

# **LEARNING TARGETS:**

I will be able to translate weighted average word problems involving uniform motion into equations that I can solve.

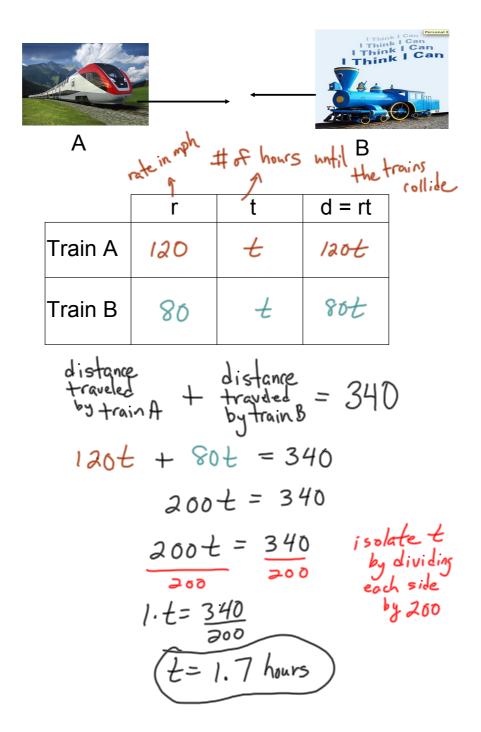
# FOUNDATIONAL SKILLS I WILL RELY ON

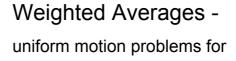
- distributing
- combining like terms
- solving equations with variables on both sides
- modeling creating graphs to represent data
- attending to precision



two objects

Two trains are 340 miles apart heading toward each other on the same track. Train A is traveling east at 120 miles per hour, while Train B, a runaway, travels west at 80 miles per hour. How long to emergency personnel to prevent the trains from colliding?





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		<b>→</b>	Thin I Thin	R I Can K I Can K I Can			
A	rate in mph	# of hours	until B the t	rains collide			
	r	t	d = rt				
Train A	120	t	120t				
Train B	80	t	80t				
distance traveled + distance traveled + traveled = 340 by train A by train B							
120t + 80t = 340							
200t = 340							
$\frac{200t}{200} = \frac{340}{200}$ isolate t by dividing each side by 260							
(t=1.7 hours)							

# Weighted Averages -

uniform motion problems for two objects

Jordan and Griffen begin a unicycle race traveling in opposite directions on a circular track that is 5 miles long. Jordan is traveling at a rate of 15 miles per hour while Griffen cruises along at a pace of 18 miles per hour. How long will it take in minutes before they "run into each other"?

,	rate in mph # of hours until they collide				
	r	t	d = rt		
Jordan	15	t	15t		
Griffen	18	t	18t		

Istance traveled = 5 miles

Ist + 18t = 5

33t = 5

$$35t = 5$$

Convert to minute

 $t = \frac{5}{33}$ 
 $t = \frac{5}{33}$ 



A pirate ship is traveling due east at a rate of 20 miles per hour. At the same time a ship 175 miles away carrying treasures beyond measure is traveling due west at a rate of 15 miles per hour. When will these two ships meet?

THANKS FOR SHOWING ALL OF YOUR WORK



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	r	t	d = rt
Pirate	20	t	201
Treasur e Ship	15	t	15t

20+ +15+ =175

It took Mr. and Mrs. Hall 70 minutes to skate 15 miles. The return trip took them 60 minutes. What was their average speed for the trip?

Because Mr. and Mrs. Hall traveled at a different rate on each portion of the trip we will have to use weighted averages of their speeds.

Find the rate off the going portion, followed by the rate for the return portion. The formula for rate is rate = distance time

Since we would like the average speed in miles per hour we will need to convert the minutes to hours.



Before school this morning, Mr. Jaydin jogged 2.5 miles in 16 minutes and then sprinted 1 mile in 5 minutes. What was his average speed?

Because Mr. Jaydin traveled at a different rate on each portion of the trip we will have to use weighted averages of their speeds.

Find the rate off the going portion, followed by the rate for the return portion. The formula for rate is rate = distance time.

#### DEMINIDED:

Since we would like the average speed in miles per hour we will need to convert the minutes to hours.



Mrs. Koenecke jogged 3 miles in 25 minutes and then jogged 3 more miles in 30 minutes. What was her average speed in miles per minute?

THANKS FOR SHOWING ALL OF YOUR WORK



## Weighted Averages - practice work

Please complete the following problems for the following class period.

### THANKS FOR SHOWING ALL OF YOUR WORK

- 1. Two airliner are 1600 miles apart and heading toward each other at different altitudes. The first plane is traveling north at 620 miles per hour, while the second is traveling south at 780 miles per hour. When will the planes pass each other?
- 2. A person walked 1.5 miles in 28 minutes and then jogged 1.2 more miles in 10 minutes. What was the average speed in miles per minute?
- 3. In a triathlon, Steve swam 0.5 miles in 15 minutes, biked 20 miles in 90 minutes, and ran 4 miles in 30 minutes. What was Steve's average speed for the triathlon in miles per hour?
- 4. Two buses leave Smithville, at the same time, one traveling north and the other traveling south. The northbound bus travels at 50 miles per hour, and the southbound travels at 65 miles per hour. When will these buses be 345 miles apart?