

# **FRIDAY SPECIALS TO ENLIVEN YOUR CLASSROOM**

**A Presentation for**

**AMATYC**

**Washington D. C.**

**November 20, 2008**

**Professor Jack Weiner**

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## CORRECTION NOTICE

An error was made in the AUGUST 6th EDITION of the PENNYSAVER in the

## KRAZY KELLY

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Professor Weiner: Here is a copy of the Honda Ballot with the "skill testing" question.

# FEEL FREE!

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**1st prize** Honda Nighthawk 250cc and Canada Safety Council Course (Approx. value \$3,650.00).

**2nd prize** 10 Compact Discs (Approx. value \$200.00). See reverse for rules.

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Winners must correctly answer the following skill testing question:

**$22 + 14 \div 3 \times 4 - 3 =$**  \_\_\_\_\_

Honda has stated that 45 and  $37\frac{2}{3}$  are both correct answers.

Would you please answer the question & explain how (why?) you arrive at your answer?

Would you also state your opinion on whether both 45 and  $37\frac{2}{3}$  are correct answers.

Thank you very much for your time. Your assistance with this is greatly appreciated.

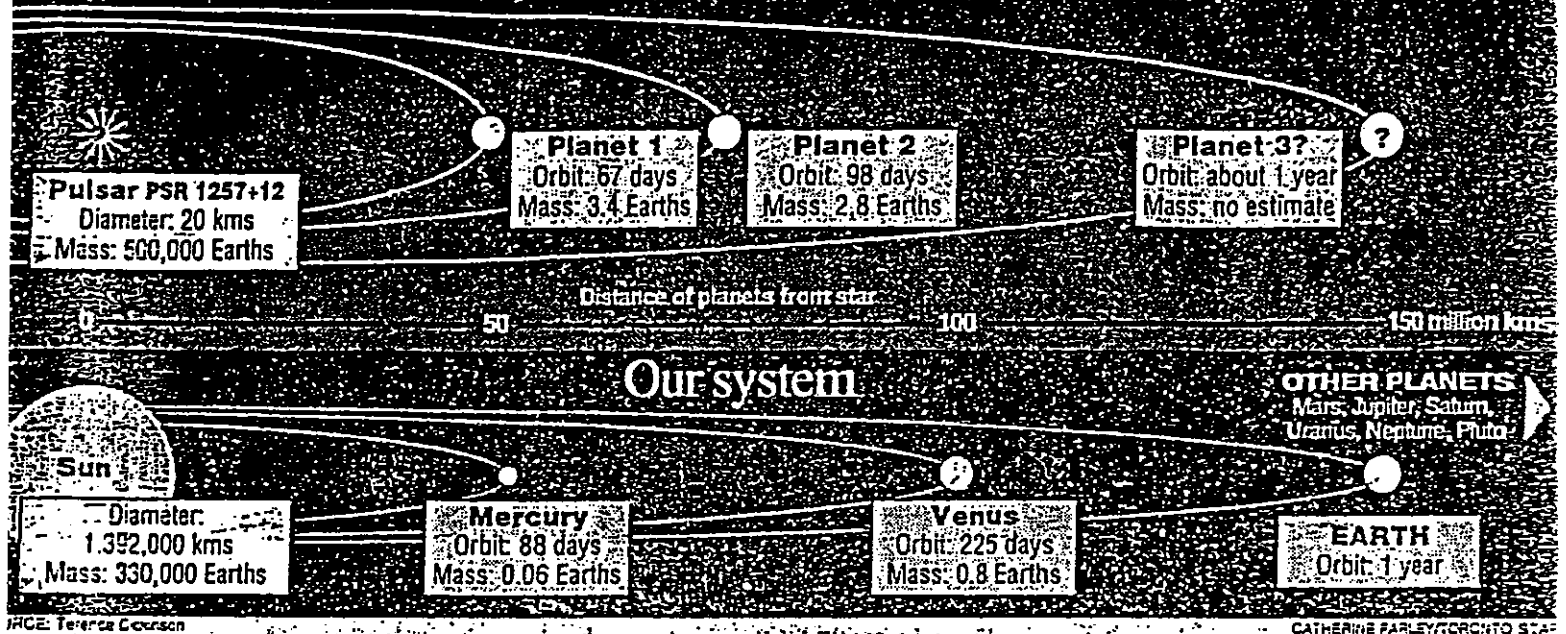


BORIS SPREMO/CM/TORONTO STAR FILE PHOTO

A gas station at Jarvis and Isabella Sts. sells gas for 14.4 cents a litre in April 1975. As Toronto prices hit an average yesterday of 91.5 cents, one small business owner who uses her car daily said, "I'm outraged. Don't get me going."

# New solar system discovered

Astronomers say they have found a new solar system, with planets having some characteristics similar to Earth.



## Canadian helps find new planets

By Michael Smith  
TORONTO STAR

**TWO ASTRONOMERS** — one a Canadian — have discovered the best evidence for planets outside the solar system.

Dale Frail and Alexander Wolszczan timed the arrival of pulses from a rapidly spinning neutron star — a "black widow" pulsar — about 1,300 light years from Earth and concluded it has at least two and possibly three planets.

It's the second time in recent months that a team of astronomers has reported planets around a pulsar but earlier findings — by a team from Britain's Jodrell Bank observatory — are not as convincing, he said.

Questions were immediately raised after Jodrell Bank team announced its findings last July: how could planets form under a relatively young pulsar? Were there other causes — starquakes, for instance — that might produce the impres-

**UP FRONT**



**DALE FRAIL: U of T grad was part of astronomers' team.**

sion of a single planet?

"I personally believe their result," said Frail, a Nova Scotian with a doctorate from the University of Toronto, "but it's not as convincing as this one."

The new discovery is more convincing because the star itself — dubbed PSR1257+12 — is very old, and researchers think they know how its planets might have formed.

And because the data indicate two planets, it's less likely that other causes are producing the effect.

"I have no hesitation in saying this is the most solid evidence so far" for planets outside the solar system, Wolszczan said.

He and Frail report their findings in today's issue of *Nature*, the prestigious British science weekly.

One implication of the discovery, Wolszczan said, is that if planets can form in the extreme conditions that exist near a pulsar, "lots of normal stars should have planets as

Please see PROOF/page A4

### How far away is it from Earth?

Our system

New system

Our galaxy: The Milky Way

### '1,300 light years'

- A light year is the distance that light travels in one year.
- Light travels at a speed of 299,792.5 kms per second.
- Therefore, the newly discovered system is 122.9 million billion or 122,902,000,000,000 kms away from Earth.

$$299792.5 \times \boxed{\phantom{000}} \times \boxed{\phantom{000}} \times \boxed{\phantom{000}} \times \boxed{\phantom{000}} \times \boxed{\phantom{000}} \times \boxed{\phantom{000}}$$

