

6.R.3 Exercises

Concept Check

True/False. Determine whether each statement is true or false. If a statement is false, explain how it can be changed so the statement will be true. (**Note:** There may be more than one acceptable change.)

1. When using formulas, typically it does not matter if capital or lower case letters are used: $A = a$, $C = c$, etc.
2. If the perimeter and length are known, $P = 2l + 2w$ can be used to find the width of a rectangle.
3. Rate of interest is stated as an annual rate in percent form.

Practice

Solve each formula for the indicated variable.

4. $P = a + b + c$; solve for b .
5. $P = 3s$; solve for s .
6. $I = Prt$; solve for t .
7. $A = P(1 + rt)$; solve for r .

Applications

Solve.

8. **Velocity:** If an object is shot upward with an initial velocity v_0 in feet per second, the velocity v in feet per second is given by the formula $v = v_0 - 32t$, where t is time in seconds. (v_0 is read “ v sub zero.” The 0 is called a subscript.) An object projected upward with an initial velocity of 106 feet per second has a velocity of 42 feet per second. How many seconds have passed?
9. **Investments:** The total amount of money A in an account with P dollars invested in it is given by the formula $A = P + Prt$, where r is the rate expressed as a decimal and t is time (one year or part of a year). If \$1000 is invested at 6% interest, find the total amount in the account after 6 months.
10. **Cost:** The total cost C of producing x items can be found by the formula $C = ax + k$, where a is the cost per item and k is the fixed costs (rent, utilities, and so on). Find the total cost of producing 30 items if each costs \$15 and the fixed costs are \$580.
11. **Percentile of a Data Value:** The P^{th} percentile of a particular value in a data set is given by

$$P = \frac{l}{n} \cdot 100$$

where P is the percentile rounded to the nearest whole number, l is the number of values in the data set *less than or equal to* the given value, and n is the number of data values in the sample. For a particular data set, a data value in the 20th percentile has 30 values in the data set less than or equal to it. How many data values are in the sample?