



Virtual Learning

Essential Math 4

Unit 11

Lesson 6: Simplifying Expressions

May 21, 2020



Essential Math 4
Lesson 6: May 21, 2020

Learning Target:

I can simplify number fractions and algebraic fraction.



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

Directions:

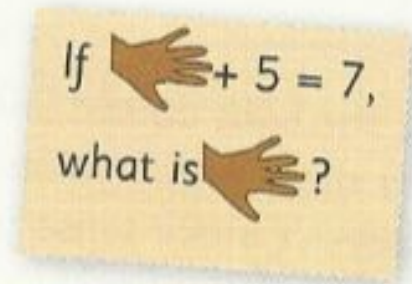
1. Click through the slides.
2. Watch all videos on slides.
3. Do what each slide asks on a separate sheet of paper.

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Bell Work:
May 21, 2020

⑫ Solve for x .

Ⓐ $2x + 5 = 7$



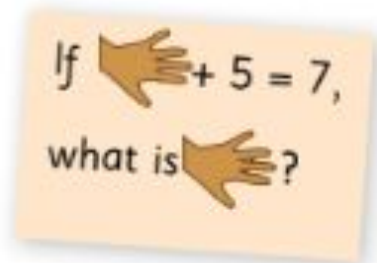
Ⓑ $2x + 5 = 1$

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Bell Work **Key**
May 21, 2020

⑫ Solve for x .

① $2x + 5 = 7$
 $2x = 2$
 $x = 1$



② $2x + 5 = 1$
 $2x = -4$
 $x = -2$

Practice Problems: Unit 11 Lesson 6 page 24, # 1-3

Simplify the following fractions.

$$\textcircled{1} \frac{6}{9} =$$

$$\textcircled{2} \frac{x^5}{x^3} =$$

$$\textcircled{3} \frac{6x^5}{9x^3} =$$

Answer Key: After completing the problems, check your answers for page 24 here.

Simplify the following fractions.

$$\textcircled{1} \quad \frac{6}{9} = \frac{2}{3}$$

$$\textcircled{2} \quad \frac{x^5}{x^3} = x^2$$

$$\textcircled{3} \quad \frac{6x^5}{9x^3} = \frac{2x^2}{3}$$



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Thinking Out Loud

Lena, Michael, and Jay are working on problems 1–3 above.

Lena: Is the answer to problem 3 just the answers to problems 1 and 2 smushed together?

Michael: Smushed together? Doesn't sound very mathematical...

Lena: Well, what did you guys get for problems 1 and 2, anyway?

Jay: I got that $\frac{6}{9}$ is equivalent to $\frac{2}{3}$.

Michael: Yup. And for problem 2, x^5 is on the top, so that means five x 's are multiplied, and x^3 is on the bottom, which means three of those x 's are divided, so in the end, we're left with x^2 on the top and just 1 on the bottom. So that's $\frac{x^2}{1}$.



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Lena: That's the same as just x^2 .

Jay: As for problem 3, "smushing" isn't math... But that's what it looks like—in problems 1 and 2, the tops are multiplied and the bottoms are multiplied...

Lena: Oh, so we're just multiplying! That's how you multiply fractions. So $\frac{6x^5}{9x^3}$ is the same as $\frac{6}{9} \cdot \frac{x^5}{x^3}$.

Jay: Except we re-wrote those fractions as $\frac{2}{3} \cdot x^2$.

Lena: So $\frac{6x^5}{9x^3}$ is equivalent to $\frac{2x^2}{3}$. Or we could write $\frac{2}{3}x^2$, which is the same.

Simplify the following fractions.

④ (a) $\frac{12}{8} =$

(b) $\frac{c^6}{c} =$

(c) $\frac{12c^6}{8c} =$

⑤ (a) $\frac{10}{30} =$

(b) $\frac{m^8}{m^2} =$

(c) $\frac{10m^8}{30m^2} =$

Practice Problems:

Unit 11 Lesson 6

page 24, # 4-5

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Answer Key: After completing the problems, check your answers for page 24 here.

Simplify the following fractions.

④ (a) $\frac{12}{8} = \frac{3}{2}$

(b) $\frac{c^6}{c} = c^5$

(c) $\frac{12c^6}{8c} = \frac{3c^5}{2}$

⑤ (a) $\frac{10}{30} = \frac{1}{3}$

(b) $\frac{m^8}{m^2} = m^6$

(c) $\frac{10m^8}{30m^2} = \frac{m^6}{3}$

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Practice Problems:
Unit 11 Lesson 6
page 24, # 6-7

Simplify the following fractions.

⑥ a $\frac{8}{10} =$

b $\frac{x^4}{x^5} =$

c $\frac{8x^4}{10x^5} =$

⑦ a $\frac{8}{72} =$

b $\frac{b^3}{b^5} =$

c $\frac{8b^3}{72b^5} =$

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Answer Key:
After completing
the problems,
check your
answers for
page 24 here.

$$\textcircled{6} \quad \textcircled{a} \quad \frac{8}{10} = \frac{4}{5}$$

$$\textcircled{b} \quad \frac{x^4}{x^5} = \frac{1}{x}$$

$$\textcircled{c} \quad \frac{8x^4}{10x^5} = \frac{4}{5x}$$

$$\textcircled{7} \quad \textcircled{a} \quad \frac{8}{72} = \frac{1}{9}$$

$$\textcircled{b} \quad \frac{b^3}{b^5} = \frac{1}{b^2}$$

$$\textcircled{c} \quad \frac{8b^3}{72b^5} = \frac{1}{9b^2}$$



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Practice Problems: Unit 11 Lesson 6 page 24, # 8-10

Un-simplify these fractions. Write an equivalent fraction that is *more complicated* than the first fraction.
(Each problem has many correct answers.)