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# VICE SQUAD

Less sugar, yes, but more calories



Suzanne Carere

**Product:** Froot Loops 1/3 Less Sugar

**Price:** \$4.49-\$5.29 for 350g box  
**Total calories:** 112 for a 27g serving

**Manufacturer:** Kellogg Canada Inc.

**The position:** Froot Loops 1/3 Less Sugar gives consumers choice if they are looking to limit their sugar intake.

**Top 4 ingredients:** Flour mix (corn/white/whole oat flour, sugar, salt), sugar, hydrogenated coconut oil, colour

**Nutritional breakdown for a 27g serving:** Froot Loops 1/3 Less Sugar: 23g carbohydrate (0.9g fibre, 8g sugar, 14g starch), 0.9g fat (0.3 saturated), 2g protein, 149g sodium. Regular Froot Loops: 24g carbohydrate (0.9g fibre, 12g sugar, 11g starch), 0.5g fat (0.5 saturated), 1g protein, 110g sodium and 110 calories

**Analysis:** Take a moment to compare the nutrition information of both products and see if anything stands out as being a little... strange? Now give yourself a point if you found each of the following:

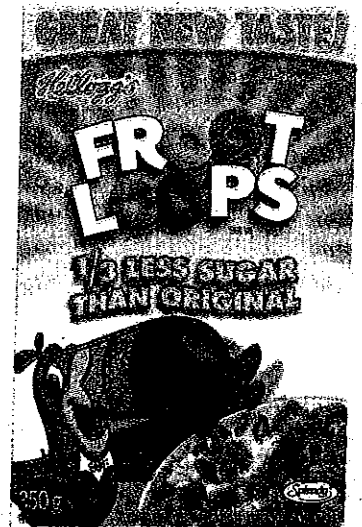
- > 1/3 Less Sugar is higher in fat
- > 1/3 Less Sugar is higher in sodium
- > 1/3 Less Sugar is higher in calories
- > 1/3 Less Sugar is only lower in carbohydrates by 1g

Shocked? I sure was. When scanning the numbers, the first three were probably easy — although no less surprising — to pick out. The last one may have been a little trickier. In the process of reducing the sugar content in this cereal, Kellogg's ended up using an artificial sweetener — sucralose — and more flour. This increased total starch by 3g and led to a slightly higher sodium, iron, thiamin, niacin and protein content.

Research has shown, however, that some starches (like white bread) actually turn into sugar in the blood faster than table sugar itself. In the end, it's the concentration of fibre that plays a larger role than the number of grams of sugar. To your body, this means there's basically no difference in sugar content between these two cereals.

You don't have to go by my word on this, however. You can ask any dietitian you want — even Johanne Trudeau, director of nutrition for Kellogg's Canada. Despite quotes from Kelloggs.ca stating that they are dedicated to the health of children and nutrition education, Trudeau was quick to clarify with me that Kellogg's 1/3 Less Sugar wasn't formulated with the health of children in mind. Say what? Apparently it was created to meet the consumer demand that moms want their children to consume less sugar.

Stunned, I asked: "Wouldn't that be for health reasons though?" Her answer: "You're going too deep." According to Trudeau, Kellogg's didn't take

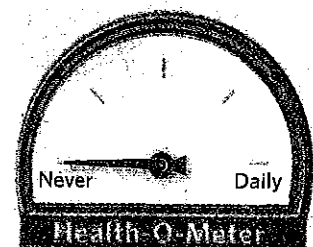


the time to find out why moms wanted their kids to eat less sugar, they simply made a product that would "make moms feel better."

When I pushed her on the fact that both cereals would provide a similar sugar load to the blood, she told me that although she and I might know that, "most kids and moms don't."

**Alternative:** I know I've been hard in the past on companies that are trying to make healthy products but in the end fall short of their goals. This, however, is an entirely different ball game. If I'm going to treat myself to a high-carbohydrate, low-fibre cereal like this one, I'd rather buy one that doesn't take advantage of consumers' lack of knowledge.

**Take it or leave it:** I think my work here is done.



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To onto  
Star  
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# GAS PRICE HIKES ELIMINATE SAVINGS

(Letter to the Editor, The Toronto Star, March, 1981)

Despite the milder weather, I cannot agree we are saving any dollars using gas.

My last gas bill showed an amount of \$128.50 for February against \$83.40 for the same time last year. When I asked about this of Consumers' Gas, I was informed I had used 15% less gas this year than last. When asked why my account was \$45 more, the reply was that the price of gas increased 24% in the last year. Where are the 6 and 5% guidelines, or don't they apply to Consumers' gas?

Monty Goldstone  
Downsview

	Gas g litres	Price ¢ per litre	monthly Bill
1980			
1981			



## **Want Ads**

### **Honourable Intent, Questionable Execution!**

**FOR SALE:** Hundreds of bikinis for ridiculous figures.

**FOR SALE:** Diamonds, \$20. Microscopes, \$15.

**USED CARS:** Why go elsewhere and be cheated? Come here first!

**AUTO REPAIR SERVICE:** Free pick-up and delivery. Try us once, and you'll never go anywhere again.

**SEVEN OUNCES** of choice sirloin steak, boiled to your likeness and smothered in onion rings.

**DINNER SPECIAL:** Turkey, \$5.95; Chicken or beef \$4.95; Children, \$3.95

**WANTED:** Woman to assist magician in cutting-off-head illusion. Salary and medical benefits.

**THREE** year-old teacher needed for pre-school. Experienced preferred.

**OUR** bikinis are exciting. They are the tops!

**ILLITERATE?** Write today for free help.

**WANTED:** Widower with school age children requires person to assume general housekeeping duties. Must be capable of contributing to the growth of the family.

