Virtual Learning

Essential Math 4 Unit 11

Lesson 6: Simplifying Expressions

May 22, 2020

**Essentials Math 4
Lesson 6: May 22, 2020**

Learning Target:
I can simplify number fractions and algebraic fraction.

You will explore the use of multiplication and its relationship to exponents.

<u>Directions:</u>

1. Click through the slides.
2. Watch all videos on slides.
3. Do what each slide asks on a separate sheet of paper.

Bell Work:
May 22, 2020

Fill in the blanks with pairs that will satisfy the equation.

① $y = 2x - 1$

x	0	1	-1		
y					

② $y = x + 4$

x	0		1	-1	
y		0			

Bell Work Key
May 22, 2020

$y = 2x - 1$ (Responses for solution points will vary.)

x	0	1	-1		
y	-1	1	-3		

② $y = x + 4$

x	0	-4	1	-1	
y	4	0	5	3	

Practice Problems: Unit 11   Lesson 6   page 25, # 11-14

Simplify the following fractions. In problems 12–14, fill in parts a and b yourself, based on part c.

(11) (a) $\dfrac{28}{7} =$

(b) $\dfrac{a^8}{a^{10}} =$

(c) $\dfrac{28a^8}{7a^{10}} =$

(12) (a) $\dfrac{20}{15} =$

(b)

(c) $\dfrac{20k^2}{15k^5} =$

(13) (a)

(b)

(c) $\dfrac{18w^7}{45w^3} =$

(14) (a)

(b)

(c) $\dfrac{6c^{10}}{12c^2} =$

Answer Key: After completing the problems, check your answers for page 25 here.

Simplify the following fractions. In problems 12–14, fill in parts a and b yourself, based on part c.

(11)
(a) $\dfrac{28}{7} = 4$

(b) $\dfrac{a^8}{a^{10}} = \dfrac{1}{a^2}$

(c) $\dfrac{28a^8}{7a^{10}} = \dfrac{4}{a^2}$

(12)
(a) $\dfrac{20}{15} = \dfrac{4}{3}$

(b) $\dfrac{k^2}{k^5} = \dfrac{1}{k^3}$

(c) $\dfrac{20k^2}{15k^5} = \dfrac{4}{3k^3}$

(13)
(a) $\dfrac{18}{45} = \dfrac{2}{5}$

(b) $\dfrac{w^7}{w^3} = w^4$

(c) $\dfrac{18w^7}{45w^3} = \dfrac{2w^4}{5}$

(14)
(a) $\dfrac{6}{12} = \dfrac{1}{2}$

(b) $\dfrac{c^{10}}{c^2} = c^8$

(c) $\dfrac{6c^{10}}{12c^2} = \dfrac{c^8}{2}$

Practice Problems:
Unit 11
Lesson 6
page 25,
15-18

Simplify all the expressions. Then match the pairs of equivalent expressions.

(15) $\dfrac{15x^3}{20x} =$

(A) $\dfrac{33x}{44x^2} =$

(16) $\dfrac{3x^{10}}{24x^7} =$

(B) $\dfrac{6x^9}{15x^{10}} =$

(17) $\dfrac{18x^6}{24x^7} =$

(C) $\dfrac{10x^5}{80x^2} =$

(18) $\dfrac{16x}{40x^2} =$

(D) $\dfrac{21x^8}{28x^6} =$

Simplify all the expressions. Then match the pairs of equivalent expressions.

(15) $\dfrac{15x^3}{20x} = \dfrac{3x^2}{4}$ D

(A) $\dfrac{33x}{44x^2} = \dfrac{3}{4x}$ (17)

(16) $\dfrac{3x^{10}}{24x^7} = \dfrac{x^3}{8}$ C

(B) $\dfrac{6x^9}{15x^{10}} = \dfrac{2}{5x}$ (18)

(17) $\dfrac{18x^6}{24x^7} = \dfrac{3}{4x}$ A

(C) $\dfrac{10x^5}{80x^2} = \dfrac{x^3}{8}$ (16)

(18) $\dfrac{16x}{40x^2} = \dfrac{2}{5x}$ B

(D) $\dfrac{21x^8}{28x^6} = \dfrac{3x^2}{4}$ (15)

Unit 11
Lesson 6
page 25

You can simplify expressions with more than one variable the same way:

$$\frac{a^9 b^5 c^2}{a^3 b^5 c^{20}} = \frac{a^9}{a^3} \cdot \frac{b^5}{b^5} \cdot \frac{c^2}{c^{20}}$$

$$= \frac{a^6}{1} \cdot \frac{1}{1} \cdot \frac{1}{c^{18}}$$

$$= \frac{a^6}{c^{18}}$$

Practice Problems: Unit 11   Lesson 6   page 25, # 19-20

Simplify these expressions.

