

Introduction to Problem Solving & Critical Thinking - 2

Part 13b 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:

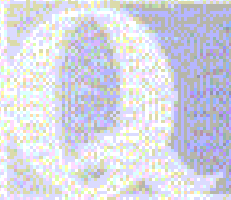
Problem Solving and Critical Thinking

- 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

Pawn



MINDTRAP

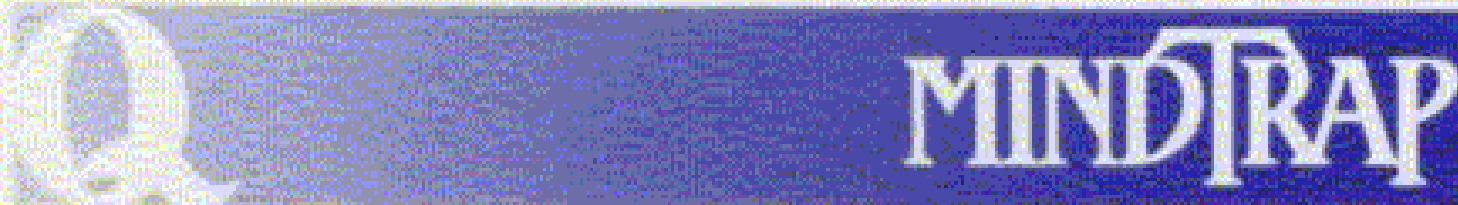
Art Conn had only \$2, but he needed \$3 for his cab fare home. Undaunted, he went to a pawn shop and pawned his \$2 for \$1.50. Art then bumped into Duncan Drivel and told him that he would sell him his \$2 pawn ticket for \$1.50. Duncan agreed. Since Art started out with \$2, and he ended up with \$3, who is out the extra dollar and why?

Pawn - Answer

ANSWER

Duncan Drivel is out the extra dollar. Before the pawn broker will return the \$2 to the ticket holder, he will want the \$1.50 which he advanced returned to him. Duncan will give the pawn broker the ticket and the \$1.50, and the pawn broker will then return the \$2. Duncan now has \$2 for which he paid \$3.

Profit



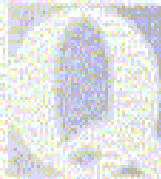
Art Conn bought a used car for \$600 and sold it to Hardy Pyle for \$800. He later bought it back for \$1000 and resold it for \$1200. Did Art make any profit and if so how much? Explain.

Profit - Answer



At first glance it appears that Art Conn made a profit of \$200, however this is not the case. Art made a total profit of \$400 since he made \$200 profit *each time* he sold the car.

Salary



MINDTRAP

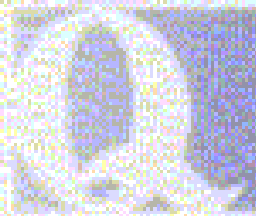
Art Bragg and Ari Gant were at the 'Soul-Ace Hotel' celebrating their new three year contracts. Art said that his position starts him off at \$50,000 a year, and he'll receive a \$10,000 raise at the beginning of each year. Ari said that in his position he starts at \$25,000 for the first six months, and gets a \$2,500 raise every six months after that. "Well," said Art, "since I'll be making the most money for the next three years, the least I can do is buy the next round." Who will make the most money each year, and by how much?

Salary - Answer



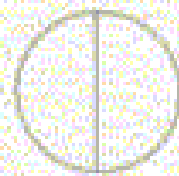
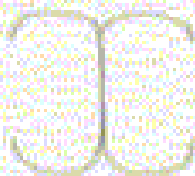
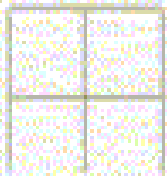
Ari Gant will actually earn more than Art Bragg since Art will not receive a raise until the start of the second year. In the first year Art will earn a flat \$50,000. Ari, however, will earn \$25,000 in the first six months, and in the second six months he will earn another \$25,000 plus a \$2,500 raise. At the end of the first year Ari will have earned \$52,500. In the second year Art will get his \$10,000 raise plus his \$50,000 base, meaning in year two he will earn \$60,000. Ari will earn \$27,500 for the first six months plus a \$2,500 raise, and for the second six months earn \$30,000 plus another \$2,500 raise for a total of \$62,500. Therefore, at the end of each year, Ari will *always* be \$2,500 ahead of Art.