**SEMI-ANNUAL** after Christmas Sale!

**NOW THE SUPERSTORE:** Unequalled in size, unmatched in variety, unrivalled inconvenience!

**DOG FOR SALE:** Eats anything and is fond of children.

**STOCK UP AND SAVE:** Limit one.

**TIRED** of cleaning yourself? Let me do it!

## **CUSTOMER DID REDUCE PER DAY HYDRO COSTS**

**(Letter to the Editor, The Toronto Star, January, 1993)**

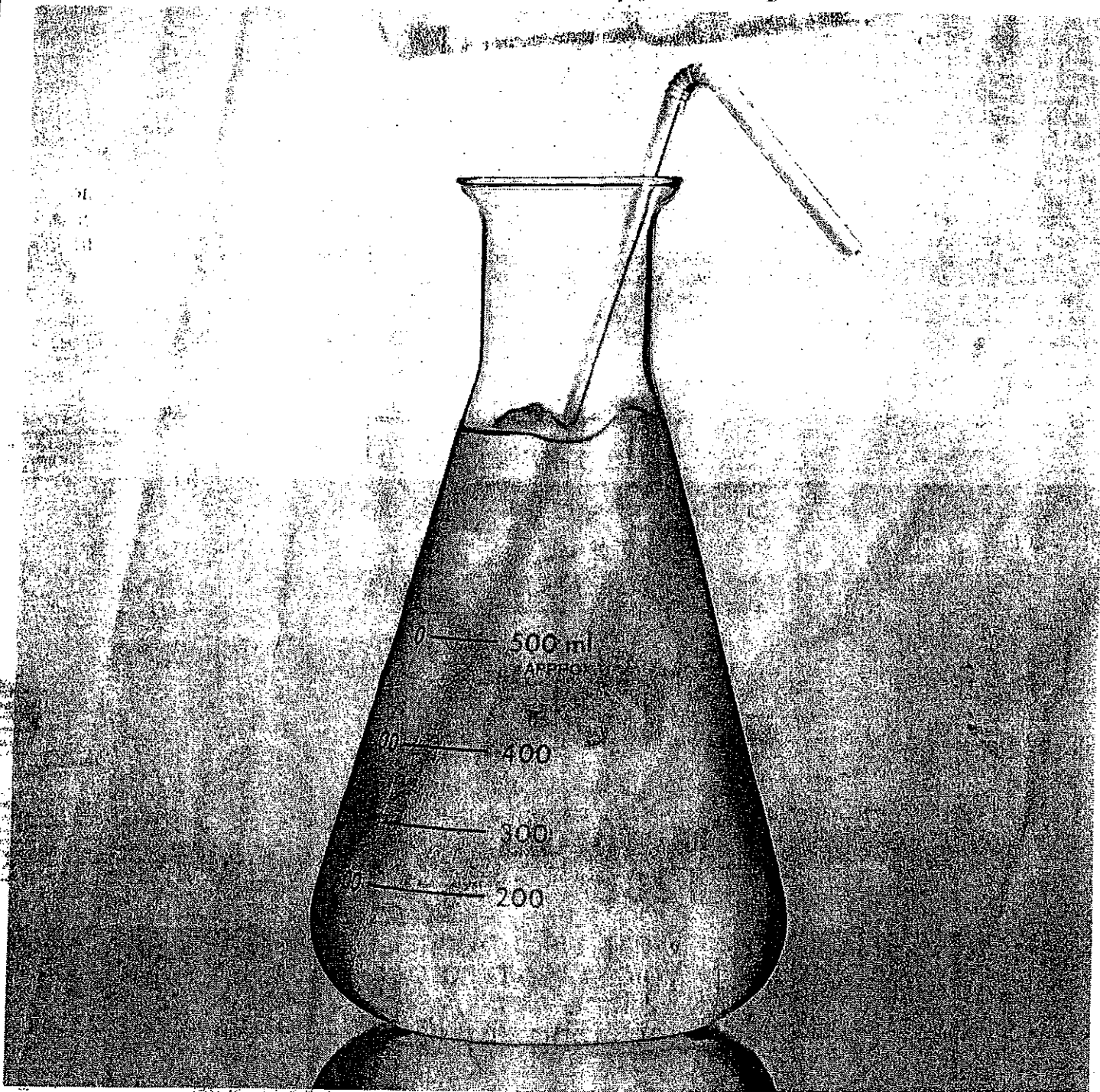
In her Dec. 30 letter, Leslie Jones of Mississauga was correct in observing that her current bill was higher than her previous bill, even though she used less electricity.

Our rate structure considers the length of the billing period by dividing by 365 (days) and then multiplying by 12 (months) to create a ratio which is then applied to the rate blocks. Over the course of a year, customers are billed exactly 12 equal blocks of energy at each rate. This method of calculation is the fairest to our customers.

During Jones' current billing period, her costs were \$1.31 per day (\$82.27 divided by 63) compared to \$1.44 (\$81.82 divided by 57) during the previous billing period. She did reduce her costs on a per day basis.

If Jones continues to reduce her electricity consumption, she will save money. At this same reduced level, she would save about \$8 per year

Ken N. Posgate  
Director, Consumer Affairs  
Mississauga Hydro



# TORONTO DRINKING WATER. PURITY-TESTED MORE THAN 300,000 TIMES/YR.

Every day, Toronto's drinking water is tested for purity, and then tested again. In fact, water samples are taken every four hours to confirm the absence of bacteria. What's more, compared to bottled water, it's environmentally friendly, and a small fraction of the price. How refreshing is that? Visit [www.city.toronto.on.ca/water](http://www.city.toronto.on.ca/water) or call 416.392.4546.



Toronto Star Dec 3, 2001

$$365 \times 6 = 2190 ; \frac{300000}{2190} \approx 137$$

Reddy?! 5 x 6 = 30 day

## PRODUCTION MANAGEMENT

A worker in a plastics factory breaks apart sheets of component A and strips of component B and then snaps one of each together to make a finished item. If the worker can break off 20 A's or 30 B's per minute and snap together 10 pairs of A's and B's per minute, how should the worker's 440-minute workday be divided so as to complete as many items as possible with no unused pieces left over?

### Solution

Let  $x$  be the number of minutes spent breaking apart sheets of component A and  $y$  be the number of minutes breaking apart strips of component B. The remainder of the worker's time,  $440 - (x + y)$ , will then be spent snapping A's and B's together. Because the worker needs as many A's as B's,

$$20x = 30y$$

Rate  $\times$  time gives  
number finished

As many finished items as A's will be completed:

$$20x = 10(440 - (x + y))$$

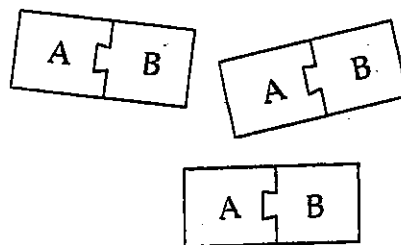
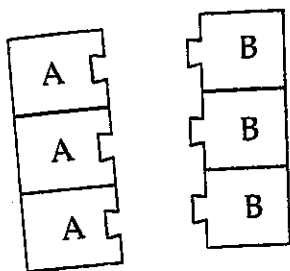
Simplifies to  
 $30x + 10y = 4400$

