Module 3 - Lesson 18:

Compare and evaluate expressions with parentheses.

CCSS Standard – 5.OA.A.1 / 5.OA.A.2

Let's count the math way. Each finger represents **1 tenth.**

Show me your left hand. Make the following hand signals:

 Now let's continue counting using both hands!!

What larger unit can we make with **10 tenths?**

We can bundle 10 tenths to make 1 one. Let's show 1 one with our hands <u>bundled.</u>

Now let's reverse count the math way by tenths from 10 tenths to 0 tenths.

How can we represent the fraction as a division expression?
Raise your hand when you know?
Next, divide and express the quotient as a whole or mixed number.

$$\frac{34}{2} = \underline{\qquad} \div \underline{\qquad} =$$

$$\frac{72}{3} = \underline{\qquad} \div \underline{\qquad} =$$

$$\frac{76}{4} = \underline{\qquad} \div \underline{\qquad} =$$

$$\frac{81}{5} = \underline{\qquad} \div \underline{\qquad} =$$

$$\frac{90}{6} = \underline{\qquad} \div \underline{\qquad} =$$

Choral Response: Multiply Fractions

What is the product in fraction form?
Raise your hand when you know.

$\dfrac{1}{2} \times \dfrac{1}{3} = $ _____

$\dfrac{1}{2} \times \dfrac{2}{3} = $ _____

$\dfrac{1}{3} \times \dfrac{1}{3} = $ _____

$\dfrac{2}{3} \times \dfrac{1}{3} = $ _____

$\dfrac{3}{4} \times \dfrac{2}{3} = $ _____

$\dfrac{3}{4} \times \dfrac{4}{3} = $ _____

$\dfrac{2}{4} \times \dfrac{4}{5} = $ _____

$\dfrac{7}{4} \times \dfrac{4}{5} = $ _____

Analyze a tape diagram to prepare for writing and evaluating expressions

TURN & TALK:

How would you evaluate this expression.

$$\left(\frac{9}{10} \times \frac{1}{2}\right) + \left(\frac{1}{4} \times \frac{2}{5}\right)$$

What information is shown in the tape diagram below?

How can we use what we see in the tape diagram to solve the problem?

Now that you see the tape diagram matches the expression, would you place parentheses in the expression? Where?

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Write an equation that can be used to find the unknown value for each tape diagram. Then use the equation to find the value of the unknown.

1.

$9 + 12$

x
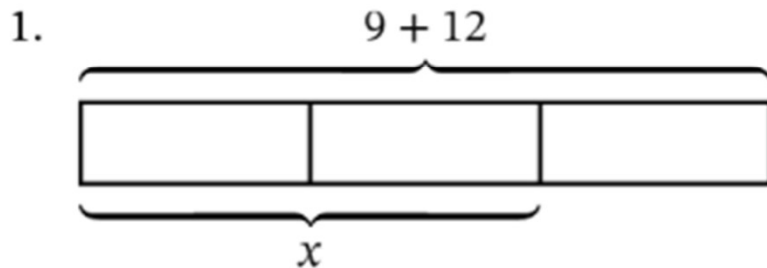
$$X = \frac{2}{3} \times (9 + 12)$$

$$\frac{2}{3} \times 21$$

$$\frac{42}{3} = 14$$

Based on this tape diagram, what do we know?

- *There are 3 equal-sized parts.*
- *The total is 21*
- *The sum of the 3 equal parts is 21*
- *The unknown value x represents two of the equal parts*

What do we need to find?

- *The value of x*
- *2/3 **OF** (9 +12)   or   2/3 x 21*

Would this equation solve the problem? If not, why not?

$$X = \frac{2}{3} \times (9 + 12)$$

Write Equations to Find Unknown Values

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2.

$\frac{1}{3} - \frac{1}{4}$
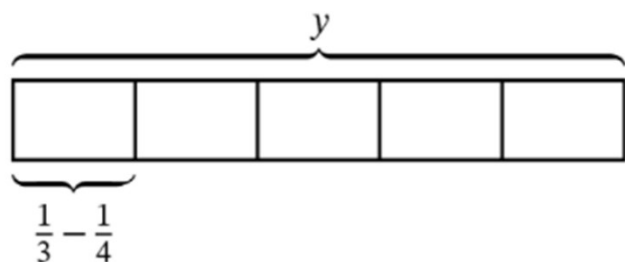
How is this tape diagram different from the previous one?

- *The unknown value y is the total of 5 equal parts.*
- *There is a subtraction expression we need to solve to find the value of one part.*

To find the value of y, what do we need to do first?

