

OCTOBER 2003
ROUND 7: TEAM QUESTIONS

ANSWERS

A) _____ D) _____

B) _____ E) _____

C) _____ F) _____

A) An ice cream cone has the shape of a square pyramid of height 5 inches where the side of the square base is 4 inches. A spherical scoop of ice cream of diameter 4 inches is placed in the cone. If the ice cream were allowed to melt, the volume of ice cream that would overflow the cone is $\frac{a - b\pi}{3}$. Find the ordered pair (a, b).

B) In rectangle ABCD, E is on diagonal AC so that $AE : AD : EC = 2 : 3 : 4$, and $BC = 39$. Calculate EB in simplified radical form.

C) Jon has a number of coins in his pocket. Eleven of them are nickels, one-seventh are dimes, and one-third are pennies. What is the total value of Jon's coins? *(He has only pennies, nickels, and dimes)*

D) Solve for x: $\left(\frac{x+3}{x-1}\right)^2 - 6 = \frac{x+3}{x-1}$

E) Solve for x: $\left(\frac{x+1}{x-2}\right)^2 - \frac{x+1}{x-2} - 2 < 0$

F) Given $x * y = 2x + 3y$, solve the equation $(3 * a) * (a * 3) = 24 * 13$ for a.