

Why is a plowed field...

① $C = \text{cashews}$ $P = \text{peanuts}$

	amt	\$	total
CASHews	C	15	15C
PEANUs	P	10	10P
MIX	20	12	240

③ $X = \text{50/kg}$ $Y = \text{4150/kg}$

	amt	\$	total
CASHews	X	4	4X
PEANUs	Y	450	450Y
MIX	3	5	15

(15/3=5)

5 (C+P=20) $C+12=20$

15C+10P=240 $C=8$

-15C-15P=-300

-5P=-40

P=12

-45(X+Y)=3

4X+4.5Y=15

-4.5X-4.5Y=-13.5

1.5X=1.5

X=1

Need to mix 1kg of peans and 8 kg of cashews.

Need 1 kg of 50 candy 1 kg of 4150 candy.

② A=10ffee a b=cffee b

	amt	\$	total
ffee A	a	9	9a
ffee B	b	10	10b
MIX	150	8	1200

	amt	\$	total
raisins	r	5	5r
peanuts	10	380	38
MIX	r+10	4	5r+38

-10(a+b=150) $100+b=150$

9a+10b=1200 $b=50$

-10a-10b=-900

9a=300

a=100

4(r+10)=5r+38

4r+40=5r+38

2=5r

Need to mix 100 kg of peans and 8 kg of cashews.

Need to mix 2kg of raisins

⑤ p = ground part

	Amount #	total
g.o.b.	8	4.75
g.p.	p	5.50
Mix	8+p	5.10

$$5.10(8+p) = 38 + 5.5p$$

$$40.8 + 5.10p = 38 + 5.5p$$

$$2.8 = .40p$$

$$7 = p$$

Need 7 kg of ground part.

⑦ e = embossed cards

	Amount #	total
e	e	.10e
r	r	.40r
MIX	e+r	.50

$$(\uparrow 25/14 = .50)$$

r = regular cards

$$-.4(e+r) = .25$$

$$.10e + .4r = 14$$

$$-.4e - .4r = -14$$

$$.25e = 4$$

$$e = 16$$

⑥ b = bluegrass seed

	Amount #	total
b	b	7.00b
r	200	6.25(200)
Mix	b+200	7.10b + 125

$$10e + r = 25$$

$$r = 9$$

Should mix 16 embossed cards & 9 regular cards

$$7(16+200) = 7.10b + 125$$

$$7(16+1400) = 7.10b + 125$$

$$150 = .10b$$

$$250 = b$$

Need 250 kg of bluegrass seed.

#10

What happened to the lamp. Programmer?

① X = water

#	0%	amount	%	total
#1	0%	X	0	0
#2	40%	8+	.4	3.2
MIX	10%	X+8	.1	3.2

③ X = water

#	0%	amount	%	total
#1	0%	X	0	0
#2	50%	15D	.5	7.5
MIX	20%	X+15D	.2	7.5

$1(x+8) = 3.2$

$.1x + .8 = 3.2$

$.1x = 2.4$

$x = 24$

Need 24 liters of water.

$.2(x+15D) = 7.5$

$.2x + 3D = 7.5$

$.2x = 4.5$

$x = 22.5$

Need 22.5g of water.

② X = water

#	0%	amount	%	total
#1	0%	X	0	0
#2	70%	2D	.7	14+
MIX	50%	X+2D	.5	14

④ X = water

#	0%	amount	%	total
#1	0%	X	0	0
#2	90%	12+	.9	10.8+
MIX	25%	X+12	.25	10.8

$.5(x+2D) = 14$

$.5x + 1D = 14$

$.5x = 4$

$x = 8$

Need 8 liters of water.

$.25(x+12) = 10.8$

$.25x + 3 = 10.8$

$.25x = 7.8$

$x = 31.2$

Need 31.2g of water.

⑤ X = pure alcohol

#	100%	amount	%	total
#1	100%	X	1	X
#2	70%	5D	.7	3.5+
MIX	80%	X+5D	.8	3.5

$.8(x+5D) = x+3.5$

$.8x + 4D = x + 3.5$

$5 = .2x$

$x = 25$

Need 25 liters of alcohol.