Rewriting these as a system of equations, the problem becomes

$$\begin{cases} 20x - 30y = 0 \\ 30x + 10y = 4400 \end{cases}$$

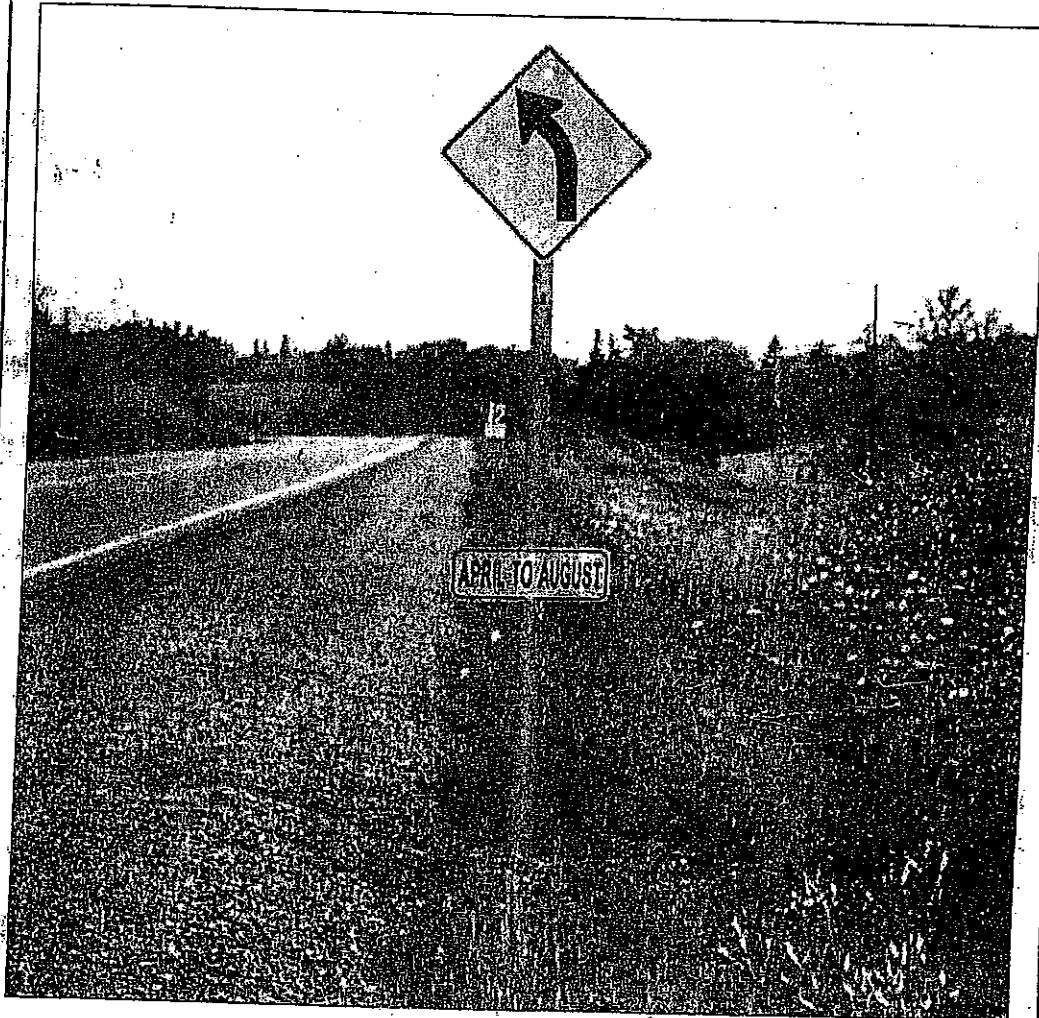
$$x = 120$$

$$y = 80$$



- 73. GENERAL: Estate Division** A will specifies that the older brother is to receive one half of the \$12 million estate after first deducting the younger brother's share, the younger brother is to receive one third of the estate after first deducting the older brother's share, and the remainder is to be given to their sister. How much does each brother receive? How much is left over for their sister?
- 74. BUSINESS: Real Estate Taxes** Find the state and city property taxes on an apartment building assessed at \$833,000 if the state tax is 4% of the assessed value after first deducting the city tax and the city tax is 1% of the assessed value after first deducting the state tax.

## Drive-by



WILLIAM PELLETT

Seasonally adjusted curve?

HOW DO  
**YOU**  
SOLVE FOR X?

**PROBLEM** Solve for x in each of the following.

(a)  $3x - 6 = 32$

(b)  $3x - 12 = 32$

**SOLUTION** (a)  $x = 8$

(b) There is no solution.

## THE DEVIANT "MEDIANT"

**PROBLEM** The "mediant" of two fractions,  $a/b$  and  $c/d$ , where  $a$ ,  $b$ ,  $c$ , and  $d$  are positive real numbers, is defined by the fraction:

$$\text{mediant} = (a + c)/(b + d).$$

Given that  $a/b < e/f$  and  $c/d < g/h$ , prove that

$$(a + c)/(b + d) < (e + g)/(f + h).$$

**SOLUTION** COUNTER-EXAMPLE using the batting averages of Julie and John!!!!

SEASON	JULIE	JOHN
	<u>hits/at bats</u>	<u>hits/at bats</u>
1	40/200 =	100/400 =
2	93/300 =	32/100 =
Cumulative averages	133/500 =	132/500 =



## **Message for English Speaking Tourists**

### **Honourable Intentions, Questionable Results**

*In a Bucharest hotel lobby:* The lift is being fixed for the next day. During that time we regret that you will be unbearable.

*In a Paris hotel elevator:* Please leave your values at the front desk.

*In a Belgrade hotel elevator:* To move the cabin, push button for wishing floor. If the cabin should enter more persons, each one should press a number of wishing floor. Driving is then going alphabetically by national order.

*In a Yugoslavian hotel:* The flattening of underwear with pleasure is the job of the chambermaid.

*In a Japanese hotel:* You are invited to take advantage of the chambermaid.

*In an Austrian hotel catering to skiers:* Not to perambulate the corridors during the hours of repose in the boots of ascension.

*Outside a Hong Kong tailor shop:* Ladies may have a fit upstairs.

*In a Bangkok dry cleaners:* Drop your trousers here for best results.

*Paris dress shop:* Dresses for street walking.

*A sign posted in Germany's Black Forest:* It is strictly forbidden on our Black Forest camping site that people of different sex, for instance, men and women, live together in one tent unless they are married with each other for that purpose.

*In a Zurich hotel:* Because of the impropriety of entertaining guests of the opposite sex in the bedroom, it is suggested that the lobby be used for this purpose.

*In a Rome laundry:* Ladies, leave your clothes here and spend the afternoon having a good time.

*In a Czechoslovakian tourist agency:* Take one of our horse driven city tours. We guarantee no miscarriages.

*Advertisement for donkey rides in Thailand:* Would you like to ride on your own ass?

*In a Tokyo bar:* Special cocktails for ladies with nuts.

*In a Norwegian cocktail lounge:* Ladies are requested not to have children in the bar.

*In the office of a Roman doctor:* Specialist in women and other diseases.

*In an Acapulco hotel:* The manager has personally passed all the water served here.

