Life of Fred™

Mineshaft

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A Note Before We Begin
Life of Fred: Mineshaft

There are several keys to success to learning math,
to being a good cook,
to doing tricks on a skateboard,
to writing applications for a cell phone,
to climbing mountains, and
to playing hide-and-seek with a tiger.

One important key is . . .

Effort.

The most common mistake is to put in too little effort. Human beings often like to take the easy road.

my daughter Margaret

There is nothing wrong with resting up a little bit before you tackle the main work of the day.

There is nothing wrong with heading off to sleep after running around hard all day.

But it is wrong if your life consists of just sleeping, fooling around, napping, goofing off, dozing, eating, snoozing, and resting,
. . . unless you were born yesterday.

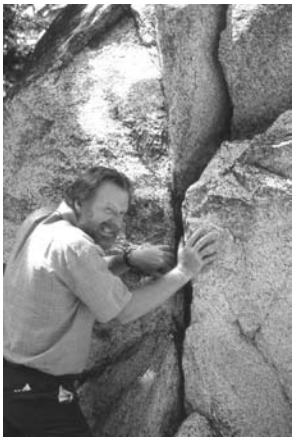
In this book, please make the effort of doing the *Your Turn to Play* problems before you turn the page and look at my answers.

Write down the answers, even though you can do many of the problems in your head. You will learn more that way.

The second mistake with regard to effort is the opposite of the first. Instead of putting in too little effort, you put in too much effort. One student in a thousand makes this error.

Sometimes when you get to a mountain of granite, it is better to walk around it than try to tear your way through it.

Hint: *Life of Fred: Mineshaft* is not a mountain of granite.



Margaret's silly father tearing the mountain apart

CALCULATORS?

Not now. There will be plenty of time later after finishing *Life of Fred: Fractions* and *Life of Fred: Decimals and Percents.*

Right now in arithmetic, our job is to learn the addition and multiplication facts by heart.

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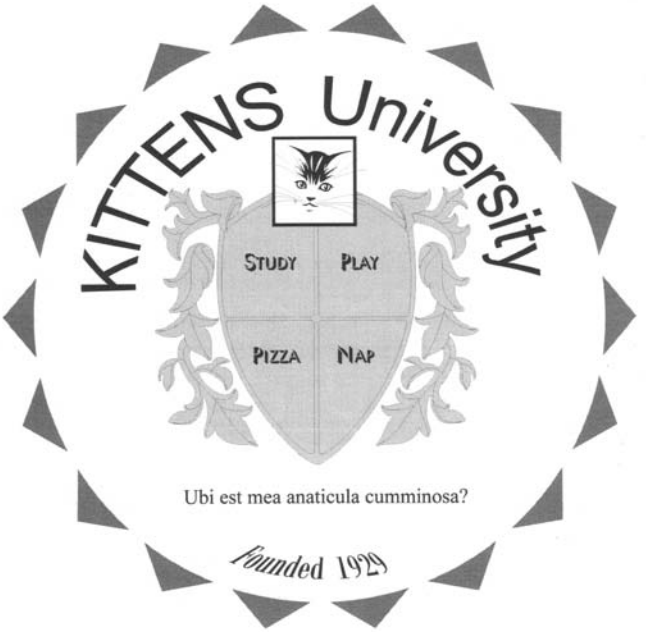
Chapter One
The Prize

Kingie had won the university seal contest. That seal would now be used on all the official documents of KITTENS University. Every diploma, every transcript, and every letter would have . . .



THE KITTEN CABOODLE newspaper had advertised that the winner of the contest would "win big," but had not said what the prize would be.

Kingie didn't care. He was much more interested in painting than getting prizes or making money. As long as he had oil paints and a quiet place to work, he was happy.

The staff at THE KITTEN CABOODLE didn't know that Kingie was not concerned about a prize. If they had known, life would have been a lot easier for everyone.

The editor of the newspaper called a meeting of his staff. He asked them, "What prize should we give Kingie?"