⑩ $X = \text{pure salt}$

	amt	g%	total
#1 100%	X	1	X
#2 10%	20	.1	2
MIX 5%	$X+20$.25	$X+2$

$$.25(X+20) = X+2$$

$$.25X + 5 = X+2$$

$$3 = .75X$$

$$4 = X$$

Need 4 kg pure salt

⑦ $X = \text{pure acid}$

#	amt	%	total
#1 100%	X	1	X
#2 5%	10	.05	$.3$
MIX 4%	$X+10$.4	$X+.3$

$$.4(X+10) = X+.3$$

$$.4X + 4 = X+.3$$

$$3.7 = .6X$$

$$3.5 = X$$

Need 3.5 ml of pure acid

Mixture Problems

S = salt

g = gold S = silver

Amount \$ total

g	g	12	12g	
S	S	.80	.8S	+
Mix	20	5	100	

(3)

Amount % total

Salt	S	1	S	+
25%	400	.25	100	
Mix	8+400	.40	100+S	

$-80(g+s=20)$ $7.5+s=20$

$12g+.80S=100$ $S=12.5$

$-.80g-.80S=-110$

$11.2g=84$

$g=7.5$

$.40(5+400)=100+S$
 $40S+100=100+S$

$100=100+S$

$100=S$

Need 100g of salt.

Need 7.5g of gold and 2.5g of silver.

(4) X = water

Amount % total

water	X	0	6	+
80%	30	.8	24	
Mix	X+30	.60	24	

(2) 0 = orange juice

Amount \$ total

O	0	1.80	1.800	
L	2.4	1.15	2.76	+
Mix	0+2.4	1.84	1.800+2.76	

$.6(X+30)=24$

$.6X+18=24$

$.6X=6$

$X=10$

$1.54(0+2.4)=1.800+2.76$

$1.540+3.696=1.800+2.76$

$.936=2.160$

$3.6=0$

Need 10 L of water

Need 3.0 L of orange juice

③ d = dimes 2d = quarters

	AMOUNT	\$	TOTAL
d	d	.10	.10d
q	2d	.25	.50d
MIX	3d		q

$.10d + .50d = 9$

$100d = 9$

$d = 15$

④ C = common stone

	AMOUNT	\$	TOTAL
C	C	.10	.10C
g	g	.15	.15g
MIX	300	.13	39g

$-.10(C+g) = 300$

$.10C + .15g = 39$

$-.10C - .10g = -30$

$.05g = 9$

$g = 180$

$C + 180 = 300$

HE HAS 15 dimes & 30 quarters

Need 180 veg plants
& 120 veg stone.

⑤ y = yellow p = pink

	AMOUNT	\$	TOTAL
y	y	.10	.10y
p	2(y+p)	.20	.20p
MIX	3y+2p	.25	.5y + .5p

Need 100 yellow bulbs,
105 pink bulbs, and
410 red bulbs.

$p = y + 5$

$.10y + .20p + .5y + .5p = 133.50$

$.60y + .7p = 133.50$

$.60y + .7(y+5) = 133.50$

$1.30y + 3.5 = 133.50$

$1.30y = 130$

$y = 100$

S = sum of rows, C = column sums

	amount	A	total
S	S +	2.5D	2.5DS
C	C	3.75	3.75C
MIX	50	3.35	107.50

(10) $X = 10\%$, $Y = 30\%$

	amount	Y%	total
X	X	.10	.10X
Y	Y	.30	.30Y
MIX	92.5	.40	9

$-2.5D(S+C = 50)$ $S+34=50$

$2.5DS + 3.75C = 107.50$ $S = 16$

$-2.5DS - 2.5DC = -12.5$ $-10(X+Y=40)$

$1.25C = 42.50$

$C = 34$

$-.10X + .30Y = 9$

$.20X = 5$

$Y = 25$

$X + 25 = 40$

$X = 15$

Need 16 lb sumatra, 34 lb of columbian.

g) $n = \text{no. of mix}$, $c = \text{customers}$

	amount	A	total
n	n +	6.50	6.50n
c	c	4.50	4.50c
MIX	100	5.10	306

Need 15 liters of the 10% solution and 25 liters of the 30% solution.

