

1. 1. A researcher is feeding one group of rats a diet containing 32 units of niacin and 22,000 units of retinol each day. There are only two types of pellet food available. Type A contains 0.12 unit of niacin and 100 units of retinol per gram. Type B contains 0.20 units of niacin and 50 units of retinol per gram. How many grams of each food should she feed this group each day?

Let  $x$  be the grams of Type A pellets.

Let  $y$  be the grams of Type B pellets.

(a). How many units of niacin are in  $x$  grams of Type A?

How many units of niacin are in  $y$  grams of Type B?

(b). How many units of retinol are in  $x$  grams of Type A?

How many units of retinol are in  $y$  grams of Type B?

(c). Summarize the information above into the table below. Add the total amount of niacin and retinol into the last column.

	Type A ( $x$ grams)	Type B ( $y$ grams)	Total
Niacin			
Retinol			

(d). Convert the table to a system of two linear equations and solve the system to find out how many pounds of each kind of nut to use.

**2.** Jill runs on the treadmill and stationary bike every day. On Monday she does each for  $\frac{1}{2}$  hour and covers a total distance of 12.5 miles. On Tuesday she runs for 12 minutes and cycles for 45 minutes, covering a total distance of 16 miles. Assuming that her speeds are the same each day, find her speed in miles per hour for each activity.

Let  $x$  be her running speed in mph.

Let  $y$  be her cycling speed in mph.

[Use the steps to set up and solve the linear system.]

**3.** There were 1200 tickets sold to a spaghetti dinner. The adult tickets were priced at \$4 and the child tickets were \$1.50. If \$4062.50 was raised, how many tickets of each type were sold?

Let  $x$  be \_\_\_\_\_ .

← Fill in the blanks with a description of each variable.

Let  $y$  be \_\_\_\_\_ .

[Use the steps to set up and solve the linear system.]

**1.** 200 grams of Type A and 40 grams of Type B

**2.** Runs 5 mph and Cycles 20 mph

**3.** 905 adult and 295 children