(19) $\dfrac{a^3 c^6}{a^8 c^2} = \dfrac{a^3}{a^8} \cdot \dfrac{c^6}{c^2}$

(20) $\dfrac{m^4 n^{12}}{m^4 n^{10}} =$

Answer Key: After completing the problems, check your answers for page 25 here.

Simplify these expressions.

(19) $\dfrac{a^3 c^6}{a^8 c^2} = \dfrac{a^3}{a^8} \cdot \dfrac{c^6}{c^2}$

$= \dfrac{1}{a^5} \cdot \dfrac{c^4}{1}$

$= \dfrac{c^4}{a^5}$

(20) $\dfrac{m^4 n^{12}}{m^4 n^{10}} = \dfrac{m^4}{m^4} \cdot \dfrac{n^{12}}{n^{10}}$

$= \dfrac{1}{1} \cdot \dfrac{n^2}{1}$

$= n^2$

Practice Problems: Unit 11 Lesson 6 page 25, # 21-22

㉑ $\dfrac{4a^6c^5}{20a^2c^2} = \dfrac{4}{20} \cdot$

㉒ $\dfrac{6m^9n^2}{15mn^3} =$

Answer Key: After completing the problems, check your answers for page 25 here.

21) $\dfrac{4a^6c^5}{20a^2c^2} = \dfrac{4}{20} \cdot \dfrac{a^6}{a^2} \cdot \dfrac{c^5}{c^2}$

$= \dfrac{1}{5} \cdot \dfrac{a^4}{1} \cdot \dfrac{c^3}{1}$

$= \dfrac{a^4c^3}{5}$

22) $\dfrac{6m^9n^2}{15mn^3} = \dfrac{6}{15} \cdot \dfrac{m^9}{m} \cdot \dfrac{n^2}{n^3}$

$= \dfrac{2}{5} \cdot \dfrac{m^8}{1} \cdot \dfrac{1}{n}$
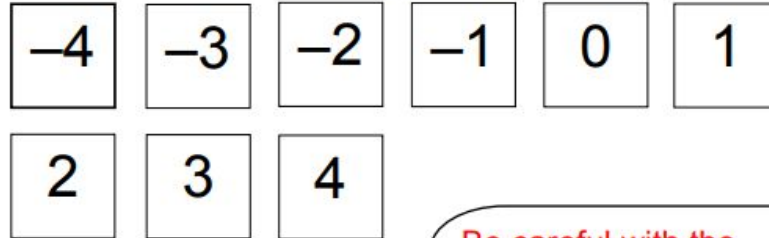
$= \dfrac{2m^8}{5n}$

Fun Stuff:

It all adds up to nothing!!
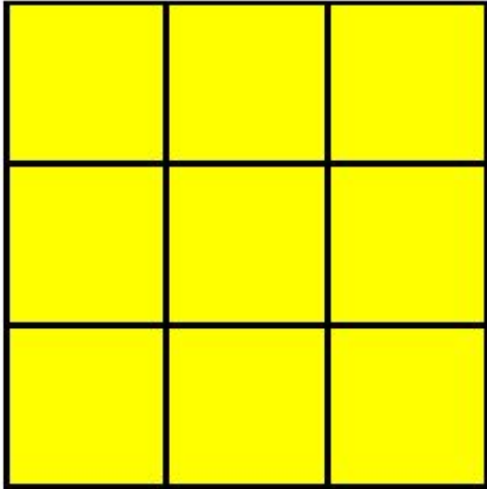
A magic square which adds up to exactly nothing.

Put these numbers into the square above so that each row across, down and diagonally adds up to zero.

−4 −3 −2 −1 0 1

2 3 4

Be careful with the negative numbers.
It's a good idea to cut the numbers out and rearrange them into a square.

Fun Stuff <u>Answer</u>:

Lots of answers to this - here are just four. It seems the 0 must always be in the middle. How many more can you find?

- 3	2	1
4	0	- 4
- 1	- 2	3

- 1	- 2	3
4	0	- 4
- 3	2	1

1	- 4	3
2	0	- 2
- 3	4	- 1

or

3	- 4	1
- 2	0	2
- 1	4	- 3

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