

# Mix & Invest

Objective - To solve investment and mixture problems.

## Investment Problem

Macy has \$4000 in stocks paying 12% interest and bonds paying 8% interest. If she earns \$432 in one year, how much was invested in stocks?

	Investment	% Interest	Total Interest
Stocks	x <b>2800</b>	0.12	0.12x
Bonds	4000 - x	0.08	0.08(4000 - x)
	4000		432

$$0.12x + 0.08x(4000 - x) = 432$$

$$x = \$2800$$

## Mixture Problem #1

A 12 pound mixture of peanuts and cashews sells for \$6.50/lb. If peanuts sell for \$3 per pound and cashews sell for \$8 per pound, how many pounds of peanuts are in the mix?

	# pounds	Price/lb.	Total Price
Peanuts	x	3	3x
+ Cashews	12 - x	8	8(12 - x)
= Mixture	12	6.5	78

$$3x + 8(12 - x) = 78$$

$$x = 3.6$$

3.6 lbs. peanuts &  
8.4 lbs. cashews

## Mixture Problem #2

A 10% acid solution is mixed with a 60% acid solution to produce 120 liters of a solution that is 40% acid. How much of each solution was used to create the mixture?

	Solution	% Acid	Total Acid
10% Sol.	x	0.10	0.10x
+ 60% Sol.	120 - x	0.60	0.60(120 - x)
= 40% Mix	120	0.40	48

$$0.10x + 0.60(120 - x) = 48$$

$$x = 16$$

16 L 10% Sol.  
&  
104 L 60% Sol.

## Mixture Problem #3

Mitch holds a beaker that contains 40 Liters of a solution that is 20% salt. How much water must be added to make the solution only 8% salt?

	Solution	% Salt	Total Salt
20% Sol.	40	0.20	8
+ Water	x	0	0
= 8% Mix	x + 40	0.08	0.08(x + 40)

$$8 + 0 = 0.08(x + 40)$$

$$8 = 0.08x + 3.2$$

$$4.8 = 0.08x$$

$$60 = x$$

60 L of Water

## Mixture Problem #4

A painter has 50 gallons of paint that is 5% thinner. His mixture needs to be 20% thinner. How much paint thinner should be added to the mix?

	Paint	% Thinner	Total Thinner
5% Thinner	50	0.05	2.5
+ Thinner	x	1.00	x
= 20% Thinner	x + 50	0.20	0.2(x + 50)

$$2.5 + x = 0.2(x + 50)$$

$$2.5 + x = 0.2x + 10$$

$$0.8x = 7.5$$

$$x = 9.375$$

9.375 Gallons of Thinner

## Mixture Problem #5

A solution that is 20% alcohol is to be mixed with a solution that is 60% alcohol to obtain 80 Liters of a solution that is 30% alcohol. How much of each should be used?

	Solution	% Alcohol	Total Alcohol
20% Sol.	x	0.20	0.20x
+ 60% Sol.	80 - x	0.60	0.60(80 - x)
= 30% Mix	80	0.30	24

$$0.20x + 0.60(80 - x) = 24$$

$$x = 60$$

60 L 20% Sol.  
&  
20 L 60% Sol.