

* Let x be the bigger number. * Let y be smaller number.

$$2(x + y) = 36 \quad (A)$$

$$x - 2y = 9 \quad (B)$$

$$(A) \times 2: 2x + 2y = 72$$

$$(A) + (B) \quad \frac{3x}{3} = \frac{81}{3}$$

$$x = 27$$

Sub $x=27$ into (B)

$$(B) \quad 27 - 2y = 9$$

$$-2y = 9 - 27$$

$$\frac{-2y}{-2} = \frac{-18}{-2}$$

$$y = 9$$

\therefore The bigger number is 27 and the smaller number is 9.

Example 8 - Try it yourself! HW

A farmer has some sheep and some hens. If he counts the heads, they are 16. If he counts the legs, they are 46. How many sheep does he have? How many hens does he have?

* Let x represents number of sheep. (4 legs)

* Let y represents number of hens. (2 legs)

$$x + y = 16 \quad (A)$$

$$4x + 2y = 46 \quad (B)$$

\therefore There are 7 sheep and 9 hens.

$$(A) \times 2: 2x + 2y = 32$$

$$(B) - 2(A): \frac{2x}{2} = \frac{14}{2}$$

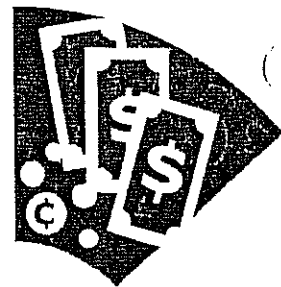
$$\therefore x = 7$$

Sub $x=7$ into (A)

$$7 + y = 16,$$

$$y = 9$$

HW for Feb 26



1. For the following problems, determine your variables, the two initial equations and the method you would use to solve. You do not need to solve the problem.

- Ann has \$300 dollars made up of \$5 and \$10 bills. If there are 39 bills in all, how many of each type of bill are there?
- Four times the mass of a baseball is 16g less the mass of a basketball. The sum of their masses is 756g. Find both masses.
- A parking meter contained 78 coins made up of dimes and nickels. The total value of the coins was \$5.20. How many dimes does it contain?
- Hans had some \$2 bills and \$5 bills which had a total value of \$81. If he replaced the \$2 bills with the same number of 5s, and replaced the \$5 bills with the same number of 10s, he would have \$175. How many \$2 bills does he have?



- In one month, a company flew round trip twice from London, England to Rome, Italy. The next month the executive flew one-way to Quebec city, which was 690km farther than all the trips of the previous month. How far is it from Rome to London and from London to Quebec City if the executive flew a total of 6410km?

2. Solve the following problems.

- I have 6 more \$5 than \$10 bills. In all I have \$255. How many \$5 bills do I have?
- The sum of two numbers is 249. Twice the large number plus three times the smaller is 591. Find the numbers.
- A vending machine contained dimes and quarters. The number of quarters is 7 more than twice the number of dimes. The coins have a total value of \$20.35. How many of each coin are there?
- A movie theatre sold twice as many adult tickets as student tickets. The total receipts were \$2299. If the adult tickets cost \$7 and the student were \$5, how many of each were sold?
- Twice Sally's age increased by 3 times Sue's age is 103. Five times Sally age decreased by three times Sue's age is 16. How old will Sally be ten years from now?

3. Thinking practice:

- a. A secret Agent being a mathematician, transmitted an important 2digit locker number in the following manner: "The difference in the digits is four. The sum of the number and the number formed by reversing the digits is 132." Find the locker number.

ANSWERS

1. A) x - # of \$5 bills
 y - # of \$10 bills
 $5x + 10y = 300$
 $x + y = 39$

B) x - mass of basketball
 y - mass of baseball
 $x - 16 = 4y$
 $x + y = 756$

C) d - # of dimes
 n - # of nickels
 $d + n = 78$
 $0.1d + 0.05n = 5.20$

D) x - # of \$2 bills
 y - # of \$5 bills
 $2x + 5y = 81$
 $5x + 10y = 175$

E) r - distance from London to Rome
 q - distance from London to Quebec City
 $4r + 690 = q$
 $4r + q = 6410$

2. A) 21

B) 156, 93

C) 31 d, 69 Q

D) 121 S, 242 A E) 30

3. A) 84

Feb 27

MPM2D

Solving Mixture and Investment Problems

* Wed (March 4) is Unit 2 Test!

Example 1 Manny has a bottle of 5% acetic acid and a bottle of 10% acetic acid. How much should he use to make 250mL of 8% acetic acid?

Solution:

	Solution Amount (ml)	Concentration (%)	Amount of Solute (ml)
Solution 1			
Solution 2			
New Solution			

Example 2 Pierre invested \$8000, part at 9% interest rate, and the remainder at 10% interest rate. After one year his total interest from these two investments was \$740. How much did he invest at each rate?

Solution:

	Amount (\$)	Interest Rate (%)	Interest (\$)
Investment 1			
Investment 2			
Total			

Feb 25 I made a mistake in example 6 yesterday.

Example 6 : $x + y = 7$ — (a)

$$\underbrace{10y + x}_{\text{reversed \#}} = \underbrace{10x + y}_{\text{original \#}} + 27 \quad \text{--- (b)}$$

Rearrange (b) $10y - y + x - 10x = 27$

(b) $9y - 9x = 27$

$9 \times$ (a) $9y + 9x = 63$

$$+ \quad \underline{\hspace{1.5cm}}$$
$$18y + 0 = 90$$

$$\frac{18y}{18} = \frac{90}{18}$$

$$\therefore y = 5 \quad \therefore x = 2$$

\therefore The number is 25

* Let x be the first digit (or 10th number)

* Let y be the second digit

