

Math 580 Assignment 4
Word Problems for Big Kids
September 15, 2011

Problem 21 Indiana Jones and three others need to cross a flimsy rope bridge over a mile-long gorge. It is so dark that it is impossible to cross the bridge without a flashlight. Furthermore, the bridge is so weak that it can only support the weight of two people. The group has just one flashlight, which has a weak beam, so whenever two people cross, they have to remain together at the speed of the slower person. Indiana Jones can cross the bridge in 5 minutes. His girlfriend can cross in 10 minutes. His father needs 20 minutes, and his father's sidekick needs 25 minutes. They need to get everyone across safely in one hour to escape the bad guys.

Can they do it? How?

Problem 22 Pat works in the city and lives in the suburbs with Sal. Every afternoon, Pat gets on a train which arrives at the suburban station at exactly 5pm. Sal leaves the house before 5 and drives at a constant speed so as to arrive at the train station at exactly 5pm to pick up Pat. The route that Sal drives never changes. One day, this routine is interrupted because there is a power failure at work. Pat gets to leave early, and catches a train which arrives at the suburban station at 4pm. Instead of phoning or texting Sal to ask for an earlier pickup, Pat decides to get a little exercise, and begins walking home at a constant speed along the route that Sal drives, knowing that eventually Sal will intercept Pat and then they will head home together. This is indeed what happens, and Pat ends up arriving at home 10 minutes earlier than on a normal day.

For how many minutes did Pat walk?

Problem 23 Two towns, A and B, are connected by a road. At sunrise, Sue begins biking from A to B along this road, while simultaneously Dana begins biking from B to A. Each person bikes at a constant speed, and they cross paths at noon. Sue reaches point B at 5pm while Dana reaches point A at 11:15 pm.

What time was the sunrise?

Problem 24 A tri-athlete dives from a bridge into a river and swims upstream through the water for 1 hour at constant speed. She then turns around and swims downstream through the water at the same rate of speed. As the swimmer passes under the bridge, a bystander tells her that her hat fell into the river when she originally dived in. The swimmer continues downstream at the same rate of speed, catching up with the hat at another bridge exactly 1 mile downstream from the first one.

What is the speed of the current in miles per hour?

Problem 25 What is the first (exact) time after 12 o'clock that the hour and minute hands will meet on an analogue clock?