# NEW 75MHz PENTIUM PROCESSOR- BASED SYSTEM ONLY \$1999

**Dell Dimension™ XPS P75**  
A Pentium® Processor-based  
75MHz System  
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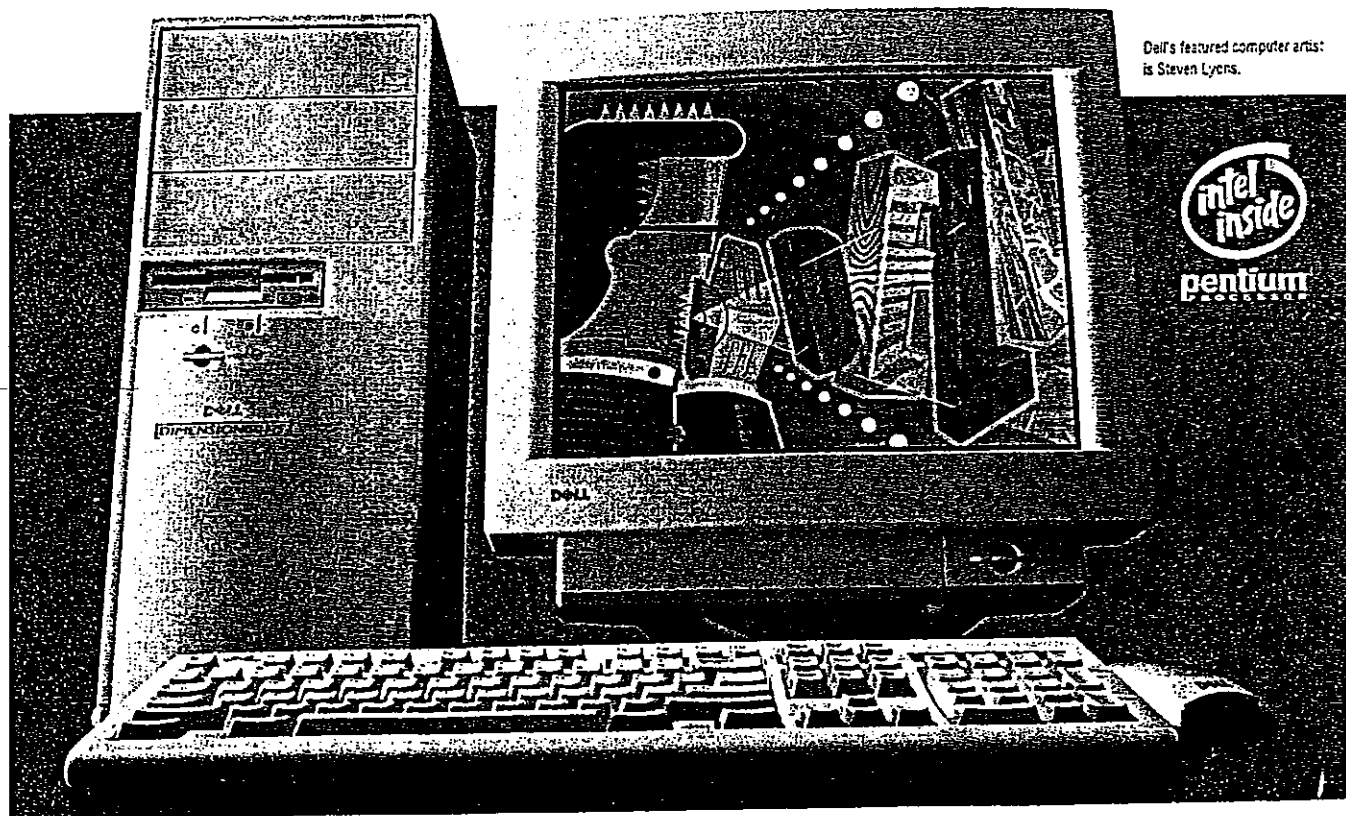
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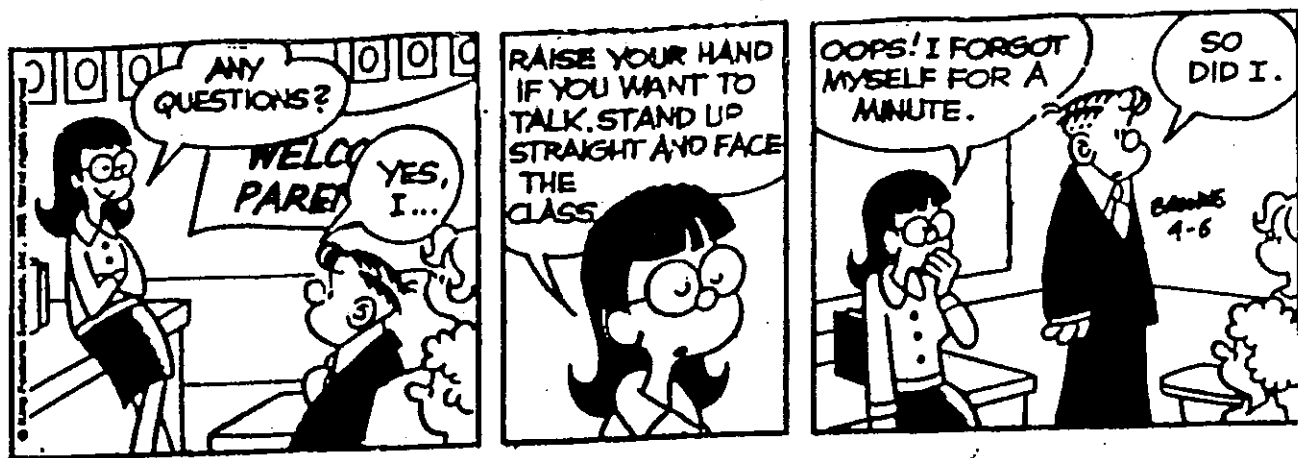
**DELL**



Dell's featured computer artist  
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**intel  
inside**  
**pentium**

Just turn the page to continue seeing the hottest technology at the hottest prices.



**Ann  
Landers**

**Ann Landers**

**"It's cross-graded multi-ethnic gobbledygook"**

**Dear Ann Landers:** You are supposed to be a smart cookie. Can you figure this out? I bet my wife \$10 you'd flunk just as we did.

The parent of a Houston High school pupil received a message from the school principal concerning a special meeting for a proposed new educational program.

The message read:

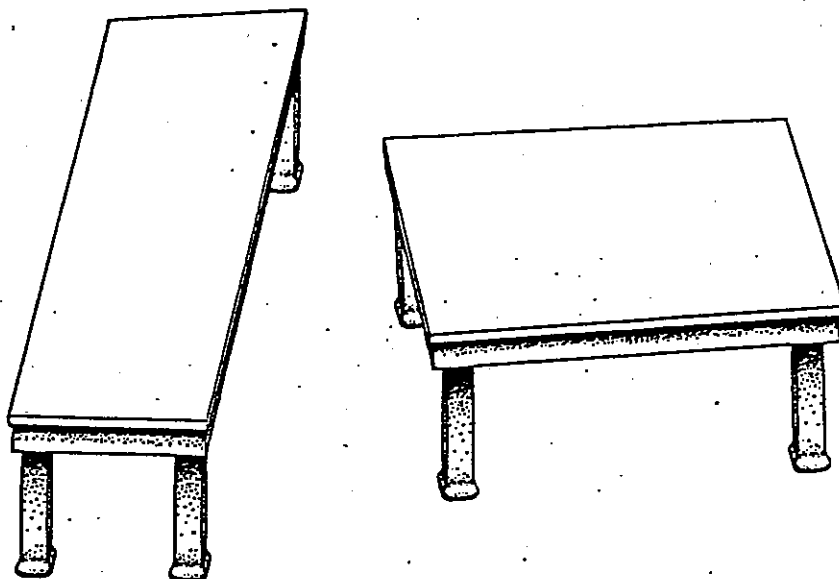
"Our school's cross-graded, multi-ethnic, individualized learning program is designed to enhance the concept of an open-ended learning program with emphasis on a continuum of multi-ethnic, academically enriched learning, using the identified intellectually gifted child as the agent or director of his/her own learning. Major emphasis is on cross-graded, multi-ethnic learning with the main objective being to learn respect for the uniqueness of a person."

The parent responded:

"Dear Principal: I have a college degree, speak two foreign languages and know four Indian dialects. I've attended a number of county fairs and three goat ropings but I haven't the faintest idea as to what the hell you're talking about."

