Lesson 13-3

Monday, April 13, 2020 11:00 AM

Name

Lesson 13-3
Write Numerical Expressions

Solve & Share

A baker packages 12 cupcakes to a box. Sean orders 5 boxes for his sister's graduation party and 3.5 boxes for the Variety Show party. Write an expression that shows the calculations you could use to find the number of cupcakes Sean orders.

I can ...
write simple expressions that show calculations with numbers.

Content Standards 5.OA.A.2, 5.OA.A.1
Mathematical Practices MP.2, MP.3, MP.4, MP.8

Model with Math
You can write a numerical expression to model this situation.

(12 cupcakes x 5 boxes) + (12 cupcakes x 3.5 boxes)

(12 x 5) + (12 x 3.5)

Look Back! MP.4 Model with Math Write a different expression to model Sean's order. Evaluate both expressions to check that they are equivalent. How many cupcakes does Sean order?

12 x (5 + 3.5)
12 x 8.5
102

(12 x 5) + (12 x 3.5)
60 + 42
102

12 x 8.5 = 102.0 (2 dp, 1 dp, 1 dp)

12 x 3.5 = 42.0 (2 dp, 1 dp, 1 dp)

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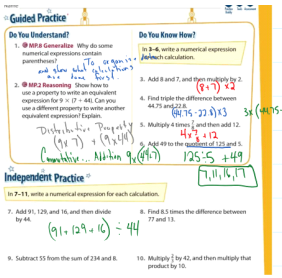

Guided Practice

Do You Understand?

1. MP.8 Generalize Why do some numerical expressions contain parentheses?
2. MP.2 Reasoning Show how to use a property to write an equivalent expression for 9 × (7 + 44). Can you use a different property to write another equivalent expression? Explain.

Do You Know How?

In 3–6, write a numerical expression for each calculation.

3. Add 8 and 7, and then multiply by 2.
4. Find triple the difference between 44.75 and 22.8.
5. Multiply 4 times $\frac{1}{2}$ and then add 12.
6. Add 49 to the quotient of 125 and 5.

Independent Practice

In 7–11, write a numerical expression for each calculation.

7. Add 91, 129, and 16, and then divide by 44.
8. Find 8.5 times the difference between 77 and 13.
9. Subtract 55 from the sum of 234 and 8.
10. Multiply $\frac{1}{2}$ by 42, and then multiply that product by 10.

How Can You Write a Numerical Expression to Record Calculations?

The school auditorium has 546 seats on the main floor and 102 in the balcony. Every seat is filled for all of the Variety Show performances. Write an expression that shows the calculations you could use to determine how many tickets were sold.

A Think about how you would calculate the total number of tickets.

Add 546 + 102 to find the total number of seats.
Then **multiply** by the number of performances, 4.

So, you need to write a numerical expression that represents:

"Find 4 times the sum of 546 and 102."

C Use numbers and symbols to write the numerical expression.

The sum of 546 and 102: 546 + 102

4 times the sum: 4 × (546 + 102)

Remember, parentheses show which calculation to do first.

The expression 4 × (546 + 102) shows the calculations for the number of tickets sold.

Convince Me! MP.2 Reasoning Two students wrote different expressions to find the total number of tickets sold. Is their work correct? Explain.

Martin
(4 × 546) + (4 × 102)

Ashley
4 × 546 + 102

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Name

Guided Practice

Do You Understand?

1. **MP.8 Generalize** Why do some numerical expressions contain parentheses?
To organize and show what calculations are done first.

2. **MP.2 Reasoning** Show how to use a property to write an equivalent expression for $9 \times (7 + 44)$. Can you use a different property to write another equivalent expression? Explain.
Distributive Property
$(9 \times 7) + (9 \times 44)$
Commutative... Addition $9 \times (44 + 7)$

Do You Know How?

In **3–6**, write a numerical expression for each calculation.

3. Add 8 and 7, and then multiply by 2.
$(8+7) \times 2$

4. Find triple the difference between 44.75 and 22.8.
$(44.75 - 22.8) \times 3$ $3 \times (44.75 - 22.8)$

5. Multiply 4 times $\frac{7}{8}$ and then add 12.
$4 \times \frac{7}{8} + 12$

6. Add 49 to the quotient of 125 and 5.
$125 \div 5 + 49$

7, 11, 16, 17

Independent Practice

In **7–11**, write a numerical expression for each calculation.

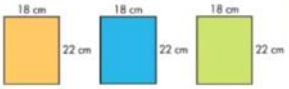
7. Add 91, 129, and 16, and then divide by 44.
$(91 + 129 + 16) \div 44$

8. Find 8.5 times the difference between 77 and 13.

9. Subtract 55 from the sum of 234 and 8.

10. Multiply $\frac{2}{3}$ by 42, and then multiply that product by 10.

11. Write an expression to show the calculations you could use to determine the total area of the rectangles at the right.



$(18 \times 22) \times 3$
$3 \times (18 \times 22)$
$(18 \times 22) + (18 \times 22) + (18 \times 22)$

*For another example, see Set B on page 767.

Math Practices and Problem Solving

12. **MP.4 Model with Math** Ronnie's Rentals charges $25 plus $15 per hour to rent a chain saw. David rented a chain saw for 5 hours. Write an expression to show how you could calculate the total amount David paid.

13. **MP.4 Model with Math** Fourteen students bought their art teacher a new easel for $129 and a set of blank canvases for $46. Sales tax was $10.50. They shared the cost equally. Write an expression to show how you could calculate the amount each student paid.

14. **Vocabulary** When evaluating an expression, why is it important to use the **order of operations**?

15. A storage shed is shaped like a rectangular prism. The width is 8 yards, the height is 4 yards, and the volume is 288 cubic yards. Explain how to find the length of the storage shed.

16. **Higher Order Thinking** Danielle has a third of the amount needed to pay for her choir trip expenses. Does the expression $(77 + 106 + 34) \div 3$ show how you could calculate the amount of money Danielle has? Explain.

Choir Trip Expenses
Train ticket $77
Hotel $106
3 Meals $34
to find

Yes correct. Add the total, dividing by 3 is equal to multiplying by $\frac{1}{3}$ to find key amount for expenses

Common Core Assessment

17. Which expression represents the following calculation?
Subtract 214 from 721 and then divide by 5.

Ⓐ $(721 \div 214) - 5$
Ⓑ $721 - 214 \div 5$
Ⓒ $(721 \div 5) - 214$
Ⓓ $(721 - 214) \div 5$

$(721 - 214) \div 5$
D

18. Last winter, Kofi earned $47.50 shoveling snow and $122 giving ice-skating lessons. During the summer, he earned twice as much by doing yard work.
Which expression shows how you could calculate the amount of money Kofi earned during the summer?

Ⓐ $2 + (47.50 + 122)$
Ⓑ $2 \times 47.50 + 122$
Ⓒ $2 \times (47.50 + 122)$
Ⓓ $2 \times (47.50 \times 122)$