

Introduction to Problem Solving & Critical Thinking - 3

Part 13c2 of
“Electronics and Telecommunications”
A Fairfield University E-Course
Powered by LearnLinc

Sections 13/14 Schedule

Session 13a	11/05	Intro to Problem Solving & Critical Thinking	Notes
Session 13b	11/10	Fun with Word Problems	Notes
Session 13c	11/12	Fun with Word Problems	Notes
MT7 (Sat,Cheshire)	11/15	CT Mastery Test, Pt 7	
MT7 Results	11/17		
Session 14a	11/19	Intro to Applied Technical Mathematics	Notes: Binary/Octal/Hex, Powers of 10, Basic Algebra
Session 14b	11/24	DC & AC Motors	Elect1-7: pp. 7-39: 7-69, pp. 7-89: 7-117
Session 14c	11/26	Levers/gears, Torque/HP/RPM	
Quiz 14 Review (Quiz 14 due 12/07)	12/01		
Quiz 14 Results	12/08		
MT8 (Sat,Cheshire)	12/13		
MT8 Results	12/15		

Section 13:

Problem Solving and Critical Thinking

- Word puzzles
- Read carefully
- Use simple logic
- Some algebra (but avoidable)
- No trick questions
- Some general world knowledge
- Some questionable wording
- Explain “why” to give me flexibility

MindTrap

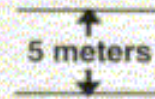
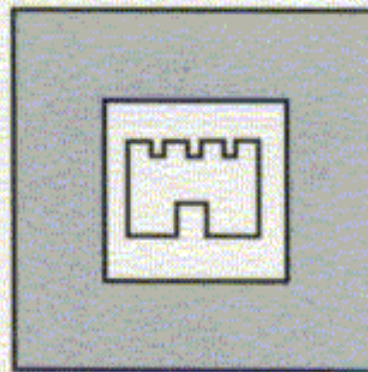
- A word puzzle game from Pressman Toy Corporation.
- Here there are some trick questions (groan)
- Designed to be fun for ages 12 \$ up

Moat



MINDTRAP

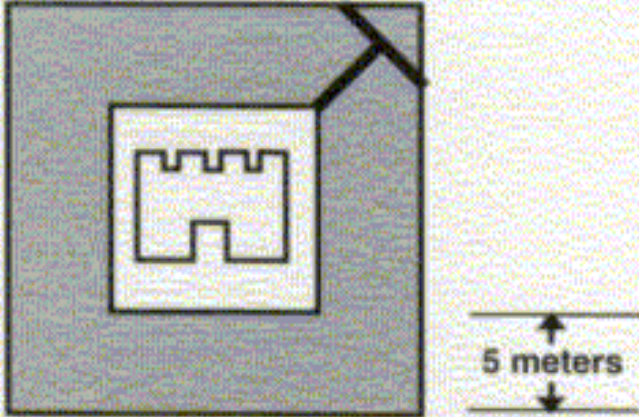
Dee Septor, the famous magician, was in Europe touring one of the many ancient castles. The tour guide explained that one of the most common defenses built in those days was the moat. The moat that Dee was touring was a huge square, five meters wide and seven meters deep. Dee, however, was not too impressed with the moat's protective abilities. Dee boasted that he he could cross the moat without getting wet by using just two $4\frac{3}{4}$ meter planks and nothing else. How could he do it?



Moat - Answer

A **MINDTRAP**

Dee Septor put one of the planks across the corner of the moat which shortened the distance to less than five meters.



The diagram shows a square moat surrounding a central castle. A plank is placed diagonally across the top-right corner of the moat. A vertical double-headed arrow to the right of the moat indicates a distance of 5 meters.

