Hundreds of get-rich-quick schemes exist out there. The one thing you need to know is: they don't make you rich. Ever hear of a pyramid scheme? It can take the form of a chain letter, a "buying" or "gifting" club, or a work-at-home operation.

Most pyramid schemes are set up the same way. You might be asked to send five dollars (or a lot more!) to someone who joined the scheme before you. Then you must recruit, say, ten people who will each give five dollars to other folks who joined before. Then each of these ten people recruits ten more people, and each of them recruits ten more, and so on. Supposedly, down the line, a lot of people will be giving five dollars to you.

The number of people involved in the scheme grows and grows. The numbers multiply exponentially, which means they keep multiplying by a given number, in this case: ten.

1 recruits 10 .......................................1 X 10 = 10 ten
10 recruit 10 ....................................10 X 10 = 100 one hundred
100 recruit 10 .................................100 X 10 = 1,000 one thousand
1,000 recruit 10 ..............................1,000 X 10 = 10,000 ten thousand
10,000 recruit 10 .............................10,000 X 10 = 100,000 one hundred thousand
100,000 recruit 10 ..........................100,000 X 10 = 1,000,000 one million
1,000,000 recruit 10 .......................1,000,000 X 10 = 10,000,000 ten million
100,000,000 recruit 10 ........................100,000,000 X 10 = 1,000,000,000 one hundred million

But somewhere along the way a pyramid scheme breaks down. People drop out. Some refuse to pay. Not every new recruit can find ten more new recruits. And even if everything went as smooth as silk — which it never does — there just aren't enough people on the planet to support the pyramid. Once you hit the tenth level of this pyramid 1,000,000,000 (one billion) people have to recruit 10,000,000,000 (ten billion people), which is more than the world population!

Federal government research has shown the only people who make any money are the people who start the pyramid — even though they promise you'll get rich. Lying to people to get money from them is fraud. It's what makes pyramid schemes illegal.

Big Promises, No Returns!
1. What are the signs of a pyramid scheme? (Check off the signs that apply.)

   a. ____You’re asked to invest money and recruit others.
   b. ____You invest money in a well-known stock.
   c. ____You’re promised an unrealistic amount in return for your investment.
   d. ____You can only make money if other people invest too.
   e. ____You put money in a government bond.
   f. ____Money is automatically deducted from your salary and put into a savings account.

2. Why are pyramid schemes illegal?
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________
   ____________________________________________________

3. Why do pyramid schemes collapse? (circle one)
   a. People don’t join.
   b. People don’t pay.
   c. Eventually there are not enough people on the planet to support it.
   d. All of the above.

Let’s explore again what it means for a number to grow exponentially. Say you’re told you can make money if you recruit 5 people. Then those 5 people need to recruit 5 people; then each of those 5 recruits 5 more; then each of those folks recruits an additional 5, and they each recruit 5 more. You end up multiplying 5 by itself five times (often written like this: $5^5$).

4. How many people end up participating in the scheme if it expands to five levels?
   
   Level 1 $5^1 = 5$ people
   Level 2 $5^2 = 5 \times 5 = ____$ people
   Level 3 $5^3 = 5 \times 5 \times 5 = ____$ people
   Level 4 $5^4 = 5 \times 5 \times 5 \times 5 = ____$ people
   Level 5 $5^5 = 5 \times 5 \times 5 \times 5 \times 5 = ____$ people
   Add: Level 1 + 2 + 3 + 4 + 5 = _____ people

   Answers: 1. a, c, d; 2. it’s illegal to deceive people into giving you money; 3. d; 4. 5 x 5 x 5 x 5 x 5 = 3,125; Total number of participants: 3,125
Penny Wise

Speaking of pennies... what if you were offered a job that gave you a choice of pay: $200 an hour per 8-hour day for 22 days, or 1 cent for the first day, 2 cents for the second day, 4 cents for the third day, and so on — getting double the amount each day — all the way up to day 22. At the end of the 22 days, which salary would make you more money?

To get the answer, do the math on paper or with a calculator:

1. Calculate what you’d make earning $200 per hour working 8-hour days for 22 days.

\[ $200 \times 8 \times 22 = \] \[ \text{______________} \]

2. On a piece of lined paper, make a list of numbers starting with 1 cent. On each new line, write double the amount of the number on the line above, like this:

Day 1) $0.01
Day 2) $0.02
Day 3) $0.04
Day 4) $0.08
Day 5) ______

Keep going until you have 22 amounts. Add them up with a calculator.

3. Which is more? By how much?