

# Track and Field Competition

## THIS ISSUE'S PUZZLE

Three small state colleges participated in a track and field competition. Each college sent only one representative to each event. Jessica, a student at Kennedy College, went to the competition to cheer on her boyfriend, the school's long-jump champion.

When she returned to campus later in the afternoon, her roommate, Kelly, asked how their school had performed. "We won the long jump," Jessica said, "but Jefferson College won the competition overall with a score of 22 points. Both our school and Adams College had only 9 points."

"What was the point system?" Kelly asked.

"I really don't remember," Jessica said, "but they gave a different number of points for each place. They even awarded points for third place. The point system was the same for each event."

"How many events were there in total?" Kelly asked.

"Hey, I didn't pay attention," protested Jessica. "I spent my time watching the long jump."

"Was there a javelin throw?" asked Jack, Kelly's friend.

"Come to think of it, there was," Jessica said.

"Who won it?" asked Jack.

"I don't know," replied Jessica.

But, you should. Who won the javelin throw? Show all your work.



## Answer:

About 43.8 feet<sup>3</sup>

## Solution:

If the first cube was totally submerged in the water before the second cube was placed next to it, the placement of the second cube would have raised the water level by three inches. Therefore, part of the first cube was above water. Analogously, if the first two cubes were totally underwater before the third cube was inserted, the water level would have risen by less than four inches. So, cubes one and two weren't entirely submerged before cube three was placed. Finally, if all three cubes weren't totally underwater, the water level would have risen by more than 11 inches from start to finish. Therefore, when the last cube was inserted, all three cubes were submerged.

Let  $S$  be the area of the pond's base,  $a$  be the length of each cube's side and  $x$  be the depth of the pond before the cubes were inserted.

$$3S = a^2(x+3)$$

$$7S = a^2(x+7) + a^2(x+7)$$

$$11S = a^3 + a^3 + a^3$$

Solving the equation we get  $S = 47.8$  square feet,  $x = 21$  inches,  $a = 29.33$  inches, and  $3 \cdot a^3 = 43.8$  feet<sup>3</sup>.

## PREVIOUS ISSUES PUZZLES

### Foundation for Trophy

The idea for this puzzle originated with Australian actuary Roger Allen.

The figure skating committee has decided to install a trophy for one of the long-time champions in the center of a large artificial pond near the champion's house. The pond has a perfectly horizontal base. The sides are perpendicular to the base everywhere. Three identical metal cubes would serve as a foundation for the trophy. The cubes would be placed next to each other side by side.

Once the first cube was positioned on the pond's base, the level of water rose three inches. The water level rose an additional four inches when the second cube was placed on the bottom of the pond. Finally, when all cubes sat on the bottom, the water level was 11 inches higher than that before any cube was placed in the pond.

What's the volume of the foundation?

### Chess Puzzle

White to move and mate in three.

Initial position:

White—Kd4, Bg5, pawns b6, e7, f7, h4.

Black—Kd6, pawns b7, g6, g7.

## Solution:

1. e7B Ke6
2. f7B Kf5
3. Bd7#

## SOLVER LISTS

Because of an administrative deadline, names of only those people who submitted correct solutions by Sept. 30, 2007, are shown on the lists.

THIS ISSUE'S CHESS PUZZLE								
White to Move and Mate in Three.								
8								
7			♙					
6	♔		♕					
5			♙		♖			
4								
3	♗							
2		♙						
1								
	A	B	C	D	E	F	G	H

**Foundation Puzzle:** Bob Bartholomew, Bob Byrne, Lois Cappellano, Bill Carroll, William Cross, Tom Dahl, Andrew Dean, Paul Dennee, Gregory Dreher, John Edmondson, Mark Evans, Michael Failor, Megan Farris, Nick Franceschine, Christophe Gaboriaud, Rui Guo, Yehuda Haber, Rachel Hemphill, Bob Howard, John Hubenschmidt, Sam Keller, Alex Kozmin, Songan Liu, Lee Michelson, Brian Miller, David Oakden, Don Onnen, Stephen Peeples, David Promislow,

Francis de Regnacourt, Nick Sales, Bill Scott, Noam Segal, Todd Sherman, Leonid Shteyman, Philip Silverman, Sally Smith, Don Sondergeld, Al Spooner, David Stults, Doug Szper, David Thaller, Tony Torelli, Kevin Trapp, David Uhland, Virginia Young

**Chess Puzzle:** Steven Azar, Robert Burrell, Hobson Carroll, Gregory Dreher, Alan Erlebacher, Len Helfgott, Mark Hopfinger, Greg Kleklak, Todd Kennedy,

Robert Koch, Alex Kozmin, James Marks, John McCarthy, Mark Mercier, Lee Michelson, David Oakden, Don Onnen, Harry Ploss, Joseph Roma, Noam Segal, Don Sondergeld, David Thaller, Kevin Trapp, Andrew Witte, Lee Zinzow

Solutions may be e-mailed to [cont\\_puzzles@yahoo.com](mailto:cont_puzzles@yahoo.com) or mailed to **Puzzles, 25 Sparrow Walk, Newtown, Pa. 18940.**

In order to make the solver lists (separately maintained for the regular and chess puzzles), please make sure that your answers and solutions are received by **November 30, 2007.** Depending on the response volume, solver lists may contain only the names of people who solved puzzles on the first attempt.

This issue marks Yan Fridman's last contribution to the *Contingencies* puzzles page. Because the puzzles are the first things many *Contingencies* readers turn to, the pressure to come up with challenging and entertaining brain twisters for each issue is enormous. Yan Fridman has been more than up to the challenge. Thank you, Yan, for your hard work and meticulous attention to detail. Though we find your decision to give up the high-profile life of a *Contingencies* contributor puzzling, we're grateful you chose to spend the past three years with us.

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