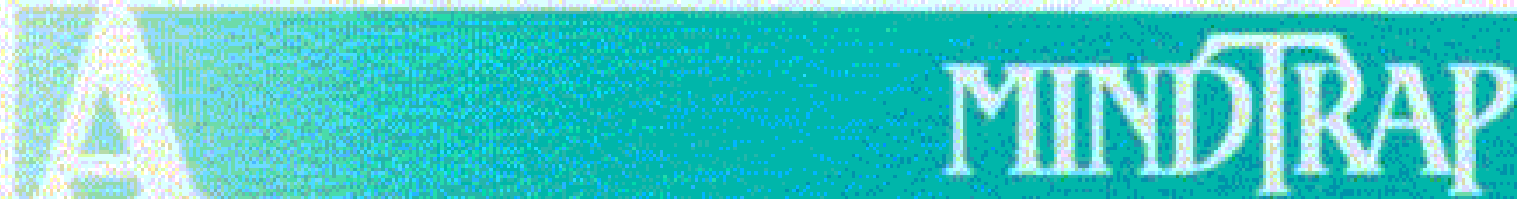
P&L

Q

MINDTRAP

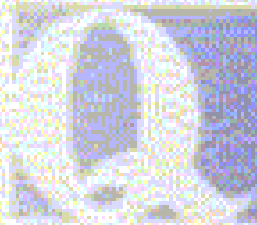
Pete Polyester decided to get into the used boat sales business. After buying two boats, he realized he'd spent all his money and had no cash flow. Pete opted for a couple of quick sales. By the end of the day he had sold both boats for \$6000 each. On one boat he realized a profit of 20% and on the other boat he lost 20%. Did Pete make money, lose money, or break even?

P&L - Answer



Pete lost money. He bought one boat for \$5000 and sold it for \$6000. The other boat he bought for \$7500 and sold for \$6000. He originally shelled out \$12,500, but on the resale, brought in only \$12,000.

Paint



MINDTRAP

It takes Sandy three hours to paint a fence, and it takes Claude six hours to complete the same job. How long would it take both of them working together at their normal paces to complete the same job? Explain.

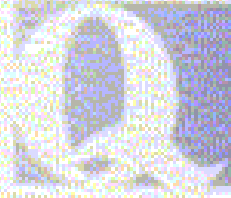
Paint - Answer

A

MINDTRAP

Two hours. Sandy can complete $\frac{1}{3}$ of the job in one hour and Claude can complete $\frac{1}{6}$ of the job in one hour; therefore, together they can complete $\frac{1}{3}$ plus $\frac{1}{6}$ or $\frac{1}{2}$ of the job in one hour. Consequently, the entire job can be completed in just two hours.

Pole



MINDTRAP

Dee Septor, the famous magician, wants to send his nephew, Justin Summers, a one-piece fishing pole for his birthday. Since it's Justin's birthday the following day, Uncle Dee must send it by air mail. Dee is told that he cannot send the pole air mail since it is three inches longer than the airline regulations permit. Dee Septor considers his problem for a moment and then realizes he can still send the pole without exceeding the airline regulations. How can he package and ship the pole without bending or shortening it in any way?

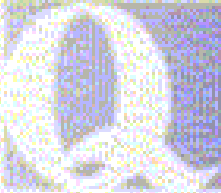
Pole - Answer

A

MINDTRAP

Dee Septor can use a carton that is three inches shorter than the pole and put it in the carton diagonally.

River



MINDTRAP

Three brothers and their respective wives were travelling through the country when they came to a river. Their only means of crossing was in a small canoe which would only hold two people at a time. The three men were very jealous and mistrustful of their wives and each other. Not one of the brothers would leave his wife alone in the boat, or on the shore with another brother, unless that brother's wife was also present. How many crossings were necessary to get the 'happy' clan across the river?

River - Answer

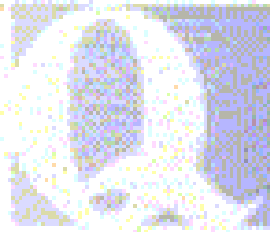
A

MINDTRAP

Nine. Let's call the six people involved A, Aw, B, Bw, C, Cw.

- Example:
1. C & C's wife (Cw) cross
 2. C returns
 3. Aw & Bw cross
 4. Aw returns
 5. A & Aw cross
 6. A returns
 7. A & B cross
 8. B returns
 9. B & C cross

Ship



MINDTRAP

Picture a ship at anchor. Over the side hangs a rope ladder with half meter rungs. The tide rises a half meter per hour. At the end of five hours, how much of the ladder will remain above the water assuming that nine rungs were above the water when the tide began to rise?

