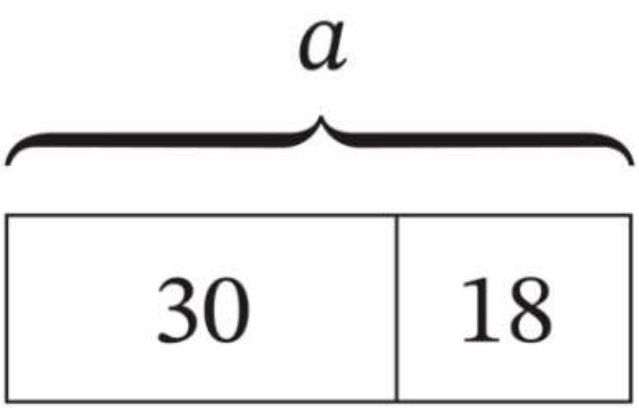
Lesson 17:

Write, interpret, and compare numerical expressions.

CCSS Standard – 5.OA.A.1 / 5.OA.A.2

FLUENCY (10-min) **Whiteboard Exchange: Interpret Tape Diagrams**



What does this tape diagram show?

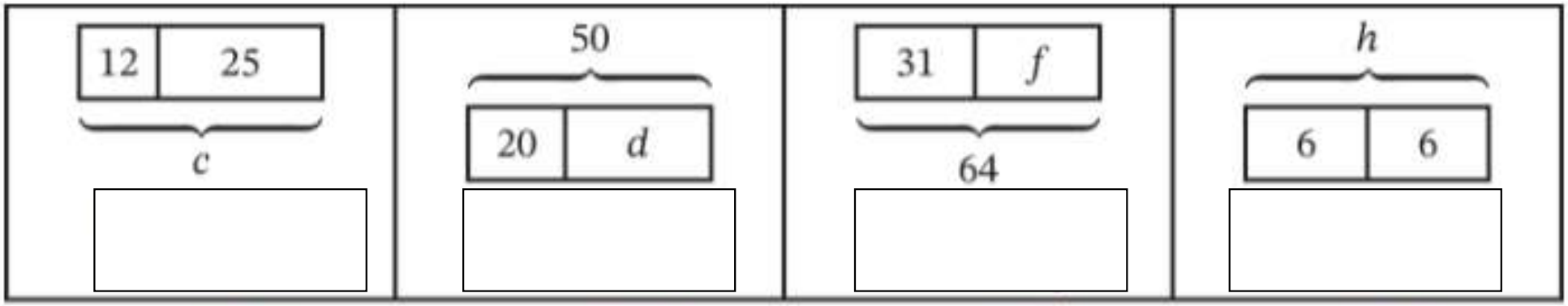
Is the total known or unknown?

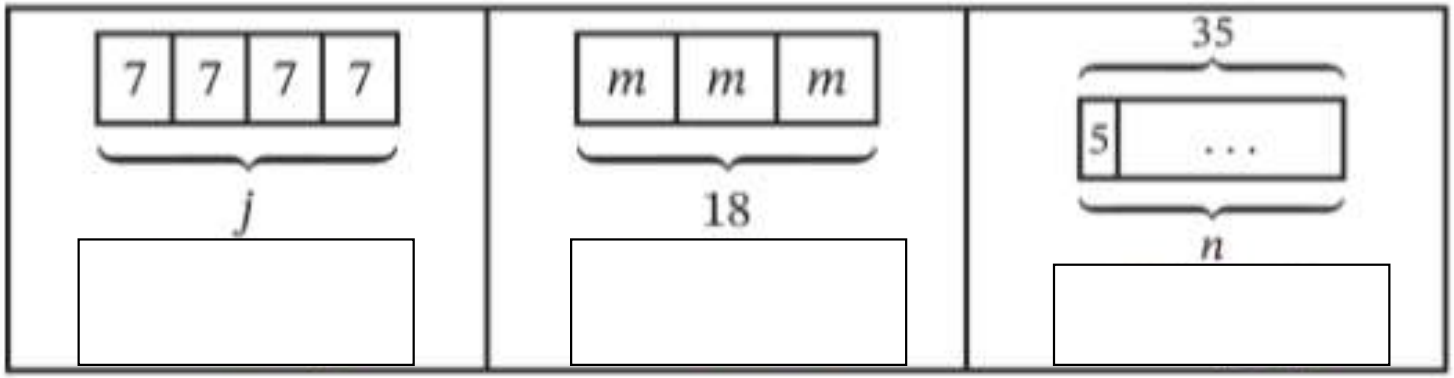
What equation can we write to solve for a?

Write the value of the expression.

FLUENCY (10-min) **Whiteboard Exchange: Interpret Tape Diagrams**

What equation can we write to solve for the letter?
Write the value of the expression.





FLUENCY (10-min) **Whiteboard Exchange: Write and Evaluate Expressions**

Write an expression to represent the statement.
Write the value of the expression.