Caboodle Editor

Ashley said, "Most people would be happy getting money."

Chris responded, "But we don't have a lot of money. Our newspaper only sells for a dime."

Drew asked, "What do we know about this guy Kingie? All we know right now is that he is a terrific artist. Let's get him something he would like."

Joyce got out a piece of paper and wrote . . .

Dear Kingie,

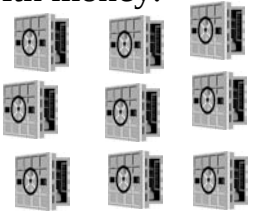
You are the winner of the university seal contest.

We here at The KITTEN Caboodle are wondering what prize you would like. We will try to get it for you—as long as it's not too expensive.

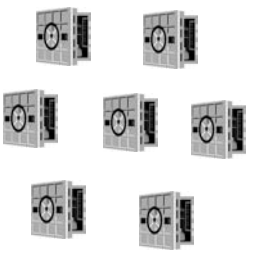
Sincerely,
Joyce

Joyce sent it by campus mail. Kingie received it two seconds later.

When Kingie read the letter, he didn't know how to respond. On the top floor of Kingie's fort were 16 safes (9 on the left wall and 7 on the right wall), and they were all filled with money.



Kingie's art had sold very well. If he received more money, he would just have to buy more safes.



Kingie wrote back in his beautiful artistic handwriting . .

.

Dear Joyce,

Thank you for kind thoughts. I really do not need anything for myself. May I make a suggestion? There are a lot of hungry people in the world.

Would you please send one grain of rice to Afghanistan? If you use campus mail, it will not cost anything for shipping.

And two grains of rice to Akrotiri. And four grains of rice to Albania.

I have enclosed a list of places from K's Afternoon Dining menu. Each will receive twice as many grains as the previous place.

Love,
Kingie

Afghanistan 1 grain
Akrotiri 2 grains
Albania 4 grains
Algeria 8 grains
American Samoa 16
Andorra 32
Angola 64
Anguilla 128
Argentina 256
Armenia
Aruba
Australia
Austria
Azerbaijan
Bahamas
The Bahrain
Bangladesh
Barbados
Bassas da India
Belarus
Belgium
Belize
Benin
Bermuda
Bhutan
Bolivia
Bosnia and Herzegovina
Botswana
Bouvet Island
Brazil
British Virgin Islands
Brunei
Bulgaria
Burkina Faso
Burma
Burundi
Cambodia
Cameroon
Canada
Cape Verde
Central African Republic
Chad
Chile
China
Christmas Island
Clipperton Island
Cocos Colombia
Comoros
Congo
Cook Islands
Coral Sea Islands
Costa Rica
Cote d'Ivoire
Croatia
Cuba
Cyprus
Czech Republic
Denmark
Dhekelia
Djibouti
Dominica
Dominican Republic
Ecuador
Egypt
El Salvador
Equatorial Guinea
Eritrea
Estonia
Ethiopia
Europa Island
Falkland
Fiji
Finland
France
French Guiana
French Polynesia
Gabon
Gambia
Georgia
Germany
Ghana
Gibraltar
Glorioso Islands
Greece
Greenland
Grenada
Guadeloupe
Guam
Guatemala
Guernsey
Guinea
Guyana
Haiti
Honduras
Hong Kong
Hungary
Iceland
India
Indonesia
Iran
Iraq
Ireland
Isle of Man
Israel
Italy
Jamaica
Jan Mayen
Japan
Jersey
Jordan
Juan de Nova Island
Kazakhstan
Kenya
Kiribati
Korea North
Korea South
Kuwait
Kyrgyzstan
Laos
Latvia
Lebanon
Liberia
Libya
Liechtenstein
Lithuania
Luxembourg
Macau
Macedonia
Madagascar
Malawi
Malaysia
Maldives
Mali
Malta
Marshall Islands
Martinique
Mauritania
Mauritius
Mayotte
Mexico
Micronesia
Moldova
Monaco
Mongolia
Montserrat
Morocco
Mozambique
Namibia
Nauru
Navassa Island
Nepal
Netherlands
Netherlands Antilles
(We'll stop here.)