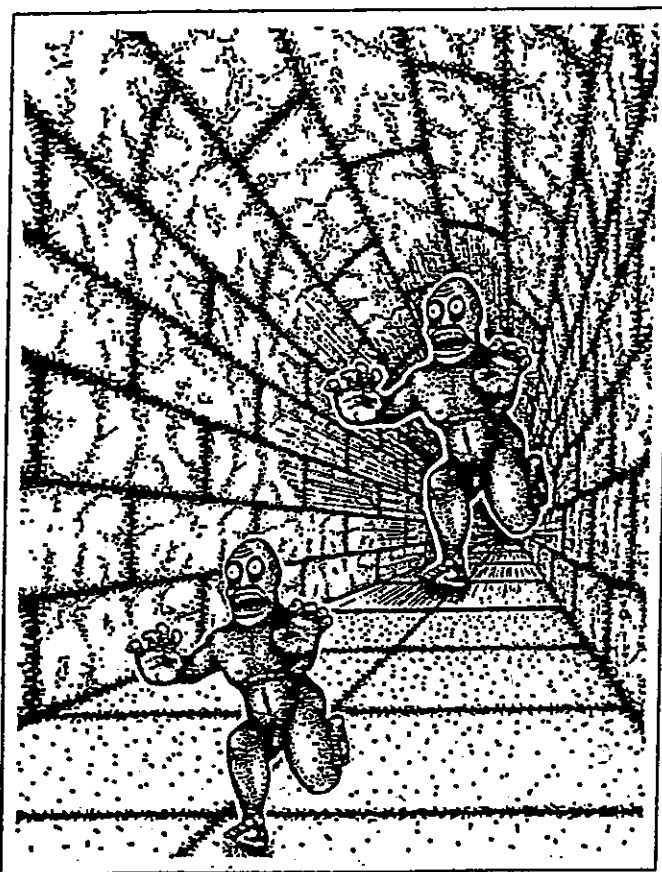
Dear Ann Landers,  
I'm writing to tell you  
my problem. It seems I have been  
married to a sex maniac for the  
past 12 years. He makes love to  
me regardless of what I'm doing -  
ironing, washing dishes, sweeping,  
etc. I would like to know if  
there is anything to  
prevent this? Please  
excuse this forky

within.



#### A2 TURNING THE TABLES

*The tops of the two tables are of identical size and shape in the plane of the picture. (This drawing is an elaboration of a parallelogram illusion that I first published in 1981.)*



#### A1 TERROR SUBTERRA

*(With apologies to Latin scholars.) The two monsters are identical in size. In addition to seeing them as different in size, do we also interpret their identical faces as expressing different emotions—such as rage on the part of the pursuer and fear on the part of the pursued?*

Roger  
N.

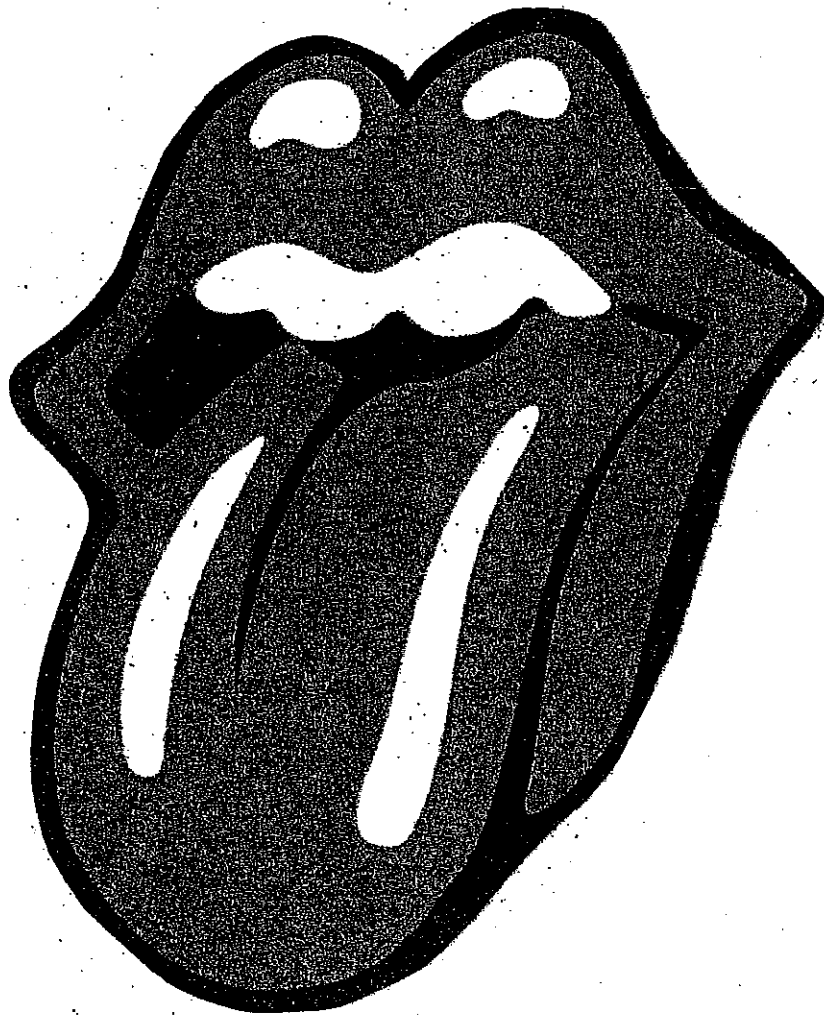
Shepard

"MINDSIGHTS

W. H. Freeman

ISBN

0-7167-2134



# SMART CARDS

1. Ask your partner to pick a number from 1 to 31.
2. Your partner should then tell you which squares below have that number.
3. You then AMAZE your friend by identifying the number.

