1.) A rectangle has perimeter P, length ℓ and width w. Which of the following represents ℓ in terms of P and w ?

A) $\ell = P - w$

B) $\ell = \dfrac{2P - w}{2}$

C) $\ell = \dfrac{P - 2w}{2}$

D) $\ell = 2P - 2w$

$P = 2\ell + 2w$

$-2w \qquad -2w$

$\dfrac{P - 2w}{2} = \dfrac{2\ell}{2}$

2.) Tyra subscribes to an online gaming service that charges a monthly fee of $5.00 and $0.25 per hour for time spent playing premium games. Which of the following functions gives Tyra's cost, in dollars, for a month in which she spends x hours playing premium games?

A) $C(x) = 5.25x$

B) $C(x) = 5x + 0.25$

C) $C(x) = 5 + 0.25x$

D) $C(x) = 5 + 25x$

$\rightarrow C(x)$

$C(x) = 5 + .25x$

3.) A soda company is filling bottles of soda from a tank
that contains 500 gallons of soda. At most, how
many 20-ounce bottles can be filled from the tank?
(1 gallon = 128 ounces)

A)   25

B)   78

C) 2,560

D) 3,200

$$500 \text{ gal} \times \frac{128 \text{ oz}}{1 \text{ gal}} = 64000 \text{ oz}$$

$$\frac{}{20}$$

Homework #17 Answers --

1.) a. Let w = width
     b. l = w + 3
     c. 2w + 2(w+3) = 30; 6
     d. 9in

5.) C

7.) a. Let n = the first integer
     b. 2
     c. n + 2
     d. n + n + 2 = 56; 27, 29

2.) 2 in; 10 in

4.) 5 yd; 13 yd

6.) a. Let n = the first integer
     b. 2
     c. n + 2
     d. n + n + 2 = 118; 58, 60

8.) 304, 305, 306

9.) -148, -150

7. The sum of two consecutive *odd* integers is 56.
  a. Define a variable for the smaller integer. X
  b. What must you add to an odd integer to get the next greater odd integer? $+2$
  c. Write an expression for the second integer. $X+2$
  d. Write and solve an equation to find the two odd integers.

$$1 \quad 3 \quad 5 \quad 7 \quad 9$$

$$X+X+2=56$$
$$2X+2=54$$
$$2X=54 \quad X=27$$

6. The sum of two consecutive *even* integers is 118.
  a. Define a variable for the smaller integer.

8. The sum of three consecutive integers is 915. What are the integers?

9. The sum of two consecutive *even* integers is −298. What are the integers

5.) The width of a rectangle is one half its length. The perimeter of the rectangle is 54 cm
Write and solve an equation to find the dimensions of the rectangle.

5.) Four consecutive multiples of seven have a sum of 378. Write and solve an equation to find these numbers.

$$\underset{=84}{X} + \underset{=91}{X+7} + \underset{=98}{X+14} + \underset{=105}{X+21} = 378$$

$$4X + 42 = 378$$
$$4X = 336$$
$$X = 84$$

$$7 < 7$$
$$7 < 14$$
$$7 < 21$$
$$7 < 28$$

Int 1 = X
int 2 = X+7
Int 3 = X+14
Int 4 = X+21

Objective 2: I can model situations by using the distance formula in distance-rate-time problems.

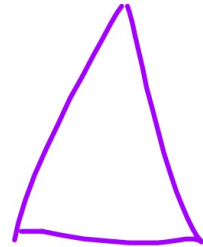Use this formula to answer the following problems: $d = rt$

d =distance r =rate(speed/velocity) t =time

1. You drove 261 miles in $4\frac{1}{2}$ hours. Find your rate of travel

$$r = \frac{261}{4.5}$$

$$= 58 \, mi/h$$

$$r = \frac{d}{t}$$

$$d = r \cdot t$$

2. You drove 65 mph for 6 hours. Find the distance you traveled.

$$d = 65 \cdot 6 = 390 \, mi$$

3. You drove 306 miles at a constant rate of 72 mph.
Find the time you were driving.

$$\frac{d}{r} = \frac{r \cdot t}{r}$$

$$t = \frac{d}{r} = \frac{306}{72}$$

$$= 4.25 \text{ hrs.}$$

4 hrs 15 min

4. You flew round-trip from Detroit to Los Angeles. What is true about the distance traveled from Detroit to LA and the distance traveled on your return trip?

