Advanced Math

1-7

(Day 1)

Variation and Modeling

Translate the following into mathematical equations.

$=k$ — constant of variation

y <u>varies</u> directly as x.

$$y = kx$$

y varies inversely as x.

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

x varies jointly as y and z.

$$x = kyz$$

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21) The annual simple interest on an investment is directly proportional to the amount invested. By investing $2500 in a certain bond issue, you obtained an interest payment of $187.50 at the end of 1 year. Find a mathematical model that gives the interest I for this bond issue at the end of 1 year in terms of the amount invested P.

$$I = kP \longrightarrow \boxed{I = .075P}$$

$$\frac{187.50}{2500} = \frac{k(2500)}{2500}$$

$$.075 = k$$

$$7.5\%$$

Find a mathematical model for the verbal statement.

39) F varies directly as g and inversely as the square of r.

$$F = \frac{kg}{r^2}$$

Write a sentence using the variation terminology of this section to describe the formula.

45) $A = \frac{1}{2}bh$

The area of a triangle varies jointly as its base and its height.

Find a mathematical model representing the statement. In each case, determine the constant of proportionality.

61) z varies directly as the square of x and inversely as y.
($z = 6$ when $x = 6$ and $y = 4$.)

$$z = \frac{kx^2}{y} \qquad z = \frac{2x^2}{3y}$$

$$6 = \frac{k \cdot 6^2}{4}$$

$$\frac{24}{36} = \frac{36k}{36}$$

$$\frac{2}{3} = k$$

Assignment:
pg. 192
22, 24,
27-30 all,
32-64 even,
65-74 all