MA 1040 Unit 4 Problem Solving Examples

Paul has a job raking leaves for a neighbor. He makes $6.50 an hour, plus $0.75 for each bag he fills. Last Saturday he worked three hours and made a total of $27.75. How many bags of leaves did he fill?

Let n = # of bags filled

$6.50 \times 3 + 0.75 \times n = 27.75$

$19.50 + 0.75n = 27.75$

$\frac{0.75n}{0.75} = \frac{8.25}{0.75}$

$n = 11$

Paul filled 11 bags.

Isabel is considering a job as a waitress. She would be paid $8 per hour plus tips. The wait staff have told her that an average tip at that restaurant is $4.50 per table. If Isabel works 25 hours per week, how many tables would she have to serve in order to make $362 for the week?

Let n = # of tables she would have to serve.

$8 \times 25 + 4.50 \times n = 362$

$200 + 4.50n = 362$

$\frac{4.50n}{4.50} = \frac{162}{4.50}$

$n = 36$

Isabel would need to serve 36 tables.

The Swedish Chef Catering Company charges $50.00 for setup, $85.00 for cleanup, and the special menu that Judy Carter ordered cost $23.50 per person. If Judy Carter can only spend $558 for the party, how many people can she invite?

Let n = # of people that can be invited

$50 + 85 + 23.50 \times n = 558$

$135 + 23.50n = 558$

$\frac{23.50n}{23.50} = \frac{423}{23.50}$

$n = 18$

Judy can invite 18 people

The camera Melissa wanted for her birthday is on sale at 28% off the usual price. The amount of the discount is $100.80. What was the original price of the camera?

Let p = the original price of the camera

$$\frac{0.28p}{0.28} = \frac{100.80}{0.28}$$

$$p = \$360$$

The original price was $360.00

Alice Swanson got a 3% raise in her salary from last year. This year she is earning $22,660. How much did she make last year?

Let m = amount made last year

$$m + 0.03m = 22660$$

$$\frac{1.03m}{1.03} = \frac{22660}{1.03}$$

$$m = \$22000$$

She made $22000.00 last year.

The number of women working full-time in Springfield has risen 12% this year. This means 216 more women have full-time jobs. What was the number of women working full-time last year?

Let n = # of women working full time last year.

$$\frac{0.12n}{0.12} = \frac{216}{0.12}$$

$$n = 1800$$

There were 1800 women working full-time last year.

Robert Campbell invested some money at 8% simple interest. At the end of the year, the total amount of his original principal and the interest was $7560. How much did he originally invest?

Let p = amount originally invested (principal)

$p + p \times 0.08 \times 1 = 7560$

$1p + 0.08p = 7560$

$\frac{1.08p}{1.08} = \frac{7560}{1.08}$

$p = 7000$

Robert originally invested $\$7000.00$

Little Melinda has nickels and quarters in her bank. She has four fewer nickels than quarters. She has $3.70 in the bank. How many coins of each type does she have?

Let q = # of quarter

Let $q-4$ = # of nickels

$25q + 5(q-4) = 370$

$25q + 5q - 20 = 370$

$30q - 20 = 370$

$\frac{30q}{30} = \frac{390}{30}$

$q = 13$

$q - 4 = 13 - 4 = 9$

Melinda had 13 quarters + 9 nickels

Madelyn Logan is an office furniture dealer who earns an $18,000 base salary. She also earns a 4% commission on sales. How much must she sell to earn a total of $55,000?

let s = amount sold

$18000 + 0.04s = 55000$

$\frac{0.04s}{0.04} = \frac{37000}{0.04}$

$s = \$925,000$

Madelyn must sell $\$925,000$ in furniture to earn $\$55,000$.

The local animal shelter usually receives twice as many cats as dogs. They estimate that 80% of the cats and 60% of the dogs that come in need some kind of medical treatment. If they treated 286 animals last year, how many cats and dogs did they take in?

Let d = # of dogs taken in
Let $2d$ = # of cats taken in

$$0.80(2d) + 0.60(d) = 286$$
$$1.60d + 0.60d = 286$$
$$\frac{2.20d}{2.20} = \frac{286}{2.20}$$
$$d = 130$$
$$2d = 260$$

There were 130 dogs + 260 cats taken in.