Name: _____ Date: _____

A Boat Too Small

Reading level 8 (4th grade) · 778 words

The Softleigh family set out for a picnic on a sunny day. Mother carried the big basket, and Father carried the folding chairs. Their two little robots, Tick and Tock, rolled along behind them. Last of all came Rover the dog, who disliked walking, running, and above all getting wet.

At the stream they found one small boat with a sign: NO MORE THAN 150 POUNDS. Mother with her basket weighed 150. Father with his chairs weighed 150. Each robot weighed 75, and Rover weighed a bit less than a robot. Rover would not swim, and he could not row.

Mother, Father, and both robots could row. Someone had to bring the boat back every time. Hint: the two robots can ride together, and one of them can wait on the far bank. Think it through before you turn the page. How can all five get across without sinking the boat?

Here is the way. Tick and Tock row over, and Tick rows back. Father rows over alone, and Tock brings the boat back. Both robots cross again, and Tick rows back. Mother rows over alone, and Tock returns. Last, both robots cross again, and only Rover is left behind.

Tick stays with Mother and Father. Tock rows back one last time to fetch Rover, and they cross together. That makes eleven trips in all! The robots did most of the work, because two of them fit in the boat, but Mother or Father filled it alone. Rover got out, shook himself, and looked proud, although he had not done a thing.

Past the stream, two farmers were arguing beside a big round barrel of apple juice with its lid off. "It is more than half full!" said one. "It is not even half!" said the other. They had no stick, no cup, and no string, and the barrel had no marks inside.

"You are both big and strong," said Mother. "Tip the barrel gently, until the juice just reaches the edge of the lip." Hint: while it is tipped, look down at the bottom of the barrel. How will the farmers know if it holds more than half, less than half, or exactly half?

The farmers tipped it until the juice touched the lip. If the juice also just reached the opposite edge of the bottom, the barrel was exactly half full. The juice and the air made two matching shapes. If some bottom showed dry, it held less than half. If juice covered the whole bottom with room to spare, it held more.

A little farther on, a bookworm waved from a shelf outside the village library. Three fat books stood in a row, volume one on the left, with their titles facing out. The pages of each book were 3 inches thick, and each cover was one eighth of an inch thick.

"I chewed straight from the first page of volume one to the last page of volume three," bragged the worm. Hint: stand a real book on a shelf, title facing you, and find page one. Do

not just add up all the pages! How long was his tunnel?

On a shelf, page one of volume one is on its right side. The last page of volume three is on its left. So the worm crossed one cover of volume one, all of volume two, and one cover of volume three. That is four covers, or half an inch, plus 3 inches of pages. His tunnel was three and a half inches long.

At the picnic spot, Cousin Mildred patted Rover and said, "Five years ago I was five times as old as this dog. Today I am only three times as old." Rover yawned. Hint: pick an age, make Mildred three times that, and go back five years. How old is Rover?

Try ten for Rover. Mildred is then thirty. Five years ago Rover was five and Mildred was twenty-five, and five fives are twenty-five. It works! Rover is ten years old, a fine old gentleman, and that may explain why he disliked walking, running, and getting wet.

On the way home they came to the stream again. Father groaned at the thought of eleven more trips. Just then a duck quacked on the other bank. Rover jumped in, paddled across as fast as a fish, and chased it up the path. The whole family stared. Rover could swim all along!

Henry Dudeney was an English puzzle maker. This book retells four puzzles from his book Amusements in Mathematics, first printed in 1917. The robots, the apple juice, the talking worm, and the duck are new. The puzzles still work the same way.

Questions

1. Why could the robots make so many of the trips?

A. Both of them fit in the boat together
B. They were able to fly
C. They weighed more than Father

2. Who rowed back to fetch Rover?

A. Mother
B. Tock
C. Cousin Mildred

3. The tipped juice just touches the lip, and part of the bottom is dry. What does that show?

A. The barrel is more than half full
B. The barrel is exactly half full
C. The barrel is less than half full

4. Why did the worm not chew through the pages of volume one?

A. Its first page is beside volume two
B. Its pages were too hard
C. It was not on the shelf

5. When the worm bragged, he

A. said sorry

B. talked proudly about himself

C. whispered a secret

6. What surprised the family at the end?

A. The boat was gone

B. The duck could row

C. Rover could swim

Words to know

stream: small river

barrel: round tub

volume: one book

bragged: boasted

paddled: swam

Answer key: A Boat Too Small

1. A. Both of them fit in the boat together
2. B. Tock
3. C. The barrel is less than half full
4. A. Its first page is beside volume two
5. B. talked proudly about himself
6. C. Rover could swim