Algebra II

V-3

Inverse and Joint Variation

Translate the following into mathematical equations.

y varies directly as x.

$y = kx$

y varies inversely as x.

$y = \frac{k}{x}$

a varies jointly as *b* and *c*.

$a = kbc$

Solve. (pg. 360)

*1) Suppose *r* varies jointly as *s* and *t* and inversely as the square of *v*. When $t = 3$, and $s = 18$, and $v = 5$, $r = 3.78$. Find *r* when $t = 4$, $s = 12$, and $v = 4$.

$r = \frac{kst}{v^2}$

$3.78 = \frac{k(18)(3)}{5^2}$

$\frac{25}{54}(3.78 = \frac{54k}{25})$

$1.75 = k$

$\frac{7}{4}$

$r = \frac{7st}{4v^2}$

$r = \frac{7(12)(4)}{4(4)^2}$

$r = \frac{21}{4}$

Solve. (pg 361)

1) The frequency of a radio signal varies inversely as the wave length. A signal of frequency 1200 kilohertz (kHz), which might be the frequency of an AM radio station, has wave length 250 m. What frequency has a signal of wave length 400 m?

$F = \frac{k}{\lambda}$

Greek letter lambda, λ, is the symbol used in the actual formula.

$250(1200 = \frac{k}{250})$

$300000 = k$

Notice that the the constant of variation is *c*, the speed of light.

$f = \frac{300000}{\lambda}$

$F = \frac{300000}{400}$

750 kHz

Pg 360
1-10 all
Pg 361
2-10 even
11, 12