Sequence

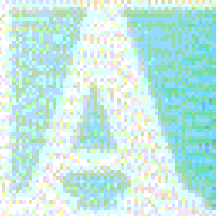


MINDTRAP


What is the next figure or symbol in the following sequence?



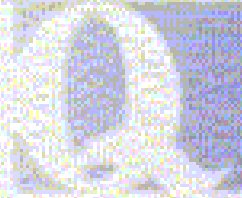
Sequence - Answer



MINDTRAP

The next figure or symbol is . The sequence is the letters A to E. The right half of each figure is the letter, and the left half is its mirror image.

Series



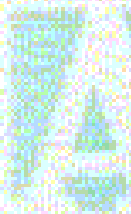
MINDTRAP

Which number is next in this series:

10, 4, 3, 11, 15 ...?

- (a) 14,
- (b) 1,
- (c) 17,
- (d) 12.

Series - Answer



MINDTRAP

(a) 14. When spelled out, each number in the series is longer than the previous number by one letter.

Tree

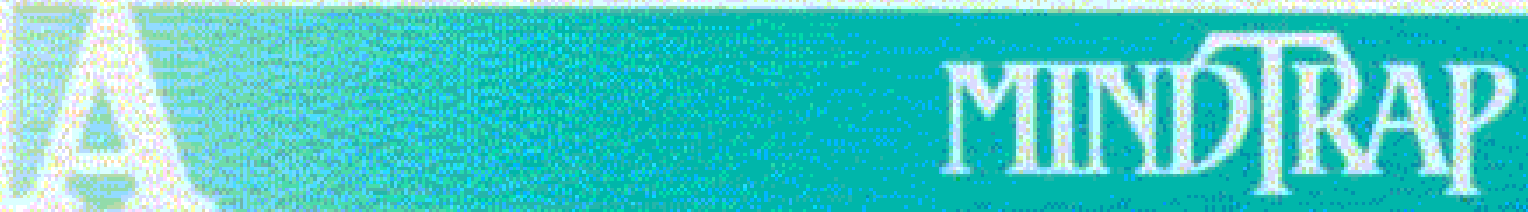


MINDTRAP



Heidi Bush has a cottage situated on a well treed lot in Northern Ontario. She enjoys keeping her lot in top condition by fertilizing, pruning and removing deadwood and broken branches. However, Heidi has a rather strange habit regarding her little forest. Every once in a while she'll chop down a perfectly healthy tree and put it in a large pot. She'll water the tree and fertilize it etc. and a short time later when she grows tired of it, she burns it. Could there be any rational explanation for this seemingly strange behaviour?

Tree - Answer



The *every once in a while* is once a year at Christmas time when she cuts down a Christmas tree.

Underware

Q MINDTRAP

Every Tuesday evening Hardy Pyle drives up to his cottage to visit his wife. On these weekly visits he drops off the clean clothes and picks up the dirty laundry. Since Mrs. Pyle changes her underwear each morning, what is the minimum number of underwear she can own?

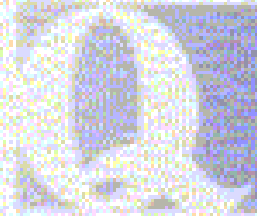
Underware - Answer

A

MINDTRAP

Fifteen. Every Tuesday Mrs. Pyle receives seven pair of underwear and also leaves seven for Hardy to wash. That equals fourteen, plus the pair she is wearing.