1	3	5	7
9	11	13	15
17	19	21	23
25	27	29	31

SQUARE 1

2	3	6	7
10	11	14	15
18	19	22	23
26	27	30	31

SQUARE 2

4	5	6	7
12	13	14	15
20	21	22	23
28	29	30	31

SQUARE 3

8	9	10	11
12	13	14	15
24	25	26	27
28	29	30	31

SQUARE 4

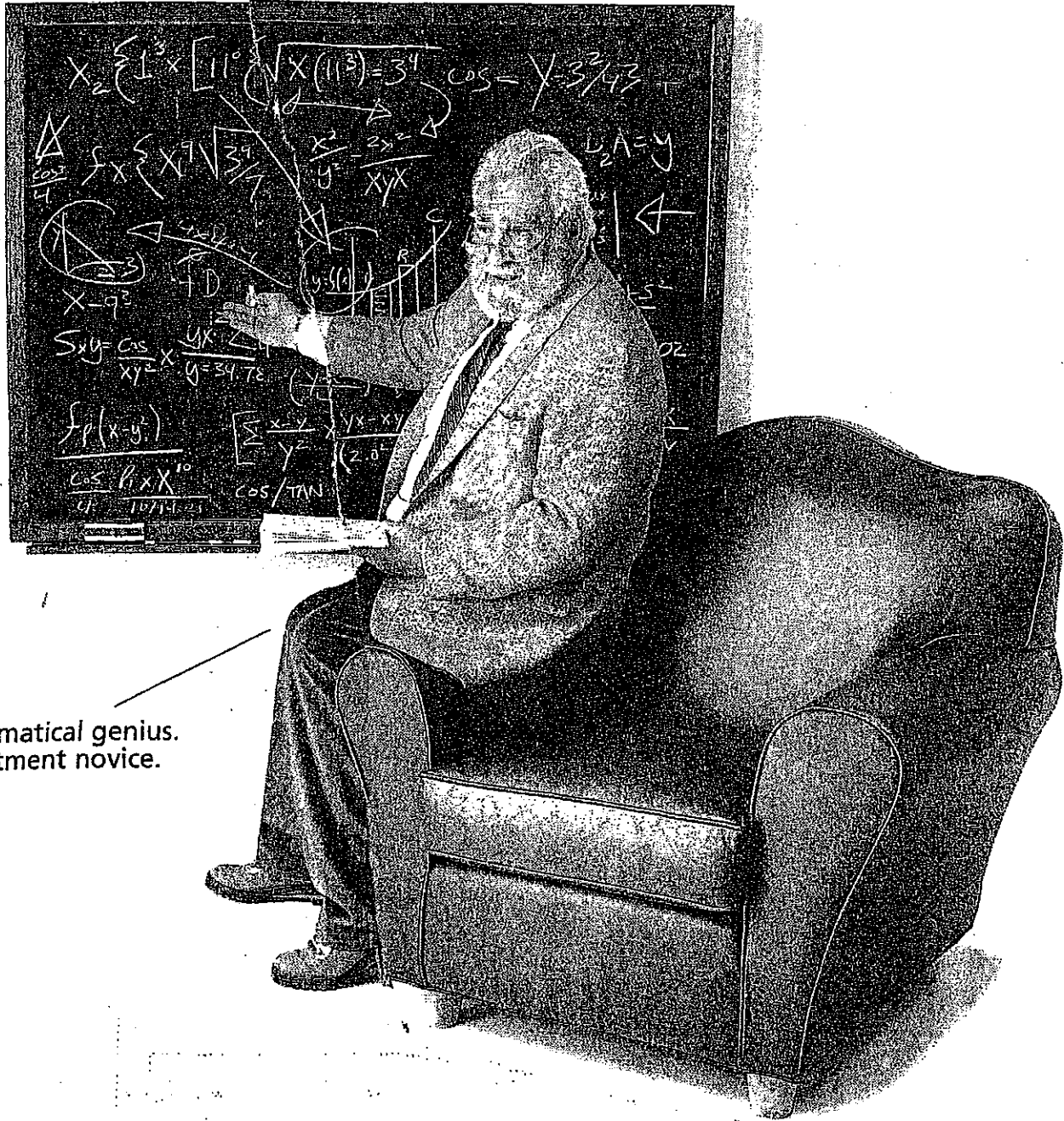
16	17	18	19
20	21	22	23
24	25	26	27
28	29	30	31

SQUARE 5

For example, if the number appears in squares 1, 3 and 5, the number must be 21.

(Thanks to Marilyn Burns for this activity.)

# Even experts can use professional advice



Mathematical genius.  
Investment novice.



## Logarithms, a Review.

Given  $\log_a M = m \Leftrightarrow a^m = M$ ,  $\log_a N = n \Leftrightarrow a^n = N$ ,  $a, M, N \in \mathbb{R}^+$ ,  $m, n \in \mathbb{R}$ ; verify the following Rules:

$$\log_a MN = \log_a M + \log_a N$$

$$\log_a \frac{M}{N} = \log_a M - \log_a N$$

$$\log_a M^p = p \log_a M$$

$$\log_a \sqrt[p]{M} = \frac{1}{p} \log_a M$$

$$\log_a \frac{1}{M} = -\log_a M = \log_a \frac{1}{M}$$

$$\log_a 1 = 0$$

and the Identities:  $a^{\log_a M} = M$ ;  $\log_a a^m = m$ .

Now apply these rules and identities to the following Evaluate:

1. (a)  $2 \log_2 8$ ; (b)  $3 \log_3 9$ ; (c)  $2 \log_2 5$ ; (d)  $3 \log_3 7$

2. (a)  $36^{\log_6 2}$ ; (b)  $25^{\log_5 3}$ ; (c)  $81^{0.5 \log_3 7}$ ; (d)  $81^{0.5 \log_3 7}$

(e)  $5^{\log_5 10 - 1}$ ; (f)  $2^{\log_2 5 + 1}$

Solve for x:

3. (a)  $\log_8 \frac{1}{8} = \frac{3}{2}$ ; (b)  $\log_{\frac{1}{27}} \frac{1}{27} = -2$

4. (a)  $\log_{0.04} 5 = x$ ; (b)  $\log_{\frac{1}{32}} \frac{1}{32} = x$ ; (c)  $\log_{0.125} = -2$

5. (a)  $3^{x+1} + 3^x = 108$ ; (b)  $2^{x+2} - 2^x = 96$

6. (a)  $3^{x+2} + 3^{x-1} = 28$ ; (b)  $2^{x-1} + 2^{x-2} + 2^{x-3} = 448$

7. (a)  $5^x + 3 \cdot 5^{x-2} = 140$ ; (b)  $7^{x+2} + 2 \cdot 7^{x-1} = 345$

8. (a)  $3^x + 3^{x+1} + 3^{x+2} = 5^x + 5^{x+1} + 5^{x+2}$

9. (a)  $3^{2x} - 3^x = 702$ ; (b)  $3^{2x} - 5 \cdot 3^x + 6 = 0$

10. (a)  $4^x + 2^{x+1} = 80$ ; (b)  $3^{x+2} + 9^{x+1} - 810 = 0$

11.  $3^{4x} - 4 \cdot 3^{2x} + 3 = 0$

12. (a)  $\log x = 2 - \log 5$ ; (b)  $\log(x+6) - \frac{1}{2} \log(2x-3) = 2 - \log 25$

(c)  $\frac{2 \log x}{\log(5x-4)} = 1$ ; (d)  $\frac{\log x}{1 - \log 2} = 2$

13. (a)  $\log_{x-1}(x^2 - 5x + 10) = 2$ ; (b)  $\log(\frac{1}{2} + x) = \log \frac{1}{2} - \log x$

(c)  $\frac{1}{12}(\log x)^2 = \frac{1}{3} - \frac{1}{4} \log x$ ; (d)  $2 \log x = -\log(6 - x^2)$

14. (a)  $\frac{1}{5 + \log x} + \frac{2}{1 + \log x} = 1$ ; (b)  $0.5 \log(2x-1) + \log \sqrt{x-9} = 1$

(c)  $\log \log \log x = 0$ ; (d)  $\log_2 \log_2 \log_2 x = 0$

Solve for x:

15. (a)  $x^x = x$ ; (b)  $x^{\log x} = 10$ ; (c)  $x^{\log x} + 2 = 1000$ ; (d)  $x^{2 - \frac{1}{2} \log x} = 100$

16. (a)  $\log(x^{\log x}) = 1$ ; (b)  $100 \log(x+20) = 10000$

(c)  $0.1 x^{\log x} - 2 = 100$ ; (d)  $(0.1)^{(x^2 - 5x + 8)} = 100$

17. (a)  $\log 9^{-1} + x \log \sqrt[3]{3^{5x} - 7} = 0$ ; (b)  $x^{1-0.2 \log x} = 10$

(c)  $\log(3 \sqrt{\frac{x(x-4)}{x-3}} + 1) = 1$ ; (d)  $\log 10 \log(x^2 + 21) - 1 = \log x$

18. Prove the formula  $\log_a N = \frac{\log_b N}{\log_a b}$  and use it to solve for x in the following:

(a)  $\log_3 x + \log_{\sqrt{x}} x - \log_3 x = 6$ ; (b)  $2 \log_4 x + 2 \log_4 4 = 5$

(c)  $2 \log_x 25 - 3 \log_{\frac{1}{x}} x = 1$ ; (d)  $\log_2(x-1)^2 - \log_{\frac{1}{2}}(x-1) = 9$

(e)  $\log_{10} x + \log_4 x + \log_2 x = 7$

## Get an "A" in MATH!

### How to... How to... How to...

**1** After class, **DON'T** do your homework! Instead, *read over your class notes*. When you come to an example done in class...