$4.50(n+c = 100)$ $18+c=100$

$6.50n + 4.50c = 306$ $C = 42$

$-4.50n - 4.50c = -270$

$2n = 30$

$n = 15$

Need 18 lb. no. of mix; 42 lb. customers.

Kuta Software Problems

1) $x = 90\%$ sand in mix

	amt	%	total
35%	2	.35	.7
15%	10	.15	.9
MIX	8	X	1.0

2) $x = 90\%$ peanuts in mix

	amt	%	total
55%	9	.55	4.95
40%	10	.40	2.4
MIX	15	X	7.35

$$8x = 1.0$$

$$x = .2$$

$$15x = 7.35$$

$$x = .49$$

Sand content is 20%

Mix is 49% peanuts

3) $x =$ concentration of mix

	amt	%	total
2%	5	.02	.10
10%	11	.00	1.20
MIX	10	X	7.30

4) $x =$ cost/lb. of mix

	amt	I.C.	T.C.	total
	12	19		228
	4		11	44
MIX	10	X		272

$$10x = 7.30$$

$$x = .40$$

$$10x = 272$$

$$x = 17$$

Average is 40% alcohol

Mix will cost \$17/lb.

2) $x = 90\%$ juice in Brand A

	amt	%	total
A	9	X	9x
B	8	.48	3.84
MIX	17	.30	5.1

$$9x + 3.84 = 5.1$$

$$9x = 1.26$$

$$x = .14$$

There is 14% juice in Brand A.

⑥ $X = \text{amt } 45\% \text{ nickel}$

	amt	%	total
45%	$X +$	45	$.45X +$
pure	$U +$	100	$+ U$
MIX	$X+U$	78	$.45X+U$

$$.78(X+U) = .45X+U$$

$$.78X + 4.08 = .45X + U$$

$$.33X = 1.32$$

$$X = 4$$

⑦ $X = 90 \text{ sugar in 1st soln}$

	amt	%	total
1st	9	X	$9X +$
2nd	$U +$	90	$5.4 +$
MIX	15	.81	12.4

$$9X + 5.4 = 12.4$$

$$9X = 7.0$$

$$X = .8$$

More 4lb of 45% nickel

⑧ $X = \text{amt } 45\% \text{ sand}$

	amt	%	total
45%	$X +$	45	$.45X +$
15%	1	.15	$.15 +$
MIX	$X+1$.35	$.45X+.15$

$$.35(X+1) = .45X + .15$$

$$.35X + .35 = .45X + .15$$

$$.20 = .1X$$

$$2 = X$$

⑨ $X = 1\text{st metal}$

	amt	%	total
X 100%	X	.100	$.10X +$
Y 40%	$Y +$.40	$.4Y +$
MIX 5%	12.4	.50	6.2

$$-.4(X+Y) = 12.4$$

$$.4X + .4Y = 12.4$$

$$-.4X - .4Y = -12.4$$

$$.2X = 1.24$$

$$X = 6.2$$

$$6.2 + Y = 12.4$$

$$Y = 6.2$$

Need 2 lbs of soil for 45% sand

87% sugar in 1st solution

Need 6.2 lb. of both metals.

1) $X = \text{Brand A}$

$Y = \text{Brand B}$

	amt	9%	4.75%
A	X	.35	.35X
B	Y	.25	.25Y
Mix	21	.19	6.09

$$-.25(X+Y=21)$$

$$.35X + .25Y = 6.09$$

$$8.4 + Y = 21$$

$$-.25X - .25Y = -5.25$$

$$Y = 12.6$$

$$.1X = .84$$

$$X = 8.4$$

Need 8.4 oz. of Brand A and
12.6 oz of Brand B.