

Instructions

Each team member receives a problem to work. The first team member gets an answer sheet. The first person works his/her problem, writes the answer only on the answer sheet, and passes the answer sheet only back to the second person. The second student uses the answer to work his/her problem, writes the answer only on the answer sheet, and passes the answer sheet only back to the third person, etc. After the fourth person gets the fourth answer and writes it down on the answer sheet, he/she takes the answer sheet to the proctor in the hall. The first team to get the correct answers wins.

Team Relay 2003

Part 1: A rectangular box with no top has height 3 units and a square base. The volume of the box is 48 cubic units. The surface area of the box is A square units. Find A.

Part 2: The perimeter of a rectangle is $(A - 30)$ units and the diagonal is 13 units. The area of the rectangle is B square units. Find B.

Part 3: Find C such that $\sqrt{B - 28} + \sqrt{\frac{B}{30}} = C\sqrt{18}$.

Part 4: If $\tan t = \frac{1}{C}$, and $0 < t < \frac{\pi}{2}$, find the exact value of D where $\sin t = D$.

Answers: A = 64, B = 60, C = 5/3, D = $\frac{3}{\sqrt{34}}$.