**2** **DON'T** read the example. Copy out the question, set your notes aside, and do the question yourself. Maybe you will get stuck. Even if you thought you understood the example completely when the teacher went over it in class, you may get stuck.

And this is **GOOD NEWS!** Now, you know what you don't know. So, consult your notes, look in the text, see your

teacher/professor. Do whatever is necessary to figure out the steps in the example that troubled you.

Once you have sweated through the example, **DO IT AGAIN! And again.** Do it as often as you need so that it becomes, if not easy, then at least straightforward. Make sure you not only understand each line in the solution, but why each line is needed for the solution.

In part, you have memorized the solution. More importantly, you have made the subtleties of the problem unsubtle!

This is the great equalizer step. If your math or science aptitude is strong, then maybe you will have the example down pat after doing it twice. If not so strong, you may have to do it several times. But after you have done this for every class example...

### **3** **DO YOUR HOMEWORK!**

If you follow this method and if the teacher chose the examples well, then most of the homework questions will relate easily back to problems done in class and the rest should extend or synthesize

the ideas behind those problems. Guess what you'll find on 80% or more of your tests and exams? The same kinds of problems! And you will have your "A". Good luck, although if you use this method, luck will have nothing to do with your **INEVITABLE** success.

## Get Extra Help

## How to... How to...

**1** Have your questions ready. When you see your teacher for extra help, **don't say anything like**, "I don't have a clue what's going on." Rather, work through your class notes – definitions, examples, theorems, and proofs – thoroughly, and be prepared to say, "I understand everything up to this point. How did we get from here to here?" In other words, **do your part!** Spend quality time with the material.

**2** Get into study groups. Then one representative of your group can see your teacher for help with problems and report back to the others. Also, with group expertise, more often than not, you will solve most problems yourselves.

**3** Struggle more than a little. Don't give up after one attempt. Make a sincere effort to sort out your problems. That way, when you say, "I am stuck **RIGHT HERE!**", you will be so **up** on the problem that your teacher's explanation will be clear.

**Have you ever had this experience?**

A teacher is explaining a concept or technique in answer to your question. You are nodding your head, saying, "Uh huh! Uh huh! Yes, I understand." Yet you're thinking, "I don't have a clue what the teacher is

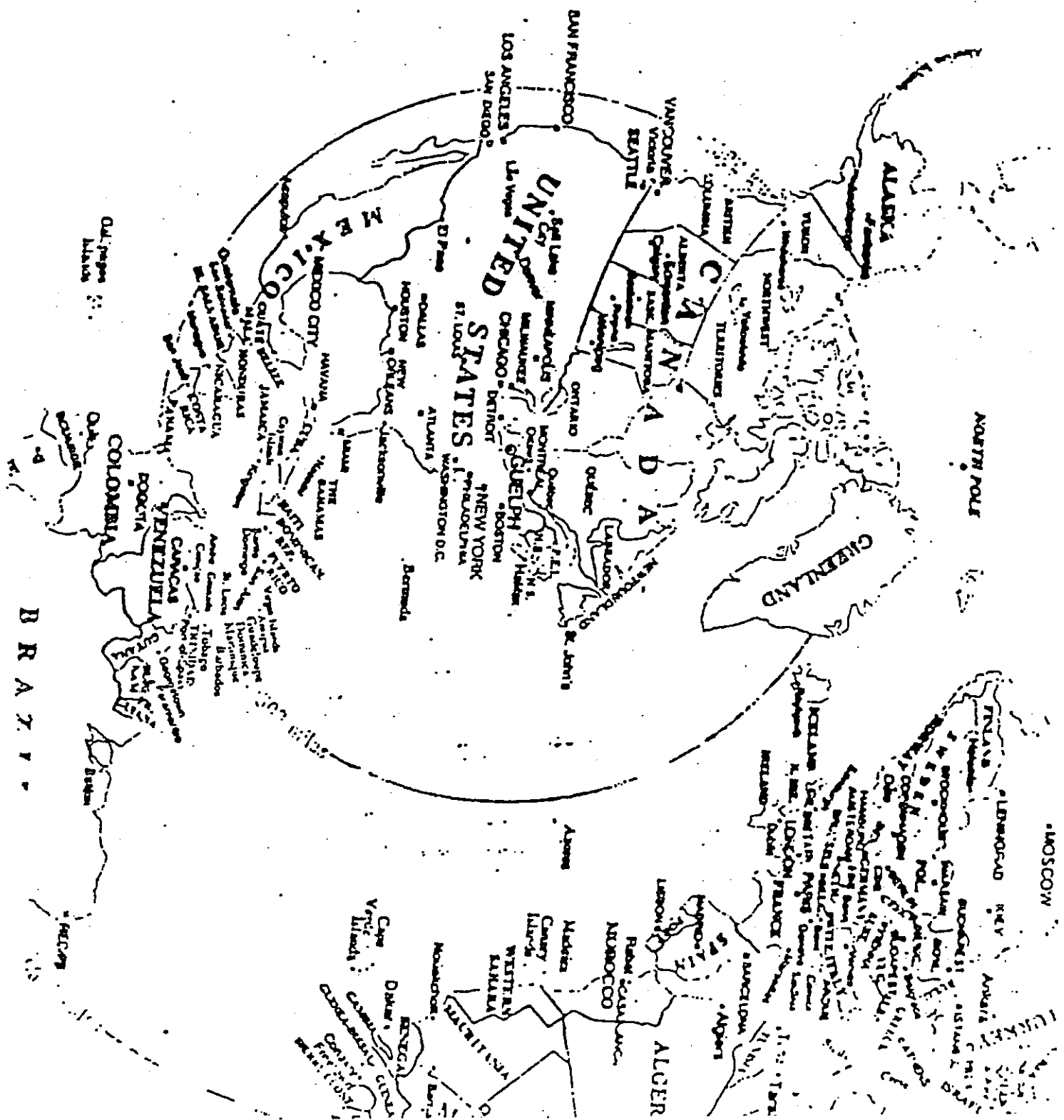
talking about."

It can happen, but it's rare, that the teacher isn't explaining the problem well. Usually, though, the blame lies, yes, with the student, who hasn't struggled enough so that the teacher's explanation can work. **Struggle more than a little!**

- Review each day's notes as soon as possible – definitely before the next class.
- Do your homework before the next class.
- Participate in class.
- Form study groups with classmates.
- Don't fall behind.

**SOME  
SPECIFIC  
STRATEGIES**

HAWAIIAN ISLANDS



B R A Z I L

MOSCOW

ALGER

NORTH POLE

ALASKA

GREENLAND

VANCOUVER

SEATTLE

SAN FRANCISCO

LOS ANGELES

SAN DIEGO

UNITED STATES

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