11 more than 73

The sum of 4 hundredths and 7 hundredths

23 less than 85

The difference of 7 twelfths and 2 twelfths

FLUENCY (10-min) **Whiteboard Exchange: Write and Evaluate Expressions**

Write an expression to represent the statement.
Write the value of the expression.

4 times as much as 20

The product of 2 and 2 fifths

63 divided by 9

The quotient of 48 divided by 8

LAUNCH (5-min) **Take a Stand!**

77	128	Undecided

Toby's Work

$17 + 15 \times 4 = 17 + 60$

$= 77$

Yuna's Work

$17 + 15 \times 4 = 32 \times 4$

$= 128$

If you think Toby's work is correct, go stand near sign "77".
If you think Yuna's work is correct , go stand near sign "128"
If you're undecided, go stand near the sign that reads…."undecided"
In your groups, discuss the reasons you chose that sign.

LAUNCH (5-min) **Take a Stand!**

Toby's Work

$17 + 15 \times 4 = 17 + 60$

$= 77$

Yuna's Work

$17 + 15 \times 4 = 32 \times 4$

$= 128$

We see that Toby and Yuna calculated the values of the expressions differently. When we evaluate an expression, or find its value, it is important that we all get the same answer. Why do you think that might be important?

Today, we will write, interpret, and evaluate expressions!

By the way, Toby's value is correct. :)

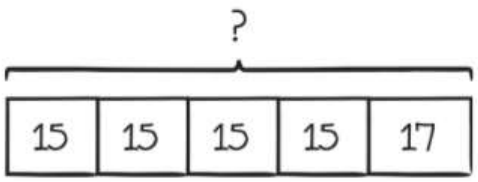
LEARN (35-min) **Represent Statements with Tape Diagrams**

Leo plants 17 daisies and 15 sunflowers.

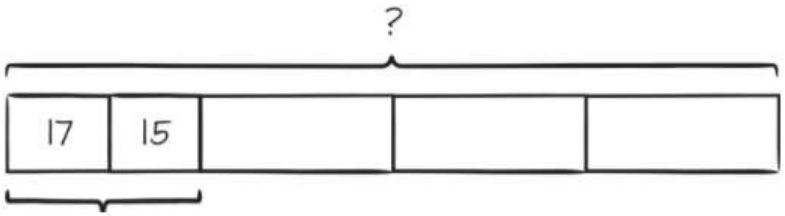
Riley plants 4 times as many flowers as Leo does.

How many flowers does Riley plant?

Toby's Work:



Yuna's Work:



The work we saw earlier shows what Toby and Yuna did to solve this problem. Now we have more information about where their work came from and, seeing their tape diagrams, how they got different answers.

Who's tape diagram represents the problem correctly?

LEARN (35-min) **Represent Statements with Tape Diagrams**

Toby's Work

$17 + 15 \times 4 = 17 + 60$

$= 77$

Yuna's Work

$17 + 15 \times 4 = 32 \times 4$

$= 128$

Leo plants 17 daisies and 15 sunflowers.

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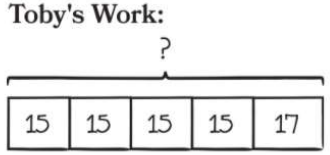
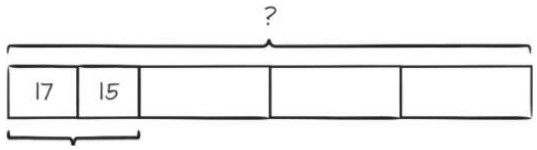
How many flowers does Riley plant?

Toby's Work:



Yuna's Work:



(17 + 15) x 4

32 x 4 = 128

At first it was difficult for us to determine who was correct because we did not have the context to understand why 17 and 15 needed to be added before multiplying. Although Yuna's tape diagram correctly solves the problem, there is an error with her expression. What can we include in the expression 17 + 15 x 4 that makes it clear we need to add first?

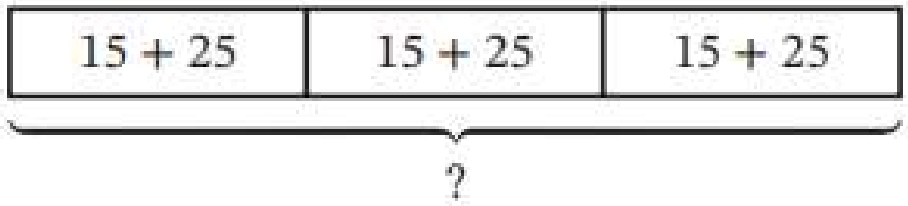
LEARN (35-min) **Represent Statements with Tape Diagrams**

Page 145 LEARN BOOK:

Write an expression to represent the statement. Use the tape diagram to help you.

