2.6 Number, Geometric, & Uniform Motion Applications

Ex. 1

$x + x + 1 + x + 2 = 48$

$3x + 3 = 48$

$-3 \quad -3$

$\frac{3x}{3} = \frac{45}{3}$

$x = 15$

15, 16, 17

1) Read the problem.
What am I looking for?

2) How do I find that? Do I need a formula?
What information do I need? Not looking at the problem.

3) Reread the problem. Look for the information you needed in step 2.

4) Plug the information from the problem into the formula. Work through the formula.

5) Does my solution answer the question?

Problem in step 3:
What if the problem doesn't give you exactly the information you need?
You might need to do steps 2-4 multiple times.
Ignore information that you don't need.

Ex. 2 RECTANGLE: FIND l & w

$P = 748$ $\quad l = 2w - 1$

$P = 2l + 2w$

$748 = 2(2w-1) + 2w$

$748 = 4w - 2 + 2w$

$748 = 6w - 2$

$+2 \quad +2$

$750 = 6w$

$\frac{750}{6} = \frac{6w}{6}$

$w = 125$

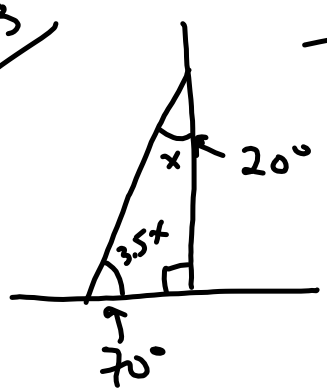
$l = 2w - 1 = 2(125) - 1 = 249$

$P = 2l + 2w$

$748 = 2(249) + 2(125)$

$748 = 498 + 250 = 748$ ✓

Ex. 3



THESE ARE COMPLEMENTARY ANGLES.

$$x + 3.5x = 90$$

$$\frac{4.5x}{4.5} = \frac{90}{4.5}$$

$$x = 20^\circ$$

$$3.5(20) = 70^\circ$$

Ex. 4 $D = RT$

$D_{TOTAL} = D_{ICY} + D_{CLEAR}$

$D = R_{ICY}T_{ICY} + R_{CLEAR}T_{CLEAR}$

$255 = (x)(2) + (x+35)(3)$

$255 = 2x + 3x + 105$

$255 = 5x + 105$

$-105 \quad -105$

$\frac{150}{5} = \frac{5x}{5}$

$30 = x$

$R_{ICY} = 30$ mph

	D =	R =	T =
ICY	2x	x	2 hr
CLEAR	3(x+35)	x + 35	3 hr

255

$255 = 2x + 3(x+35)$

Ex. 5 $D = RT$

	D	= R	T
THERE	$55(x)$	55	$x = 8$
BACK AGAIN	$40(x+3)$	40	$x + 3 = 11$

$55x = 40(x+3)$

$55x = 40x + 120$

$-40x \quad -40x$

$\frac{15x}{15} = \frac{120}{15}$

$x = 8$

$x = 8$

$D = 440$ mi.

2.7 Discount, Investment, & Mixture Applications

Ex. 1

12% DISCOUNT RATE

$6606 DISCOUNT AMOUNT

WHAT IS THE ORIGINAL PRICE?

DISC. AMT. = (DISC. RATE)(ORIG. PRICE)

$$\frac{6606}{.12} = \frac{0.12x}{.12}$$

$\$55,050 = x$

Ex. 2

12% DISCOUNT RATE

$17,600 DISCOUNTED PRICE

WHAT IS THE ORIGINAL PRICE?

DISC. PRICE = ORIG. PRICE − DISC. AMT.

(DISC. RATE)(ORIG. PRICE)

DISC PRICE = ORIG. PRICE − (DISC. RATE)(ORIG. PRICE)

$17,600 = x − 0.12x

$\frac{17,600}{.88} = \frac{0.88x}{.88}$

$20,000 = x

ORIGINAL PRICE

Ex. 3 COMMISSION = (RATE)(TOTAL PRICE)

RATE: 7%

SARAH WANTS $83,700 LEFT AFTER SHE PAYS HER AGENT'S COMMISSION.

P = PRICE

~~TOTAL SELLING~~ PRICE = 83,700 + COMMISSION

PRICE = 83,700 + .07(PRICE)

$1.00P = 83,700 + .07P$

$-.07P \quad -.07P$

$\frac{0.93P}{.93} = \frac{83,700}{.93}$

$P = \$90,000$

Ex. 4

	I	P	R	T
CD	.09x	$800	9%	1
MF	.2x	$1600	10%	1

$$.2x + .09x = 232$$

$$\frac{.29x}{.29} = \frac{232}{.29}$$

$$x = 800$$

$$2x = 1600$$

Ex. 5

$$a_1 v_1 + a_2 v_2 = a_t v_t$$

$$100\left[a(0.04) + (80)(0.01) = (80+a)(0.02)\right]$$

$$4a + 80 = 160 + 2a$$
$$-2a \quad -80 \quad -80 \quad -2a$$
$$\frac{2a}{2} = \frac{80}{2}$$
$$a = 40 \text{ gal}$$

	VALUE PERCENTAGE	TOTAL AMOUNT	VALUE AMOUNT
ING 1	4%	x	$4x$
ING 2	1%	80	.80
RESULT	2%	$x + 80$	$2x + 160$