APPLICATIONS OF LINEAR SYSTEMS

1. After ticket sales at a volleyball game, a cash box contains 87 coins in loonies and toonies. If the total value of the money is $161, how many of each kind of coin is there? The situation can be represented by the following system of equations:

$$l + t = 87$$
$$l + 2t = 161$$

where l represents the number of **loonies** and t represents the number of **toonies**.

   a) Solve the system of equations by substitution OR elimination.

   b) How many loonies are in the cash box?   c) How many toonies are in the cash box?

2. A bank teller has a total of 124 bills in fives and tens. The total value of the money is $840. The equations represent this situation.

   Total number of bills: $x + y = 124$
   Total value: $5x + 10y = 840$

where x represents the number of $5 bills and y represents the number of $10 bills.

   a) Solve the system of equations by substitution OR elimination.

   b) How many $5 bills does the bank teller have?

   c) How many $10 bills does the bank teller have?

3. At a sale, each DVD is one price and each CD is another price. Three DVDs and two CDs cost $67.
One DVD and three CDs cost $48. This situation can be described by a linear system:

$$3d + 2c = 67$$
$$d + 3c = 48$$

where d represents the price of a DVD in dollars and c represents the price of a CD in dollars.

a) Solve the linear system by substitution OR elimination.

b) How much does one DVD cost?   c) How much does one CD cost?

4. An airplane travels at an average speed of 740 km/h with a tail wind and 560 km/h with a head
wind. This situation can be described by a linear system:

$$s + w = 740$$
$$s - w = 560$$

where s is the speed of the plane with no wind in km/h and w is the wind speed in km/h.

a) Solve the linear system by substitution OR elimination.

b) Explain what the solution to the linear system represents.   c)   What is the wind speed?