1. 3 times the sum of 15 and 25

3 x (15 + 25)



The parentheses around 15 + 25 must be included to show that the sum needs to be done before multiply. These are the rules according to Order of Operations. (PEMSAS)

(15 + 25) x 3

LEARN (35-min) **Represent Statements with Tape Diagrams**

Page 145 LEARN BOOK:

Draw a tape diagram and write an expression to represent the statement.

2. The difference between 72 and 48, then divide by 2

(72 - 48) ÷ 2

Turn & Talk: Which tape diagram matches the statement? How do you know?

Diagram A

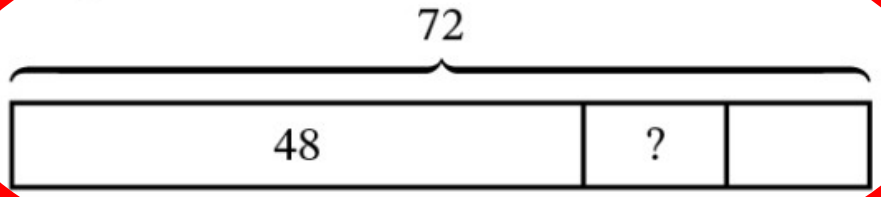
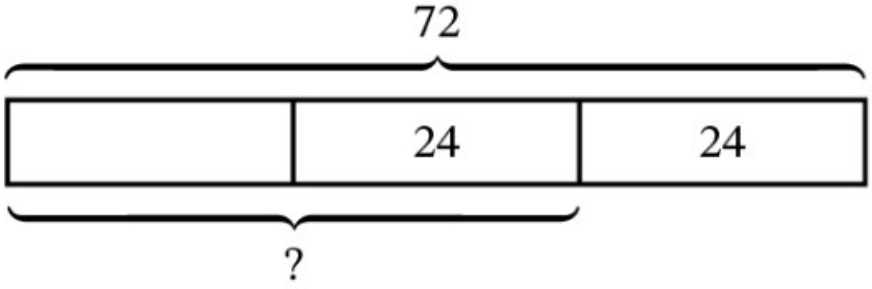


Diagram B

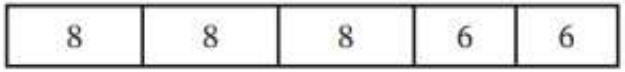


LEARN (35-min) **Write Statements and Equations to Represent a Tape Diagram**

Page 145 LEARN BOOK:

Write a statement and equation to represent the tape diagram.

3.



$8 + 8 + 8 + 6 + 6 = 36$

$(3 \times 8) + (2 \times 6) = 36$

LEARN (35-min) **Write Statements and Equations to Represent a Tape Diagram**

Page 146 LEARN BOOK:

Use >, =, or < to compare the expressions.

4. $22 \times (18 + 31)$ ___<___ $(18 + 31) \times 34$

22 x 49 49 x 34

5. $(2 \times 8) + (10 \times 8)$ ___>___ $(7 \times 8) - (4 \times 8)$

16 + 80 56 - 32

6. 145×71 ___=___ $(100 + 45) \times (70 + 1)$

145 x 70

See how we were able to make the comparison without finishing the multiplication?

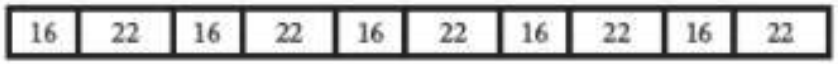
LEARN (35-min) **Match Tape Diagrams, Statements, and Expressions**

GROUP ACTIVITY:

In your groups, you will be given an envelope that has expressions, statements, and tape diagrams each cut into pieces.

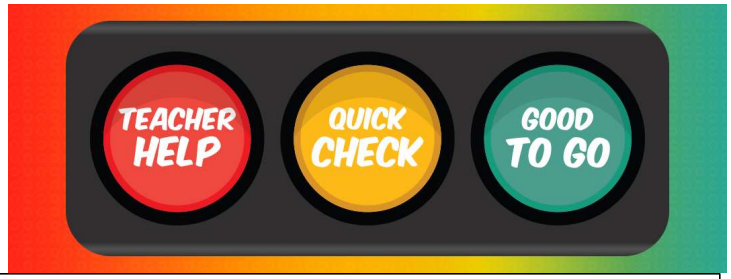
Your task: Arrange the pieces across to match the three different representations.

One is done for you and shown below:

$5 \times (16 + 22)$	5 times as much as the sum of 16 and 22	

When your group has finished, place the pieces BACK into the envelope and work on your Problem Set.

LAND (10-min) **Exit Ticket**



Name _____ Date _____

17

1. Write an expression to represent the statement. Draw a tape diagram if it helps you.

   4 times as much as the sum of 3 and 12

2. Place parentheses to make the equation true.

   $12 \times 3 + 2 - 5 = 55$

3. Use >, =, or < to compare the expressions.

   $(24 \times 3) + (10 \times 3)$ _____ $(47 \times 3) - (15 \times 3)$

Exit Ticket – PAGE 151

Small Group Time:
Problem Set Page 147

Homework:
Page 107 APPLY BOOK