① Solutions / Alloy Problem

kg	copper
x	25%
+ y	65%
100	57%

20kg 25% alloy
80kg 65% alloy

$-25(x + y = 100)$

$.25x + .65y = .57(100)$

$25x + 65y = 5700$

$-25x - 25y = -2500$

$40y = 3200$

$\frac{40y}{40} = \frac{3200}{40}$

$y = 80$

$x + 80 = 100$

$-80 \quad -80$

$x = 20$

(7)

	L	acid
20	x	30%
10	y	60%
	30	40%

$-30(x + y = 30)$

$30x + 60y = 40(30)$

$30x + 60y = 1200$

$-30x - 30y = -900$

$30y = 300$

$y = 10$

$x + 10 = 30$

$-10 \quad -10$

$x = 20$

(2)

Expenses: $y = 2200 + 35x$

Income: $y = 75x$

$$75x = 2200 + 35x$$
$$-35x \qquad -35x$$
$$\frac{40x}{40} = \frac{2200}{40}$$
$$x = 55 \text{ bikes}$$

④ Strain A $8000 - 2000x = y$

Strain B $3000 - 1000x = y$

$8000 - 2000x = 3000 - 1000x$

$+1000x \qquad +1000x$

$8000 - 1000x = 3000$

$-8000 \qquad -8000$

$\frac{-1000x}{-1000} = \frac{-5000}{-1000}$

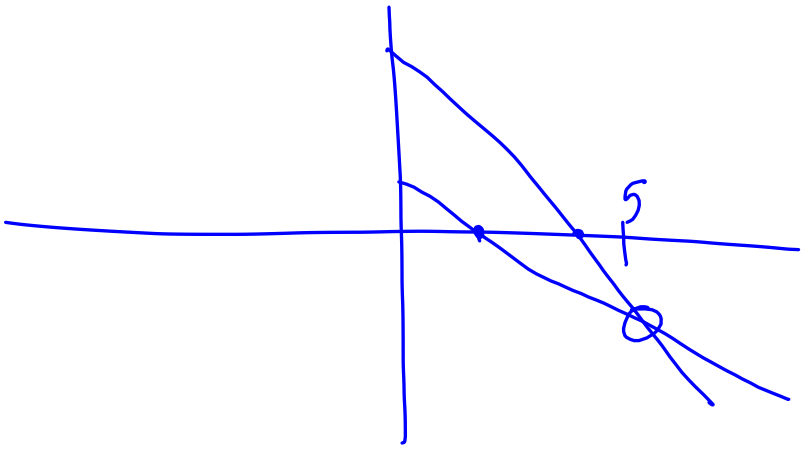
$x = 5$ hrs.

$(5, -2000)$

$3000 - 1000(5) = y$

$3000 - 5000 = y$

$-2000 = y$



⑤ x = traveler's speed 3 ft/s

y = speed of walkway 2 ft/s.

$$\begin{array}{rcl} x - y & = & 1 \\ x + y & = & 5 \end{array}$$

$$\frac{2x}{2} = \frac{6}{2}$$

$x = 3$ $\qquad 3 + y = 5$

$y = 2$

③ $-3(x+y=1300)$

$9x+3y=7500$

$-3x-3y=-3900$

$.09x+.03y=75$

$\frac{6x}{6}=\frac{3600}{6}$

$x=\$600$ 9% fund

$y=\$700$ 3% fund

$600+y=1300$

$-600 \quad -600$

$y=700$

④ Strain A $8000 - 2000x = y$

Strain B $3000 - 1000x = y$

$x = 3$

$8000 - 2000x = 0$
$-8000 \quad -8000$

$\frac{-2000x}{-2000} = \frac{-8000}{-2000}$ $x = 4$

$8000 - 2000x = 3000 - 1000x$
$+2000x \qquad +2000x$

$8000 = 3000 + 1000x$
$-3000 \quad -3000$

$\frac{5000}{1000} = \frac{1000x}{1000}$

$5 = x$

$(5, -2000)$

$3000 - 1000(5) = y$
$3000 - 5000 = y$
$-2000 = y$

⑤

against 1 ft/s

with 5 ft/s

x = traveler's speed 3 ft/s

y = walkway speed 2 ft/s

$y = 2$

$3 + y = 5$

$$x + y = 5$$
$$x - y = 1$$

$$\frac{2x}{2} = \frac{6}{2}$$

$$x = 3$$

⑥

w/ 450 mph

a/ 410 mph

$$\begin{array}{r} x + y = 450 \\ x - y = 410 \\ \hline 2x = 860 \end{array}$$

$$\frac{2x}{2} = \frac{860}{2}$$

$x = 430$ mph plane

$430 + y = 450$

$y = 20$ mph wind