The staff at the newspaper was delighted with Kingie's request.

Ashley said, "It's neat that Kingie didn't demand a big prize for himself. Lots of people just want more, more, more, for themselves and are never satisfied."

Chris added, "And he was thinking of other people. I would like to meet this guy someday."

Drew got a dollar from the editor and headed out to buy a one-pound box of rice. Joyce started addressing the envelopes so that they could mail the rice to each country.

When Drew got back from the store, he opened the box and carefully poured it out onto a desktop. Ashley put one grain of rice in the Afghanistan envelope. Chris put two grains in the Akrotiri envelope. Drew put four grains in the Albania envelope.

Joyce kept addressing the envelopes. There were roughly 30 countries in each column, and there were 5 columns. ⇨ 150 countries.

Ashley told Drew, "Don't throw away the empty rice box. After we're done, we can put the leftover rice back in the box."

They put 8 grains into the Algeria envelope.
And 16 grains into the American Samoa envelope.
And 32 grains into the Andorra envelope.
And 64 grains into the Angola envelope.
And 128 grains into the Anguilla envelope.
And 256 grains into the Argentina envelope.
And 512 grains into the Armenia envelope.
And 1,024 grains into the Aruba envelope.

Your Turn to Play

1. They put 1,024 grains into the Aruba envelope.
Compute the next three envelopes:
They put __?__ grains into the Australia envelope.
They put __?__ grains into the Austria envelope.
They put __?__ grains into the Azerbaijan envelope.

2. One grain of rice has a mass of 25 mg.

Wait! Stop! I, your reader, have a question. What does "mg" mean?

In the metric system, which most of the world uses, mg stands for milligram.

And what in the world is a milligram?

A thousand milligrams equals a gram. 1000 mg = 1 g. And a gram is roughly the weight of a raisin.

Thank you.

So how many grains of rice would weigh the same as a raisin?

Translation: How many grains of rice in a gram?

Translation: How many grains of rice in 1000 mg?

Translation: How many 25 mg are in 1000 mg?

Translation: Divide 25 into 1000.

3. There are about 454 grams in a pound.
How many grains of rice in a pound?

Translation: One pound equals how many grains of rice?

Translation: Given your answer to question 2 (which is how many grains of rice in a gram) and given that there are 454 grams in a pound, how many grains of rice in a pound?

Translation: 40×454 equals what?

. . . . . COMPLETE SOLUTIONS . . . . . .

1. 2,048 for Australia, 4,096 for Austria, 8,192 for Azerbaijan.
2. To find out how many 25s are in 1,000, we divide 25 into 1,000.

```
   40
25)1000
  100
   00
   00
```

There are 40 grains of rice in a gram.

3. There are 40 grains of rice in a gram and 454 grams in a pound. If you don't know whether to add, subtract, multiply, or divide, the general rule is: restate the problem using easy numbers and notice which of the four operations you used. Suppose there are 3 grains of rice in a gram and 2 grams in a pound. Then there would be 6 grains of rice in a pound. You multiplied.

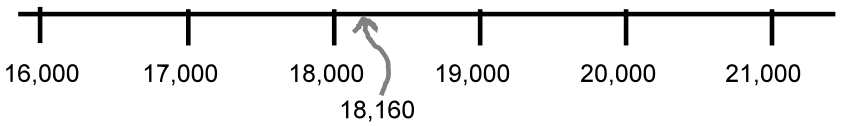
```
  454
× 40
    0
1816
18160
```

There are 18,160 grains of rice in a pound.

A grain of rice weighs *roughly* 25 mg.
There are *exactly* 1000 milligrams in a gram.
There are *roughly* 454 grams in a pound.

So there are *roughly* 18,160 grains of rice in a pound.

We can round 18,160 off to 18,000.
18,160 is closer to 18,000 than it is to 19,000.



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