Ship - Answer

A

MINDTRAP

Nine rungs will be above the water. As the tide rises, so too will the ship and the ladder.

Siblings

Q

MINDTRAP

In the 'Strange' family, each daughter has the same number of brothers as she has sisters. Each son has twice as many sisters as he has brothers. How many sons and daughters are in the family?

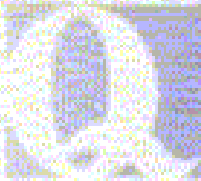
Siblings - Answer

A

MINDTRAP

There are four daughters and three sons.

Ticket



MINDTRAP

◆
“It’s just my luck!” screamed Barney Dribble. “It was about 10:30 in the morning and for once I hadn’t had a drink yet. I was driving along the highway doing the legal speed of 100 kilometers per hour. My old heap just passed a safety and my license plates, license, and insurance were all in order. Not only that, but I was even wearing my seat belt! So anyway, I’m driving along, I pass a couple of cars, being certain not to go over 100 clicks and the next thing I know a cop pulls me over and gives me a ticket.” What could Barney have done wrong?

Ticket - Answer



MINDTRAP

Barney was doing something only *slightly illegal*. He was driving his car in the wrong direction. The cars he passed were going the opposite way.

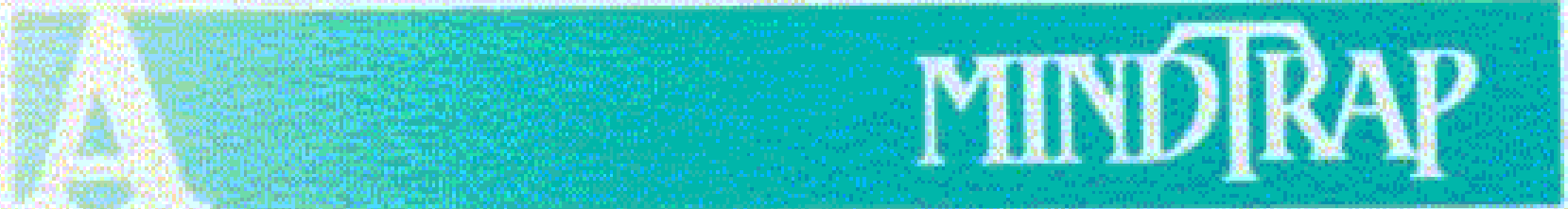
Tomorrow

Q

MINDTRAP

When the day after tomorrow is yesterday, today will be as far from Wednesday as today was from Wednesday when the day before yesterday was tomorrow. What is the day after this day?

Tomorrow - Answer



Thursday.

Wheels

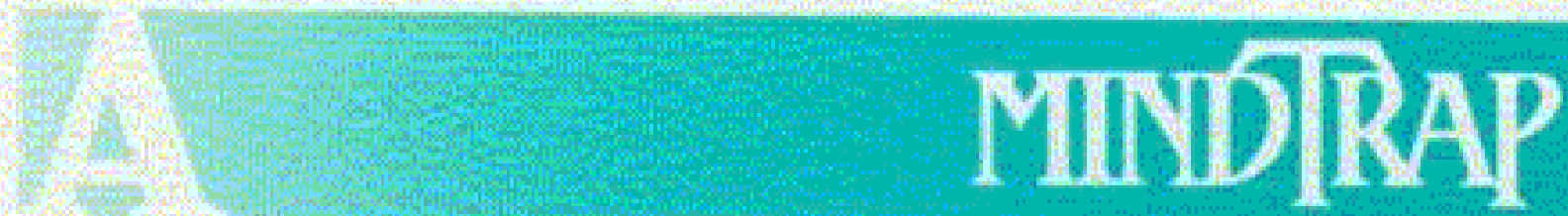
Q

MINDTRAP



Professor Quantum was motoring along at a leisurely speed when he suddenly realized that he was late for a lecture. He took the next corner on two wheels right in front of a policeman. The lawman made no effort to pull him over. How could Professor Quantum get away with such driving habits?

Wheels - Answer



ANSWER MINDTRAP

The Professor was driving a motorcycle.

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