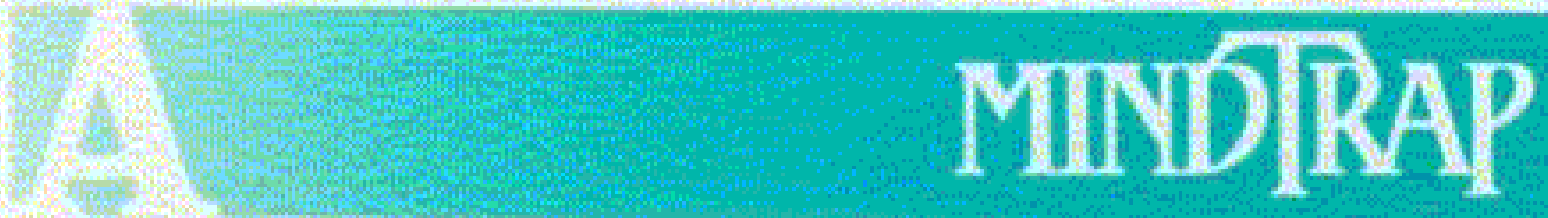
Walk-Ride



MINDTRAP

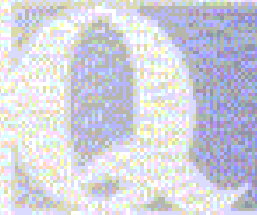
Barney Dribble was going on a one-way bus trip. He intended to ride for a certain distance, get off the bus, and walk back to town. If the bus travels at a rate of nine kilometers per hour and he was to walk back to town at a rate of three kilometers per hour, how far would he ride so that he'd be back in eight hours?

Walk-Ride - Answer



Eighteen kilometers. Since he is riding three times as fast as he can walk, three quarters of his time must be spent walking. Since he rode for two hours, travelling 18 kilometers, and walked for six hours, travelling at three kph, he made the round trip in eight hours.

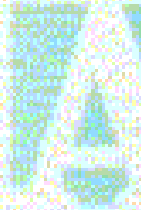
Wheel



MINDTRAP

As you approach the centre of a turning wheel, the speed decreases. Owing to this fact, does the exact centre of a wheel rotate when the wheel turns? Explain.

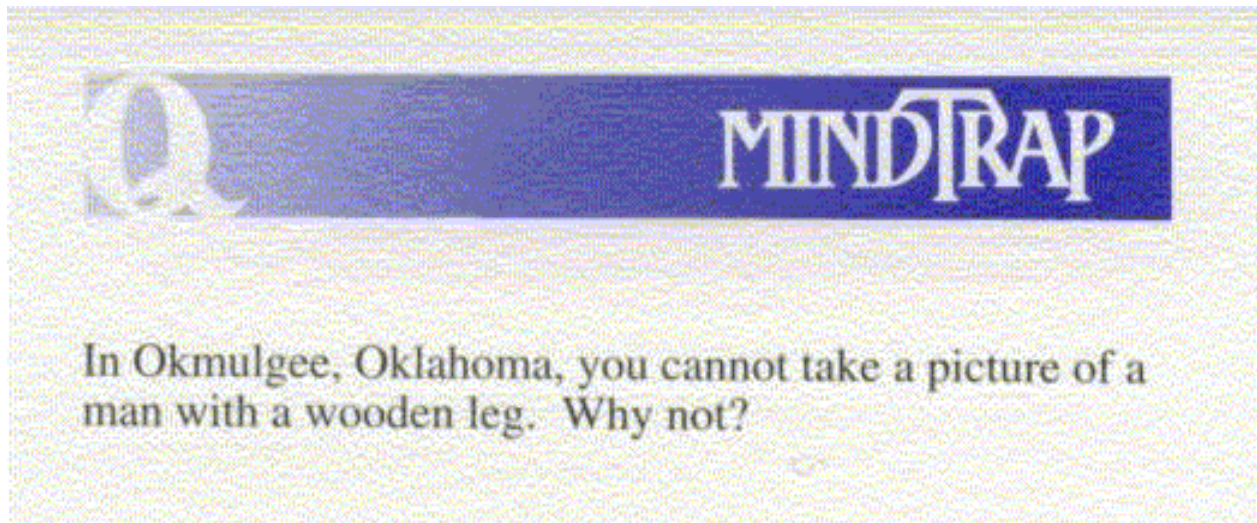
Wheel - Answer



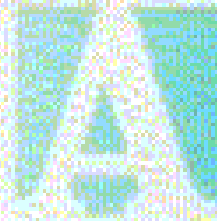
MINDTRAP

The answer is yes. Theoretically, the answer would appear to be *no*, since to move at all, it would seem the exact centre is moving in two directions at once, which is of course impossible. The *exact centre* of a wheel does turn since the particle in the centre of the wheel, be it ever so small, could always be divided in half and this process could continue indefinitely.

Wooden Leg



Wooden Leg - Answer



MINDTRAP

You cannot take a picture of a man with a *wooden leg* anywhere - you need a camera. (Groan)

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