

1. COMMUNICATING WITH LETTERS

Many students who have no trouble computing with numbers panic at the sight of letters. If you understand the concepts of a problem in which numbers are given, you simply need to apply the same concepts to letters. The computational processes are exactly the same. Just figure out what you would do if you had numbers and do exactly the same thing with the given letters.

Example:

Express the number of inches in y yards, f feet, and i inches.

Solution:

We must change everything to inches and add. Since a yard contains 36 inches, y yards will contain $36y$ inches. Since a foot contains 12 inches, f feet will contain $12f$ inches. The total number of inches is $36y + 12f + i$.

Example:

Find the number of cents in $2x - 1$ dimes.

Solution:

To change dimes to cents we must multiply by 10. Think that 7 dimes would be 7 times 10 or 70 cents. Therefore the number of cents in $2x - 1$ dimes is $10(2x - 1)$ or $20x - 10$.

Example:

Find the total cost of sending a telegram of w words if the charge is c cents for the first 15 words and d cents for each additional word, if w is greater than 15.

Solution:

To the basic charge of c cents, we must add d for each word over 15. Therefore, we add d for $(w - 15)$ words. The total charge is $c + d(w - 15)$ or $c + dw - 15d$.

Example:

Kevin bought d dozen apples at c cents per apple and had 20 cents left. Represent the number of cents he had before this purchase.

Solution:

In d dozen, there are $12d$ apples. $12d$ apples at c cents each cost $12dc$ cents. Adding this to the 20 cents he has left, we find he started with $12dc + 20$ cents.

Exercise 1

Work out each problem. Circle the letter that appears before your answer.

- Express the number of days in w weeks and w days.
(A) $7w^2$
(B) $8w$
(C) $7w$
(D) $7 + 2w$
(E) w^2
- The charge on the Newport Ferry is D dollars for the car and driver and m cents for each additional passenger. Find the charge, in dollars, for a car containing four people.
(A) $D + .03m$
(B) $D + 3m$
(C) $D + 4m$
(D) $D + 300m$
(E) $D + 400m$
- If g gallons of gasoline cost m dollars, express the cost of r gallons.
(A) $\frac{mr}{g}$
(B) $\frac{rg}{m}$
(C) rmg
(D) $\frac{mg}{r}$
(E) $\frac{m}{rg}$
- How many quarters are equivalent to n nickels and d dimes?
(A) $5n + 10d$
(B) $25n + 50d$
(C) $\frac{n+d}{25}$
(D) $25n + 25d$
(E) $\frac{n+2d}{5}$
- A salesman earns a base salary of \$100 per week plus a 5% commission on all sales over \$500. Find his total earnings in a week in which he sells r dollars worth of merchandise, with r being greater than 500.
(A) $125 + .05r$
(B) $75 + .05r$
(C) $125r$
(D) $100 + .05r$
(E) $100 - .05r$