For example, $\frac{3}{2x^2} = \frac{3}{2x^2} \cdot \frac{7x^4}{7x^4} = \frac{21x^4}{14x^6}$

⑧ $\frac{5x}{2} =$

⑨ $\frac{x^3}{4} =$

⑩ $\frac{10}{x^6} =$

Answer Key: After completing the problems, check your answers for page 24 here.

Un-simplify these fractions. Write an equivalent fraction that is *more complicated* than the first fraction.

(Each problem has **many** correct answers.)

For example, $\frac{3}{2x^2} = \frac{3}{2x^2} \cdot \frac{7x^4}{7x^4} = \frac{21x^4}{14x^6}$

⑧ $\frac{5x}{2} = \frac{10x^2}{4x} = \frac{5x^{10}}{2x^9} = \frac{5xy}{2y}$

⑨ $\frac{x^3}{4} = \frac{3x^3}{12} = \frac{5x^4}{20x} = \frac{4a^2x^3}{16a^2}$

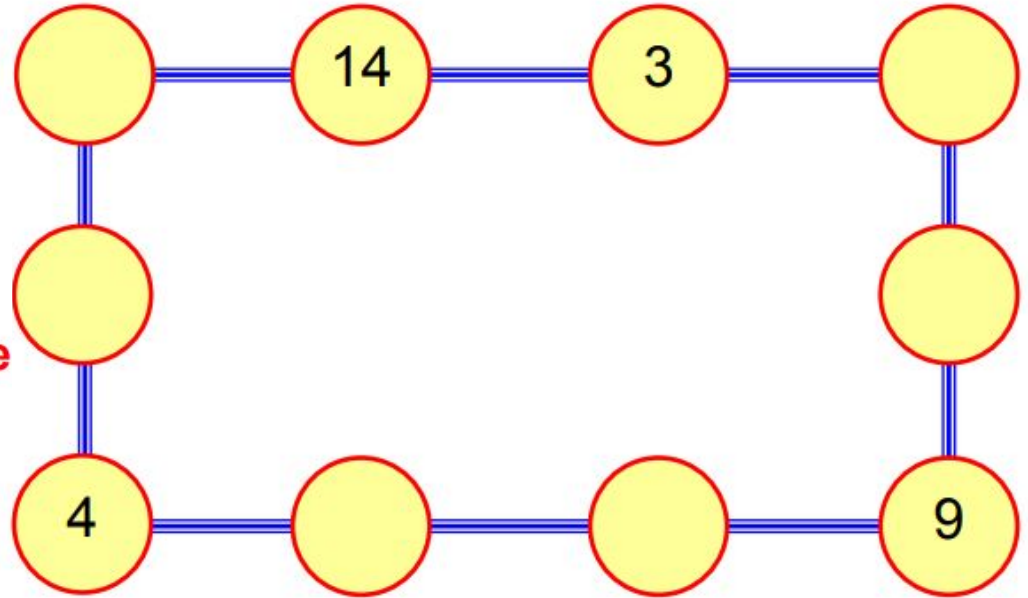
⑩ $\frac{10}{x^6} = \frac{40}{4x^6} = \frac{90x}{9x^7} = \frac{10w}{wx^6}$

(There are many correct responses. Three examples are shown for each.)

Fun Stuff:

Add up to 20

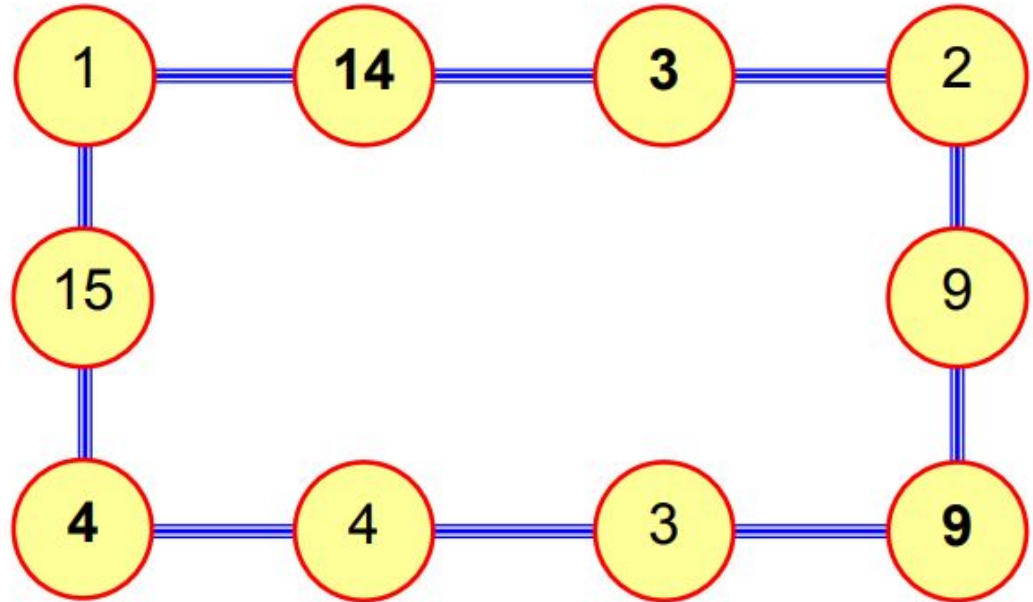
Using any whole numbers as many times as you like make each line of the rectangle add up to 20.



Can you find more than one way to do this?

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Fun Stuff **Answer:**





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