Same dist.

5. You left the house on your bike. I left the house an hour later on my bike and finally caught you.

a) If we define t as the amount of time you were riding your bike then what expression would represent the amount of time I was riding my bike?

$$t - 1$$

b) What is true about the distance each of us traveled once I've caught up to you?

Same.

6. Marcus and his brother stood back-to-back. Marcus walked 4 ft/sec. Starting at the same time, his brother walked 6 ft/sec in the opposite direction. How far apart are they after nine seconds.

$\longleftarrow$ 4ft/sec. 6ft/sec $\longrightarrow$
M B
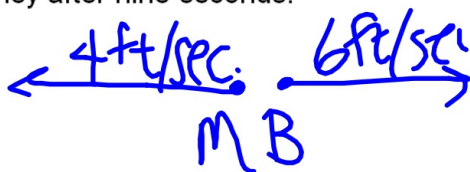
Marcus
$d = 4 \cdot 9 = 36 ft.$

Brother
$d = 6 \cdot 9 = 54 ft$
_____
90 ft Apart

Same Direction Travel:

Two people leave from the same location. One leaves before the other.
The second person follows the same path as the first.
What is true once the second person catches up with the first person?

Their distances travled are EQUAL!

Same Direction Travel

Ann leaves her house traveling 50mph. Her mother leaves an hour later traveling at
55mph. How long does it take for Ann's mother to catch up with her?

What do you do with their distances?

	Distance	= Rate •	Time
Ann	50t	50	t = 11 hrs
Mom	55(t-1)	55	t-1

10 hrs

$$50t = 55(t-1)$$
$$50t = 55t - 55$$
$$t = 11 \text{ hrs}$$

You left the house traveling 20 mph. Your brother left the house 15 minutes later traveling 25 mph. Set up equations that would help find the amount of time it would take your brother to catch you.

	Distance	= Rate	• Time
Y	$20t$	20	t
B	$25(t-\frac{1}{4})$	25	$t-\frac{1}{4}$

$\boxed{1 hr}$

$$20t = 25(t - \frac{1}{4})$$
$$20t = 25t - 6.25$$
$$-5t = -6.25$$
$$t = 1hr\ 15min$$

Round-Trip Travel:

You travel from one spot to another, then you return along the same route.
What is true about the distance you traveled each way?

The distances travled both ways are EQUAL!

Round-Trip Travel

You flew round-trip between Detroit and Los Angeles. The trip from Detroit to LA took 6 hours and you flew 80 mph slower than the trip from LA to Detroit which took 5 hours.

What do you do with their distances?

	Distance	=	Rate	•	Time
DTW to LA	$6(r-80)$		$r-80$		$\frac{6}{}$ 6
LA to DTW	$5r$		r		5

= 480 mi/h

= 480 mi/s

$$6(r-80) = 5r$$
$$6r - 480 = 5r$$
$$-480 = -r$$
$$r = 480 \text{ mi/h}$$

Your drive to work in the morning took 1 1/2 hours. On the way home there was an accident so the drive took 2 hours and you traveled 15 mph slower. How fast did you drive in the morning?

	Distance	=	Rate	•	Time
H→W	$1.5r$		r 60		1.5
W→H	$2(r-15)$		$r-15$		2

45 mi/h

$$1.5r = 2(r-15)$$
$$1.5r = 2r - 30$$
$$-.5r = -30$$
$$r = 60 \text{ mi/h}$$