121 §1.2 #s 1-4 ALL, 5, 7, 11, 13, 16, 21, 23, 31, 35, 37, 42,

#s 5-40 solve for the specified variable

(5) $I = Prt$ for r.

$Prt = I$

$\frac{Prt}{Pt} = \frac{I}{Pt}$

$\boxed{r = \frac{I}{Pt}}$

(7) $F = \frac{9}{5}C + 32$ for C

$\frac{9}{5}C + 32 = F$

$\frac{9C}{5} + \frac{32}{1}\cdot\frac{5}{5} = \frac{F}{1}\cdot\frac{5}{5}$

$\frac{9C + 160}{LCD} = \frac{5F}{LCD}$

$9C + 160 = 5F$

$9C = 5F - 160$

$\boxed{C = \frac{5F - 160}{9}}$

OR $\frac{5}{9}F - \frac{160}{9}$

OR $\frac{5}{9}(F - 32)$

$\frac{160}{9}$

(11) $Ax + By = C$

$By = -Ax + C$

$\boxed{y = \frac{-Ax + C}{B}}$

OR $-\frac{A}{B}x + \frac{C}{B}$

(13) $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$

$\frac{1}{R}\cdot R_1R_2R_3 = \frac{1}{R_1}\cdot R_1R_2R_3 + \frac{1}{R_2}\cdot R_1R_2R_3 + \frac{1}{R_3}\cdot R_1R_2R_3$

$\frac{R_1R_2R_3}{R} = R_2R_3 + R_1R_3 + R_1R_2$

Not enough room!

(similar to shared work where $R = x$ = unknown)

Here, R_3 is treated as unknown

121 §1.2 *

(13) $\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$ $\quad LCD = RR_1R_2R_3$

$$\left(\frac{1}{R}\right)\left(\frac{R_1R_2R_3}{R_1R_2R_3}\right) = \frac{1}{R_1}\left(\frac{RR_2R_3}{RR_2R_3}\right) + \frac{1}{R_2}\left(\frac{RR_1R_3}{RR_1R_3}\right) + \frac{1}{R_3}\left(\frac{RR_1R_2}{RR_1R_2}\right)$$

$$\frac{R_1R_2R_3}{LCD} = \frac{RR_2R_3 + RR_1R_3 + RR_1R_2}{LCD} = \frac{R_1R_2R_3}{LCD}$$

$$RR_2R_3 + RR_1R_3 + RR_1R_2 = R_1R_2R_3$$

$$R(R_2R_3 + R_1R_3 + R_1R_2) = R_1R_2R_3$$

$$\boxed{R = \frac{R_1R_2R_3}{R_2R_3 + R_1R_3 + R_1R_2}}$$

Beautiful job solving for R!

But we wanted R_3!

→ Solve for R_3! Get all R_3 terms on one side.

$$RR_2R_3 + RR_1R_3 - R_1R_2R_3 = -RR_1R_2$$

$$R_3(RR_2 + RR_1 - R_1R_2) = -RR_1R_2$$ FACTOR out R_3

$$\boxed{R_3 = \frac{-RR_1R_2}{RR_2 + RR_1 - R_1R_2}}$$

Dang Subscripts We're to solve For R_1!

12. §12

(B) Solve for R_1! Start after fractions cleared, since that work is OK.

$$RR_2R_3 + RR_1R_3 + RR_1R_2 = R_1R_2R_3$$
$$-RR_2R_3 \quad -RR_1R_3 \quad -R_1R_2R_3 \quad -RR_2R_3$$

$$RR_1R_3 + RR_1R_2 - R_1R_2R_3 = -RR_2R_3$$

All R_1's on one side

$$R_1(RR_3 + RR_2 - R_2R_3) = -RR_2R_3$$

$$\boxed{R_1 = \frac{-RR_2R_3}{RR_3 + RR_2 - R_2R_3}} \quad \text{OR} \quad \frac{RR_2R_3}{R_2R_3 - RR_3 - RR_2}$$

(16) $S_n = \frac{n}{2}(a_n + a_1)$ for a_1

$$\frac{2S_n}{2} = \frac{n(a_n + a_1)}{2}$$

$$2S_n = na_n + na_1 = 2S_n$$

$$na_1 = 2S_n - na_n$$

$$\boxed{a_1 = \frac{2S_n - na_n}{n}}$$

121 S1.2

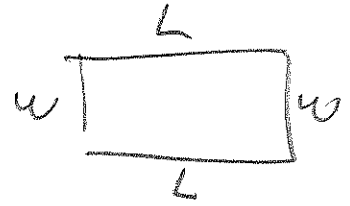
*21–26 Find the formula

(21) Write a formula that express rate R as a function of distance D and time T.

$D = RT = D$

$$R = \frac{D}{T}$$

(23) Express width W of a rectangle as a function of its Perimeter P and length L.



$P = 2W + 2L \Longrightarrow$

$2W = -2L + P \longrightarrow$

$$W = \frac{-2L + P}{2} \quad \text{OR} \quad -L + \frac{P}{2}$$

(31) If temp is 23°F, what is temp in Celsius?

$$C = \frac{5F - 160}{9} = \frac{5(23) - 160}{9} = \frac{115 - 160}{9} = -\frac{45}{9} = -5^{\circ}C$$

121 1.2

(35) Saddle height on bike needs to be 109% of inside leg measurement. If saddle height is 37 inches, what's the inside leg measurement?

Let x = inside leg measurement (inches). Then

Saddle height is 109% of leg measure.

$37 = 109\%$ of x

$37 = \frac{109}{100}$ times x

$37 = 1.09x = 37$

$x = \frac{37}{1.09} \approx 33.944954\overset{OK}{3}$, i.e. $\overset{OK}{43}$,

$x \approx 33.9$ inches
BOOK ANSWER

(Rounding to one digit wasn't specified!)

121 §1.2

(37) $50,600 for a '63 Corvette includes a 10% "buyer's premium." What was the sale price of the car?

Let x = price of car before premium ($)

Amt Paid = Sale Price + 10% of sale price.

$50,600 = x + .1x = 1.1x = 50,600$

$x = \frac{50,600}{1.1} \approx \$46,000.00$

Actually, this is EXACT.

(42) Garden is 3 m longer than it is wide

Let $L = W + 3$, where L = length (in m), W = width (in m)

RECTANGULAR GARDEN

If she adds 2 m to each side, the area is 46 m^2 greater than the old one. We find L & W. Let A = area of old Garden. (m^2).

Then $LW = A$, which says $(W+3)W = A = W^2 + 3W$

$(W+3+2)(W+2) = A + 46$ Area after adding 2 m to a side

$(W+5)(W+2) = A + 46$

$W^2 + 7W + 10 = A + 46 = W^2 + 3W + 46 \longrightarrow$

$4W = 36 \Rightarrow W = 9 \longrightarrow L = 12$

§1.2

KEY aspects to word problem.

LEXICON: Let L = length (in meters), etc.

Equation(s)

Circle Final Answer.

On homework, I'm looking for a paraphrased problem description. When in doubt, quote the whole problem, but it's good to strip away the distractions that add color, but nothing essential

On a TEST, I'm looking for the LEXICON, Algebra moves, and final answer. The "words" in the final answer are actually there, in the LEXICON.

"L = 12" actually says

"The length of the garden was 12 meters," because you packed that meaning into the one symbol, L, at the beginning.