Math 107

Fall 2016

Lecture 6

Translate only:

5 times the sum of some number and 1 is equal to 15 less than the number.

Let x be the number,

$$5(x + 1) = x - 15$$

(what percent) of 28000 is 2100?

$$\frac{P}{100} = \frac{Part}{whole}$$

"whole comes after of"

$$\frac{P}{100} = \frac{2100}{28000}$$

Cross - Multiply
&
Solve

$$28000 \, P = 100(2100)$$

$$P = \frac{100(2100)}{28000} = \frac{210}{28} = \boxed{7.5}$$

(7.5% of 28000 is 2100)

A tall building has a 40-foot shadow. At the same time, A 5-foot tall person has a shadow of 8 feet long. Use proportion to find the height of the building.

$$\frac{x \text{ ft tall}}{40 \text{ ft shadow}} = \frac{5 \text{ ft tall}}{8 \text{ ft shadow}}$$
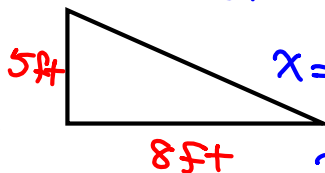
$$\frac{x}{40} = \frac{5}{8}$$

$$8x = 5(40)$$

$$8x = 200$$

$$x = \frac{200}{8}$$

$$x = 25$$

25 ft

x ft

40 ft

5 ft

8 ft

There were 36 students in the classroom. The number of females was <u>twice</u> the number of males. How many of each?

Males $\rightarrow x$

Females $\rightarrow 2x$

$2(12) = 24$

12 Males
&
24 Females

Total $= 36$

Males + Females $= 36$

$x + 2x = 36$

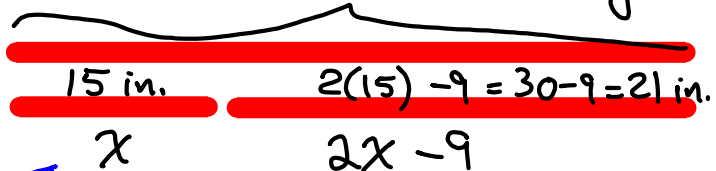$3x = 36$

$x = \dfrac{36}{3}$

$\boxed{x = 12}$

A piece of wood is 36 inches long.

It was cut into 2 pieces.

One piece was 9 inches shorter than twice the other piece.

find both pieces.

36 inches long

15 in. $2(15) -9 = 30-9 = 21$ in.

x $2x -9$

$3x = 45$

$x = \dfrac{45}{3}$ $\boxed{x = 15}$

15 in. & 21 inches

First + Second $= 36$

$x + 2x - 9 = 36$

$3x - 9 = 36$

$3x = 36 + 9$

John has 37 Coins. Nickels, Dimes, and Quarters.

# of Dimes is 3 times the # of nickels.

# of Quarters is 7 more than Twice # of nickels.

1) How many of each does he have?

2) How much does he have?

$$x + 3x + 2x + 7 = 37$$

Total is 37.

(Nickels) + (Dimes) + (Quarters) = 37

x $3x$ $2x + 7$

$$6x + 7 = 37$$
$$6x = 37 - 7$$
$$6x = 30$$
$$x = 30/6$$
$$x = 5$$

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5 Nickels

15 Dimes

17 Quarters

How many?

How much?

$$5(5¢) + 15(10¢) + 17(25¢)$$

600¢ or $6

Lisa is taking some 3 unit classes &
some 4 unit classes.
  the number of 4 unit classes is 1 less
  than the number of 3 unit classes.
  She is taking 17 units. How many of
  each?

Total = 17

$3x + 4x - 4 = 17$

3 of
3-unit
classes
&
2 of
4 unit classes

3-unit classes + 4-unit classes = 17

$7x - 4 = 17$

$7x = 17 + 4$

$3(x) + 4(x-1) = 17$

$7x = 21$

$3x + 4(x-1) = 17$

$x = \frac{21}{7} = \boxed{3}$

Sonia paid $2.96 for stamps.
She bought two types.
  29¢ stamp & 36¢ stamp.
The number of 36¢ stamp was 1 more than
  # of 29¢ stamp. How many of each did
she get?

Total cost = $2.96

$29(x) + 36(x+1) = 296$

Cost for 29¢ stamp + Cost for 36¢ stamp

$29x + 36x + 36 = 296$

$= \$2.96$

$65x + 36 = 296$

$x = \frac{260}{65}$

$= 296¢$

$65x = 296 - 36$

$x = 4$

$65x = 260$

4 29¢ stamps
5 36¢ stamps