August 20 2010

Note Title 8/20/2010

1.1 #37)

$$\frac{1}{5}m = \frac{1(m)}{5} = \frac{m}{5}$$

$$\frac{1}{5}m = \frac{1}{60}m + 1$$

Least Common denominator LCD = 60

$$60\left(\frac{1}{5}m\right) = 60\left(\frac{1}{60}m\right) + 60(1)$$

$$12m = m + 60$$

$$\frac{11m}{11} = \frac{60}{11} \quad \text{So} \quad \boxed{m = \frac{60}{11}}$$

#61

$$\frac{1}{n} + \frac{1}{n+1} = \frac{1}{n(n+1)}$$

$$n \neq 0 \quad n \neq -1$$

$$LCD = n(n+1)$$

$$\frac{1}{n} + \frac{1}{n+1} = \left(\frac{1}{n(n+1)}\right) n(n+1)$$

$$\frac{n+1}{n} + \frac{n}{n+1} = 1$$

$$2n + 1 = 1$$

$$2n = 0$$

$$n = 0$$

NO SOLUTION

Section 1.2 Applications

Example 1

Boat : $\frac{1}{3}$ of the way

Foot : 10 miles

Horse : $\frac{1}{6}$ of the way

Let x = the number of miles

Equation : Total distance = $\left(\begin{matrix}\text{distance}\\ \text{Boat}\end{matrix}\right) + \left(\begin{matrix}\text{distance}\\ \text{Foot}\end{matrix}\right) +$ (distance Horse)

$$\frac{1}{3}x + 10 + \frac{1}{6}x = x$$

LCD = 6

$$6\left(\frac{1}{3}x + 10 + \frac{1}{6}x\right) = 6x$$

$$2x + 60 + x = 6x$$

$$3x + 60 = 6x$$

subtract $3x$ from both sides

$$60 = 3x$$

divide both sides by 3

$$\frac{60}{3} = x$$

$$20 = x$$

Check! $\frac{1}{3}x + 10 + \frac{1}{6}x = x$

$x = 20$!! ✓

Example 2

three consecutive even numbers.

Let the first one be n

next $n + 2$

third $n + 4$

Sum $= n + (n+2) + (n+4)$

twice the third $= 2(n+4)$

Equation:

$$n + (n+2) + (n+4) = 2 + 2(n+4)$$

$$3n + 6 = 2 + 2n + 8$$

$$3n + 6 = 2n + 10$$

subtract 6

$$3n = 2n + 4$$

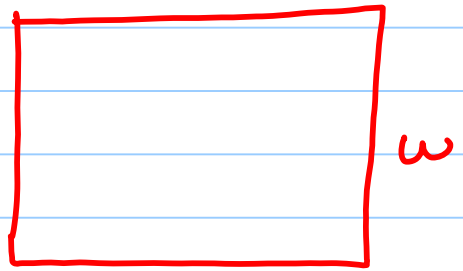
$$n = 4$$ subtract $2n$

The numbers are 4, 6, 8

Example 3

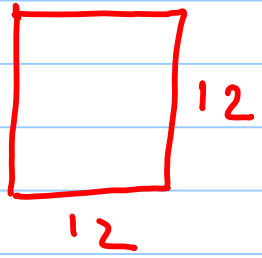
l = length of rectangle.

w = width



$$\text{Area} = lw$$
$$= 24w$$

Square:



$$\text{Area} = 12 \times 12$$
$$= 144$$

Equation Area of rectangle = area of square

$$24w = 144$$

$$\frac{24w}{24} = \frac{144}{24}$$

$$\boxed{w = 6}$$

The rectangle is 24 m long and 6 m wide.

Example 4

$$I = Prt$$

principal $= 2500$

annual interest rate is 3%.

$$r = 0.03$$

time money spends accruing interest 6 months

$$t = \frac{6}{12} \text{ yrs.}$$

$$I = Prt = (2500)(0.03)(0.5) \text{ dollars.}$$

$$= \$37.50$$

the interest paid on the CD is $37.50

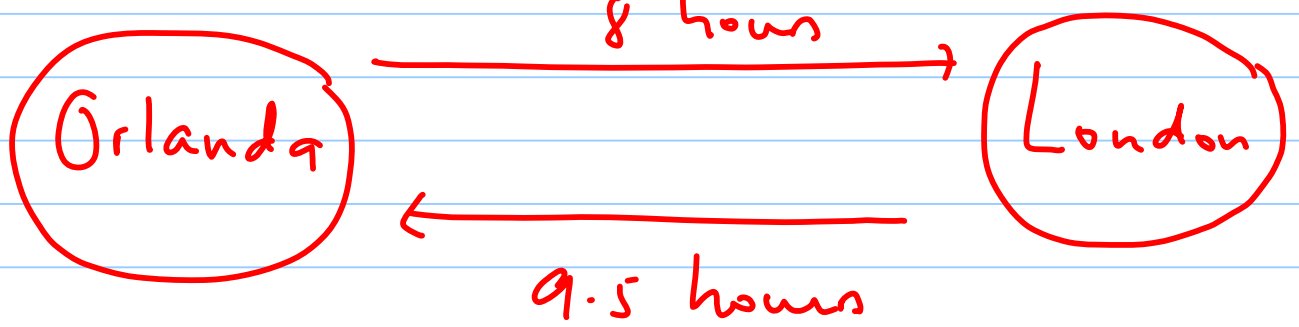
at the end of 6 months she has a total of

principle + interest

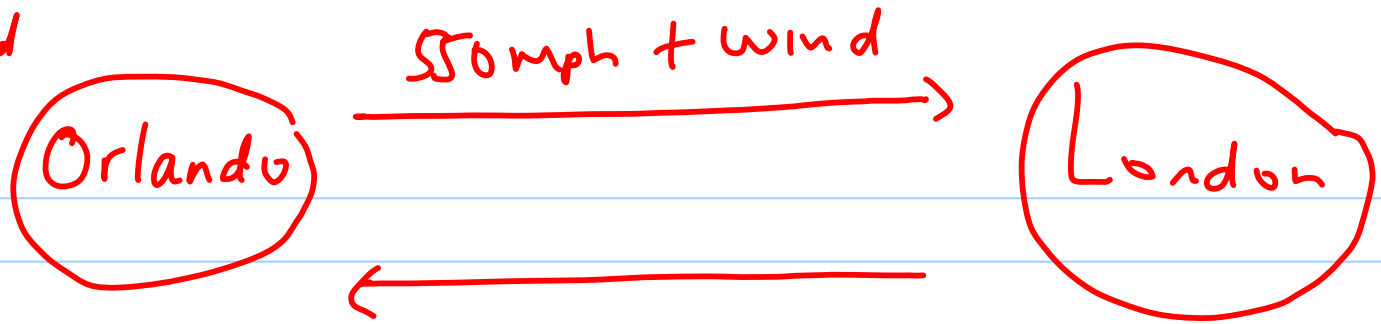
$(2500 + 37.50) = $2537.50

Example 7

time



Total Speed



Let x represent the wind speed.

Distance = Speed * time

Distance from Orlando to London

$= (550 + x)\ 8$

Distance from London to orlando

$$= (550 - x)\ 9.5$$

Equation:

$$(550 + x)\ 8 = (550 - x)\ 9.5$$

$$4400 + 8x = 5225 - 9.5x$$

$$8x + 9.5x = 5225 - 4400$$

$$17.5x = 825$$

$$x = \frac{825}{17.5} \approx$$