TEAMWORK DIVIDES THE TASK AND MULTIPLIES THE SUCCESS

JUNIOR CIRCLE 02/20/2011

(1) Laura can wash 5 cars in 2 hours.
  (a) How many cars can she wash in one hour? We call this number the rate. In this problem the rate is expressed in cars per hour.

  (b) How many cars can she wash in 6 hours?

(2) A car is travelling at the speed of 60 miles per hour.
  (a) What is the rate expressed in miles per hour?

  (b) What is the rate expressed in miles per second?

  (c) How far will the car go in 2 hours?

  (d) How far will the car go in 27 minutes?

(3) Ally can paint an entire fence in 9 hours.
  (a) Find Ally's rate (expressed in portion of fence per hour);

  (b) What portion of the fence will Ally paint in 3 hours?

(4) Nelson can drive 400 miles in 8 hours.
  (a) How many miles can he drive in one hour?

  (b) How many miles can he drive in 6 hours?

(5) Nelson can drive 540 miles in 10 hours and Jackie can drive the same distance in 9 hours.
  (a) What is Nelson's rate?

  (b) What is Jackie's rate?

  (c) If Nelson and Jackie start driving from the same place at the same time, who will be ahead in 1 hour and by how much?

(6) Alyssa can jog 2 miles in 30 minutes and Danielle can jog 3 miles in 1 hour.
   (a) What is Alyssa's rate (expressed in miles per hour)?

   (b) What is Danielle's rate?

   (c) Who is walking at a faster rate?

   (d) How much farther can Danielle jog in 15 minutes than Alyssa?

(7) Daniel can bake a cake in 45 minutes and Rosalie can bake the same cake in 54 minutes.
   (a) What is Daniel's rate (expressed in cakes per hour)?

   (b) What is Rosalie's rate (expressed in cakes per hour)?

   (c) How much faster can Daniel bake 2 cakes than Rosalie?

(8) It takes Maria 30 minutes to complete a task and it takes Sarah 60 minutes to complete the same task.

(a) What is Maria's rate?

(b) What is Sarah's rate?

(c) Who is faster?

(d) If they work together to complete this task, what portion of the task will Maria complete?

(e) What porition of the task will Sarah complete?

(f) How long does it take for Maria to do her portion of the work?

(g) How long does it take for Sarah to complete her portion of the work?

(h) Why are the answers in (f) and (g) the same?

(i) How long will it take for them to complete the task together?

(9) Suppose one painter, Bob, can paint the entire house in 12 hours, and the second painter, Bill, takes 4 hours to paint the same house.

    (a) What is Bob's rate?

    (b) What is Bill's rate?

    (c) If they work together what portion of the house will Bob complete?

    (d) What portion of the task will Bill complete?

    (e) How long will it take for them to complete the task together?

(10) In 2 hours, Jim can assemble 6 crates and Robert can assemble 2 crates.

    (a) What is Jim's rate?

    (b) What is Robert's rate?

    (c) What is their rate if they worked together?

    (d) How many crates can they assemble together in 5 hours?

(11) Ben takes 2 hours to wash 200 dishes, and Frank takes 2 hours to wash 800 dishes.

(a) Find the rates.

(b) If they work together, find the portions of work each will complete.

(c) How long will they take, working together, to wash 1000 dishes?

(12) John left home and drove at the rate of 45 mph for 2 hours. He stopped for lunch then drove for another 3 hours at the rate of 55 mph to reach his destination.

(a) What was his rate before lunch?

(b) How many miles did he travel before lunch?

(c) What was his rate after lunch?

(d) How many miles did he travel after lunch?

(e) How many miles did he drive the entire time?

(13) 3 students finished 3 math problems in 3 days.

    (a) How many problems did each student do?

    (b) How many problems were solved each day?

    (c) How many problems did each student solve each day?

    (d) How many math problems will 12 students finish in 12 days?

(14) 5 students ate 5 bananas in 5 days.

    (a) How many bananas does each student eat?

    (b) How many bananas are eaten each day?

    (c) How many bananas will each student eat a day?

    (d) How long will it take 10 students to eat 10 bananas?

(15) It takes Ashton 6 minutes to saw a 16-foot plank into four pieces, each 4 feet long.
   (a) How many cuts are made?

   (b) How long does it take Ashton to make one cut?

   (c) How long will it take Ashton to cut a 16-foot plank into 8 pieces, each 2 feet long?

(16) Six men can dig a tunnel in fourteen days.
   (a) How much of the tunnel is each man doing a day?

   (b) How many men would it take to do the same job in twenty-one days?

(17) It takes 6 workers one hour to put together one car.
   (a) How much work is each worker doing in one hour?

   (b) How long would it take 9 workers to produce the same car?

(18) Working together, Bill and Tom painted a fence in 8 hours. Last year, Tom painted the fence by himself. The year before, Bill painted it by himself, but took 12 hours less than Tom took.
  (a) What is Tom and Bill's combined rate?

  (b) How long did Bill and Tom take, when each painted alone?

(19) Jane, Paul and Peter can finish painting the fence in 2 hours. If Jane does the job alone she can finish it in 5 hours. If Paul does the job alone he can finish it in 3 hours.
  (a) What is their combined rate (expressed in amount of fence per hour)?

  (b) How long will it take for Peter to finish the job alone?

(20) Brett usually takes 50 minutes to groom one horse. After working 10 minutes, he was joined by Angela and they finished the grooming in 15 minutes after her arrival.
  (a) What is Brett's rate? (express in portion of groomed horse per minute)

  (b) How much of the horse has he groomed in 10 minutes?

  (c) What is the rate of Brett and Angela combined?

  (d) How long would it have taken Angela alone?

(21) It takes Allison, Bobby, and Cameron 3 hours to fill a moat. It takes Allison and Cameron, working together, take 4 hours. Bobby and Cameron, working together, take 5 hours to fill the moat.

 (a) What is Allison, Bobby, and Cameron's combined rate? (express in amount of moat filled per hour)

 (b) What is Allison and Cameron's combined rate?

 (c) What is Bobby and Cameron's combined rate?

 (d) How long will it take Allison and Bobby to fill the moat?