Answer Key HW #_____

1. $D = RT$
   $D = (80)(3.5)$
   $D = 280$ km

2. $D = RT$
   $600 = R(8)$
   75 mph $= R$

3. $D = RT$
   $400 = 75T$
   5 1/3 hrs = T or 5 hrs and 20 min.

4. $D = RT$
   $89 = R(0.8)$
   111.25 ft/sec $= R$

5. | Greg | Dave |
   |---|---|
   | $D = RT$ | $D = RT$ |
   | $11 = R(2)$ | $16 = R(3)$ |
   | 5.5 mph | $5.\overline{3}$ mph |

   Greg has the faster rate of speed. He can run about 2 tenths of a mile faster than Dave in 1 hour. His rate of speed is greater than Dave's.

6. A ← 800 km/hr, B → 1000km/hr; 9000 km

   x: number of hours (time)

   Distance of A + Distance of B = Total Distance of A and B
   RT + RT = Total D

   $$800x + 1000x = 9000$$
   $$1800x = 9000$$
   $$x = 5$$

   It took 5 hours for them to be 9000 miles apart.

7. A → 40 mph, B ← 50 mph; 1035 miles

   x: number of hours (time)

   Distance of A + Distance of B = Total Distance of A and B
   RT + RT = Total D

   $$40x + 50x = 1035$$
   $$90x = 1035$$
   $$x = 11.5$$

   It took 11 hours and 30 min for the two trains to pass each other.

8. A ← x, B → x + 15; 1265 miles

   x: rate of train A
   x + 15: rate of train B
   Distance of A + Distance of B = Total Distance of A and B
   RT + RT = Total D

   $$x(11) + (x + 15)(11) = 1265$$
   $$11x + 11x + 165 = 1265$$
   $$22x + 165 = 1265$$
   $$22x = 1100$$
   $$x = 50$$

The rate of train A is 50 mph
The rate of train B is 65 mph

9. A 8 am
← 45 mph
B 10 am
← 54 mph

$x + 2$: time of train A
x: time of train B

Distance of A = Distance of B
RT = RT

$$45(x + 2) = 54x$$
$$45x + 90 = 54x$$
$$90 = 9x$$
$10 = x$ ← Train B will take 10 hours to catch A

Train B will catch Train A at 8 pm (10 hrs from 10 am)

10. A 6 hrs
→ $20 + x$
B 9 hrs
→ x

x: rate of train B (local)
$x + 20$: rate of train A (express)

Distance of A = Distance of B
RT = RT

$$(x + 20)(6) = x(9)$$
$$6x + 120 = 9x$$
$$120 = 3x$$
$$40 = x$$

Train B (the local) travels 40 mph
Train A (the express) travels 60 mph

11. A → ← B
x 9 mph
120 miles

x: rate of boat A
Both boats traveled from noon to 6pm (time = 6 hrs)
Distance of A + Distance of B = Total Distance of A and B
RT + RT = Total D

$$x(6) + (9)(6) = 120$$
$$6x + 54 = 120$$
$$6x = 66$$
$$x = 11$$

The rate of boat A is 11mph

12. A ← 350 mph

B ← 250 mph

x: time of plane A

x + 2: time of plane B (*slower plane*)

Distance of A = Distance of B

RT = RT

$$350(x) = 250(x + 2)$$
$$350x = 250x + 500$$
$$100x = 500$$
$$x = 5$$

It takes 5 hours for plane A to catch plane B.

13. A → 5 hrs, x

B → 4 hrs, x + 12

x: rate of car A (*slower car*)

x + 12: rate of car B (*faster car*)

Distance of A = Distance of B

RT = RT

$$x(5) = (x + 12)(4)$$
$$5x = 4x + 48$$
$$x = 48$$

Car A's speed is 48 mph
Car B's speed is 60 mph

14. 2 hrs → x mph | 3 hrs → x – 30 mph

660 miles

x: rate of speed before the plane slowed down

Distance of A + Distance of A = Total Distance of A

RT + RT = Total D

$$x(2) + (x - 30)(3) = 660$$
$$2x + 3x - 90 = 660$$
$$5x - 90 = 660$$
$$5x = 750$$

$$x = 150$$

The rate of the plane before it slowed down was 150 mph