



LESSON 7.3b
All My Xs

Objective

Combining Like Terms

Warm-Up



Simplify each expression using the Order of Operations.

1. $12 + 8 \div 2(10 + 2)$

2. $24 \div (1)(4) + 0 - 14$

3. $10.2 + 4.1(4) - 3.5$

4. $\frac{3}{4} - \frac{4}{5}(2 - 17)$



You can combine like terms to determine prices with discounts and with sales tax.

For example, suppose a new toy that is regularly priced at \$26.99 is on sale for $\frac{3}{4}$ off.

1. Write an expression to represent the price of the toy, p , minus $\frac{3}{4}$ of the price. Then, combine like terms to simplify the expression.

2. Explain what the simplified expression means in terms of the original price of the toy.

A new shirt costs \$18.99. The sales tax is 5%.

3. Write an expression to represent the cost of the shirt, s , plus 5% of the cost. Then, combine like terms to simplify the expression.

4. Explain what the simplified expression means in terms of the original cost of the shirt.

5. Write and simplify an algebraic expression to represent each situation.

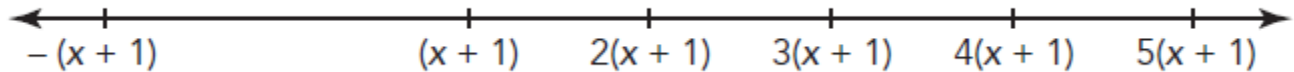
a. An 18% tip is given for a meal. What expression represents the total cost with tip?

b. A pair of shoes is advertised as $\frac{1}{4}$ off. What expression represents the total cost after the discount?

c. A new bike is discounted 35%. What expression represents the total cost?



Sasha was able to combine like terms to determine the distance between $3(x + 1)$ and $(x + 1)$ on the number line. She knew that the distance was $2(x + 1)$.



But when she showed her work using the Distributive Property, she got the wrong answer.

Sasha

$$3(x + 1) - (x + 1)$$

$$3x + 3 - x + 1$$

$$3 + 3x - x + 1$$

$$3 + 2x + 1$$

$$2x + 4 = 2(x + 2)$$



1. Julian said that Sasha made a mistake when subtracting $(x + 1)$. He said that subtracting $(x + 1)$ is the same as adding the opposite of $(x + 1)$.

a. What is the opposite of $(x + 1)$? Write your answer without parentheses.

b. Show Sasha how adding the opposite produces the correct answer.

Simplify each expression. Use the Order of Operations.

2. $30x - 140 - (x - 4)$

3. $10 - 5(-2r - 13) - 7r$

4. $-4x - 5(2x - y) - 3y$

5. $7.6p - 3.2(3.1p - 2.4)$

6. $3\frac{2}{3}p - 1\frac{3}{4}(4p - 2\frac{1}{7})$

**Show You
KNOW**

Business Extras

Katie is starting a limousine rental company. As part of her research, Katie discovers that she must charge a 7% sales tax to her customers in addition to her rental fees.

1. Write an algebraic expression that represents how much tax Katie should collect for any amount of rental fee. Katie also discovers that most limousine rental companies collect a flat gratuity from customers in addition to the rental fee. Katie decides to collect a gratuity of \$35 from her customers.

2. Write an expression that represents the total amount of additional money to be collected for tax and gratuity.

3. Write an expression that represents the total cost of any rental.

4. Use one of your expressions to calculate the amount of tax and gratuity Katie should collect if the rental fee is \$220.

5. Use one of your expressions to calculate the total cost of a rental if the rental fee is \$365.

**LESSON 7.3b**
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Objective

Combining Like Terms**Practice**

Determine the area of the circle, given each measurement. Use 3.14 for π and round to the nearest hundredth.

1. Diameter: 8 in.
2. Radius: 10 in.
3. Radius: 1.5 ft
4. Diameter: 8.8 yd
5. Diameter: $1\frac{3}{4}$ in.
6. Radius: $2\frac{1}{2}$ cm

Determine which pizza is the better buy in each situation.

7. The 10-inch diameter pizza for \$8.99 or the 6-inch diameter pizza for \$5.
8. The large 16-inch diameter pizza for \$12.99 or the \$26 X-large with a radius of 16 in.
9. The 12-inch diameter pizza for \$12.50 or the 20-inch diameter pizza for \$17.50.
10. The 4-inch radius pizza for \$3 or the 8-inch radius pizza for \$14.
11. Two 12-inch diameter pizzas for \$12.98 or one large 14-inch diameter pizza for \$7.99.
12. The 1-inch diameter pizza bite for \$1 or the 10-inch diameter pizza for \$10.

