1. Write an algebraic expression for each verbal expression. Then simplify, indicating the properties used.

(a) six times the difference of 2a and b, increased by 4b

(b) two times the sum of x squared and y squared, increased by three times the sum of x squared and y squared

(c) SALES Althea paid $5.00 each for two bracelets and later sold each for $15.00. She paid $8.00 each for three bracelets and sold each of them for $9.00.

1. Write an expression that represents the profit Althea made.

2. Evaluate the expression. Name the property used in each step.
2. Mr. Ralbovsky is taking the Drama Club on a field trip to see Mozart’s famous opera Don Giovanni. Tickets cost $39 each, and there are 23 students and 2 teachers going on the field trip. Write and evaluate an expression to find the group’s total ticket cost.

3. **SCHOOL SUPPLIES** Kristen purchased two binders that cost $1.25 each, two binders that cost $4.75 each, two packages of paper that cost $1.50 per package, four blue pens that cost $1.15 each, and four pencils that cost $.35 each.

   (a) Write an expression to represent the total cost of supplies before tax.

   (b) What was the total cost of supplies before tax?
KEY
Chapter Word Problems (1-1 – 1-4)

1. Write an algebraic expression for each verbal expression. Then simplify, indicating the properties used.

(a) six times the difference of 2a and b, increased by 4b

\[
6(2a - b) + 4b \quad \text{Original expression} \\
6(2a) - 6(b) + 4b \quad \text{Distributive Property} \\
12a - 6b + 4b \quad \text{Substitution} \\
12a - 2b \quad \text{Associative}
\]

(b) two times the sum of x squared and y squared, increased by three times the sum of x squared and y squared

\[
2(x^2 + y^2) + 3(x^2 + y^2) \quad \text{Original expression} \\
2x^2 + 2y^2 + 3x^2 + 3y^2 \quad \text{Distributive Property} \\
2x^2 + 3x^2 + 2y^2 + 3y^2 \quad \text{Commutative Property} \\
5x^2 + 5y^2 \quad \text{Substitution}
\]

(c) **SALES** Althea paid $5.00 each for two bracelets and later sold each for $15.00. She paid $8.00 each for three bracelets and sold each of them for $9.00.

\[
2(15 - 5) + 3(9 - 8) = 2(10) + 3(1) \quad \text{Substitution} \\
= 2(10) + 3(1) \quad \text{Substitution} \\
= 2(10) + 3(1) \quad \text{Multiplicative Identity} \\
= 2(10) + 3(1) \quad \text{Substitution}
\]
2. Mr. Ralbovsky is taking the Drama Club on a field trip to see Mozart’s famous opera Don Giovanni. Tickets cost $39 each, and there are 23 students and 2 teachers going on the field trip. Write and evaluate an expression using the distributive property to find the group’s total ticket cost.

\[ 39(23 + 2) = 39(23) + 39(2) \]
\[ = 897 + 78 \]
\[ = 975 \]

The group’s total ticket cost is $975.

3. **SCHOOL SUPPLIES** Kristen purchased two binders that cost $1.25 each, two binders that cost $4.75 each, two packages of paper that cost $1.50 per package, four blue pens that cost $1.15 each, and four pencils that cost $.35 each.

a. Write an expression to represent the total cost of supplies before tax.

\[ 2(1.25 + 4.75 + 1.50) + 4(1.15 + 0.35) \]

b. What was the total cost of supplies before tax?

$21.00