$$

$$\frac{5}{40} \quad \begin{array}{l} \div 5 \\ \div 5 \end{array}$$

$$\frac{1}{8}$$

attention:

$$\frac{10}{100} \quad \begin{array}{l} \div 2 \\ \div 2 \end{array} \quad \text{even}$$

$$\frac{5}{54}$$

multiple of 5

$$\frac{10}{1005} \quad \begin{array}{l} \div 5 \\ \div 5 \end{array}$$

$$\frac{2}{201}$$

Simplify the following fractions to their lowest terms by following the four steps outlined above.

? $\frac{12}{30}$

1. Divisors of the numerator:
factor

2. Divisors of the denominator:

3. The greatest common divisor (GCD) is

4. Divide $\frac{12}{30}$ by the GCD: $\frac{12 \div 6}{30 \div 6} = \frac{2}{5}$

Reduced fraction: $\frac{12}{30} = \frac{2}{5}$

12
 1 2
 2 6
 3 4
 4 3

30
 1 30
 2 15
 3 10
 5 6

long way
 by mistake
 (not wrong)

$\frac{12}{30} \div \frac{6}{6} = \frac{2}{5}$

$\frac{6}{15} \div \frac{3}{3} = \frac{2}{5}$

$\frac{2}{5}$