

Additional Applied Problems Class Work

 **You will be able to...** model problematic situations with equations, and resolve the solutions

★ **Quick Review:**

1 Provide an example of “consecutive” integers.

2. Write an expression to represent the situation: Henry runs 3 mph less than half the speed Fernando runs.

3. Assume you are traveling in a train at a constant speed of 50 mph. How far will you have traveled after 3 hours? What about 4 hours?

“Sum of Numbers” Problem Example

The sum of three consecutive integers is 72. What are the integers?

Define a variable:

Write the relationship:

Write an equation:

Solve and check:

 **Practice It!**

Three friends are each born two years apart. The sum of their ages is 120. How old is each friend?

 **“What’s the Speed” Problem Example**

Jay and Ray leave a train station at the same time. Jay's train travels due North at a constant speed, and Ray's train travels due South at a constant speed. The speed of Ray's train is 12 mph less than the speed of Jay's train. After two hours, Ray and Jay are 276 miles apart. What speed is each train traveling at?

Sketch a picture:

Define a variable:

Write the relationship:

Write an equation:

Solve and check:

 **Practice II!**

Sally and Wanda leave a train station at the same time. Sally's train travels due East, and Wanda's travels due West. Sally's train travels at a constant speed that is 10 mph less than Wanda's. After 1.5 hours, Sally and Wanda are exactly 165 miles apart. What is the speed of each train?
(Remember, distance = rate * time)

 **More Practice**

1. A high school is having a talent contest, in which four "top prizes" will be given. The best act will be awarded the most money, and each act thereafter will receive \$25 less than the previous place. The contest has a total of \$250 to award in prize money. How much money will be awarded to each place?

2. Train A and train B leave a train station at the same time. Train A travels due East at a constant speed that is 5 mph less than train B's, which travels due West. After 2 hours, the trains are exactly 222 miles apart. What is the speed of each train?

“Situations of Equality” Problem Example

Two cabs charge slightly different rates. Cab A charges an initial fee of \$4.50 plus an additional 40 cents for every mile traveled. Cab B charges an initial fee of \$3.50, but an additional 80 cents for every mile traveled. For what mileage will the charge for both cab companies be equal?

Define a variable:

Write the relationship:

Write an equation:

Solve and check:

Practice It!

At a frozen yogurt shop, you must pay \$1.25 to create your own yogurt, plus an additional 35 cents for each ounce of weight. Another frozen yogurt shop does not charge an initial fee, but charges 55 cents per ounce. For how many ounces will the cost be the same at both shops?

☞ “How Long Will It Take” Problem Example

Jorge and Andy are both taking trains (from the same station, on parallel tracks) home. Jorge's train travels at 95 miles per hour, but leaves exactly an hour after Andy's train, which travels 65 miles per hour. How long will it take for Jorge's train to pass Andy's train? (Remember $d = rt$)

Define a variable:

Write the relationship:

Write an equation:

Solve and check:

 Practice It!

Wes and Alex are horseback riding on a trail. Wes' horse travels at a constant speed of 3 mph, while Alex's horse walks at a constant rate of 3.5 mph. Alex leaves the barn a half hour later than Wes, hoping to catch up to him. How long would it take Alex's horse to catch up to Wes'?

1. A special buffet charges \$8.00 for an initial fee, but \$2.50 extra for every sushi roll you order. A buffet in the next town charges an initial fee of \$9.00, but only \$1.50 extra for every sushi roll you order. For how many sushi rolls will the prices of the buffet be the same?

2. A canoe leaves a campsite at 1:00 PM, traveling at a constant rate of 8mph. At 2:00 PM, a motorboat leaves the same campsite, following a path parallel to the canoe. The motorboat travels 12 mph. How long will it take the motorboat to pass the canoe?

HOMEWORK

- **Book Work:** p. 99 #17, 18, & 20; p. 108 #11; and p. 110 #38

- **Two Throwbacks!** A. Solve for y : $7y - 8x = 10$

B. Solve for r . $C = 2\pi r$

Day 1:

Assume one of your peers was absent from class today. Write him/her a brief note including an idea you found to be important in understanding the work he/she missed.

Day 2:

Put a 😊 next to the problem type you enjoyed the most.
Explain your choice.

Star the problem type you found to be the most challenging.
Explain your choice.

Write any other notes regarding your individual work with these problems.

***Sum of Numbers
Directions**

***Traveling Opposite
(determine each speed)**

***Traveling Same Direction
(how long will it take to pass)**

***Equal Deals**