- *Find the difference of 1/3 – 1/4 then we can multiply by the answer by 5.*

Would this equation solve the problem? If not, why not?

$$y = \left(\frac{1}{3} - \frac{1}{4} \right) \times 5$$

$$y = \frac{1}{12} \times 5$$

$$y = \frac{5}{12}$$

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Write an expression to represent the statement. Then evaluate the expression.

3. $\frac{3}{5}$ of the sum of $\frac{1}{6}$ and $\frac{2}{3}$

Addition	Subtraction	Multiplication	Division
• Add • All together • Altogether • And • Combined • How many in all • How much • In all • Increased by • Sum • Together • Total	• Minus • Lost • Change • Difference • Fewer • Fewer than • How many are loft • Need to • Reduce • Subtract • Take away • Remain	• By • Double • Every • Factor of • Increased by • Multiplied by • Of • Product • Times • Triple	• As much • Cut up • Each group has • Equal sharing • Half • How many in each • Parts • Per • Percent • Quotient of • Ratio of • Separated • Share something equally

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First we need to find the sum.
Then find $\frac{3}{5}$ of that sum.

$\frac{3}{5}$ of the sum of $\frac{1}{6}$ and $\frac{2}{3}$

Sample A ✓

$$\frac{3}{5} \times \left(\frac{1}{6} + \frac{2}{3}\right) = \frac{3}{5} \times \left(\frac{1}{6} + \frac{4}{6}\right)$$

$$= \frac{3}{5} \times \frac{5}{6}$$

$$\frac{15}{30} \text{ OR } \frac{1}{2}$$

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4. 4 times as much as the difference of $\frac{6}{7}$ and $\frac{1}{2}$

$$4 \times \frac{6}{7} - \frac{1}{2}$$

Would this equation solve the problem? If not, why not?

$$4 \times \left(\frac{6}{7} - \frac{1}{2} \right)$$

$$4 \times \frac{5}{14}$$

$$\frac{20}{14} \quad \text{OR} \quad 1\frac{6}{14}$$

Addition	Subtraction	Multiplication	Division
• Add	• Minus	• By	• As much
• All together	• Lost	• Double	• Cut up
• Altogether	• Chang	• Every	• Each group has
• And	• Difference	• Factor of	• Equal sharing
• Combined	• Fewer	• Increased by	• Half
• How many in all	• Fewer than	• Multiplied by	• How many in each
• How much	• How many are	• Of	• Parts
• In all	loft	• Product	• Per
• Increased by	• Need to	• Times	• Percent
• Plus	• Reduce	• Triple	• Quotient of
• Sum	• Subtract		• Ratio of
• Together	• Take away		• Separated
• Total	• Remain		• Share something equally

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Compare Statements and Expressions

Compare the statements using >, <, or =

Add 2 to the product $\frac{1}{4} \times 16$ $\left(\frac{1}{4} \times 12\right) + 2$

$\frac{16}{4}$ $\frac{12}{4}$

$>$

2 +   4   3   + 2

6   5

Compare Statements and Expressions
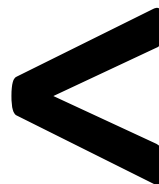
Compare the statements using >, <, or =

The difference of $\frac{8}{9}$ and $\frac{1}{3}$, doubled

$$2 \times \left(\frac{8}{9} - \frac{2}{3} \right)$$

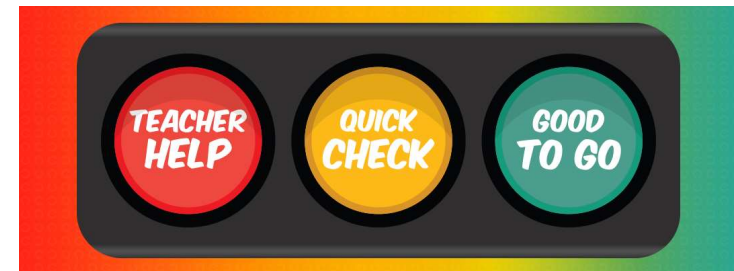$\frac{8}{9} - \frac{1}{3}$

$\frac{8}{9} - \frac{2}{3}$

$\frac{5}{9}$ x 2 $<$ 2 x $\frac{6}{9}$

$\frac{10}{9}$

$\frac{12}{9}$

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1. Write an expression to represent the statement. Then evaluate the expression.

$$\frac{7}{9} \text{ of the difference between } \frac{2}{3} \text{ and } \frac{1}{4}$$

Expression:

Value:

2. Use >, =, or < to compare. Explain how you can compare without evaluating.

$$\frac{2}{3} \times \left(7 \div \frac{1}{9}\right) \underline{\hspace{2cm}} \frac{4}{6} \text{ of the quotient of } \frac{1}{9} \text{ and } 7$$

Exit Ticket – PAGE 169

Small Group Time:
Problem Set Pages 165 - 166

Homework:
Page 117   APPLY BOOK