Life of Fred™

Kidneys

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Polka Dot Publishing

A Note Before We Begin
Life of Fred: Kidneys

It is not possible to have a mathematics book entitled *Kidneys*. Or worse yet, *Life of Fred: Kidneys*. What will people think?

But I can't help it. Other authors might write books with snappy titles such as:

MATH FOR GRADE 4
ARITHMETIC EXERCISES
WORKBOOK FOR MULTIPLICATION
MORE DRILL WORK FOR YOUR KID
POUND IT IN
GRADE THREE NUMBERS
PAGES OF PROBLEMS

. . . but I can't inflict that kind of pain on children. It just isn't in me.

> Children will learn more from three problems done with joy than from thirty drill-and-kill exercises.

Here is a picture from my childhood. Two are serious. Two are smiling. And one wrote *Life of Fred.*

I haven't been able to stop laughing. Life is filled with too much joy.

the author ↑
of *Life of Fred*

But *Life of Fred: Kidneys* is . . .

NOT JUST FUN AND GAMES

There is a lot of mathematics in this book. For example, we will discuss areas and volumes, graphing, the domain and codomain of functions, one of the most common errors in statistical thinking, elapsed time, perimeters, graphing, the meaning of $\frac{1}{6}$, the logical equivalence of P ➔ Q and not-Q ➔ not-P, exponents, and why $\sum_{i=1}^{52} i$ equals 1,378.

In the last *Your Turn to Play* in this book, is the question: "How many polka dots can fit in a glass?" That is not just a silly question. It is a two-step problem that asks the reader to first find the last term of an arithmetic series and then find the sum of the series.

HOW THIS BOOK IS ORGANIZED

Each chapter is about six pages. At the end of each chapter is a *Your Turn to Play*.

Have a paper and pencil handy before you sit down to read.

Each *Your Turn to Play* consists of about four questions. Write out the answers—don't just answer them orally.

After all the questions are answered, take a peek at my answers that are given on the page following the questions. At this point you have *earned* the right to go on to the next chapter.

Don't just read the questions and look at the answers. You won't learn as much taking that shortcut.

CALCULATORS?

Not now. There will be plenty of time later (when you hit Pre-Algebra). Right now in arithmetic, our job is to learn the addition and multiplication facts by heart.

Contents

Chapter One
Keys to Success

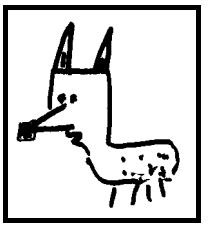
Fred is five years old. He has been a professor at KITTENS University for years. He and his doll, Kingie, have an office on the third floor of the Math Building.

Kingie was getting ready to do his first painting of the day. He squeezed out dabs of oil paint onto his palette and stared at the blank canvas.

It was the first day of the month and he wanted to start a new series of paintings. He had just finished 72 paintings of deer. His favorite was "Fawn in Forest."

"Fawn in Forest"
by Kingie

Kingie had a natural talent for painting. Fred was less talented.



"Small Deer"
by Fred

Kingie also has two other advantages over Fred. He has spent years practicing painting, and he takes his time. Kingie spent 40 minutes painting "Fawn in Forest."

Fred spent 15 seconds drawing "Small Deer." Fred did not have much patience when it came to doing art.

- ✯ Talent
- ✯ Practice
- ✯ Patience

} Success!

Not Kingie's game

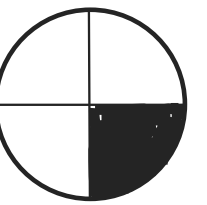
Years ago, Kingie realized that he didn't have any natural talent for playing soccer. He is a beanbag doll and doesn't have legs.

Kingie told Fred, "I have decided what my next series of paintings will be. I am going to paint numbers. I'm going to start with the numeral 3."

Kingie got out a piece of paper and tried out various ideas. He was patient and didn't just start painting.

"I bet no other artist has ever painted numbers before," Kingie said.*

Fred also liked the number three. It was one of his favorite numbers. He also liked 0, 1, 2, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13. . . . He liked fractions such as $\frac{1}{4}$.



He liked decimals. He recently bought a bow tie for four dollars and twenty-six cents. ($4.26) The dot between the 4 and the 2 is called a decimal point.

* Kingie was wrong.

In 1928, Charles Demuth painted the numeral 5. He called it "I Saw the Figure 5 in Gold." That painting is now in the Metropolitan Museum of Art in New York.

Fred liked to wear a bow tie when he taught. He thought that it made him look older. If he would remember to remove the price tag, he would look a little less silly. 

"It's the first of the month," Kingie told Fred. "Don't forget to pick up your paycheck."

"Oh. I had forgotten about that," Fred said. "Thank you for reminding me."

"You're welcome. I'm glad to be of help."

Fred was sitting at his desk in his office preparing to teach his classes.

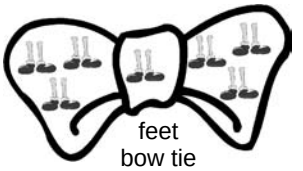
He had a little card on his desk to remind him of his schedule. One of the big joys in his life was teaching mathematics. Even if KITTENS University only paid him $10 a month, he would still be very happy.

8–9 Beginning Algebra
9–10 Advanced Algebra
10–11 Geometry
11–noon Trigonometry
noon–1 Calculus
1–2 Statistics
2–3 Linear Algebra
3–3:05 Break
3:05–5 Seminar in Biology, Economics, Physics, Set Theory, Topology, and Metamathematics

✓ He slept in his office so he didn't need to pay for housing.

✓ He spent almost nothing on food. If he did buy something to eat, he would usually put it in his desk drawer "for later."

✓ Clothes? He hadn't grown an inch in years, so all his clothing still fit. The only thing in a clothing store that excited him was the bow tie department. Fred owned some unusual bow ties.


feet
bow tie


harp
bow tie

✓ Cars? He was a little too young to drive.

✓ There was one thing Fred found irresistible. He loved books. Every wall in his office had bookshelves, and every bookshelf was filled. There were stacks of books on the floor.

Fred figured that if he lived to the age of 80, he only had 75 years left to read. That seemed like a very short time to finish all the books he wanted to read.

$$\begin{array}{r} {}^{7}\not{8}{}^{1}\not{0} \\ -\ 5 \\ \hline 75 \end{array}$$

Here's the language that goes with that subtraction problem: You can't subtract 5 from 0. You borrow 1 from the 8. That turns the 8 into a 7. The 0 now becomes 10. Five from 10 is 5. Nothing from 7 leaves 7.

Besides the books that he owned, Fred would often go to the KITTENS University Library and to the public library and borrow armfuls of books.

It was 7:30 a.m. He had been working at his desk for two hours. His eight o'clock beginning algebra class would start in a half an hour. There was just enough time to pick up his paycheck, deposit it in the bank, and get to class.

He hopped off his chair, said goodbye to Kingie, and headed out his office door.

When Kingie was not painting, Fred would give him a hug before he left. When he was painting, Fred just said goodbye. Hugging a doll that is holding a palette full of wet oil paint can be a big mistake.

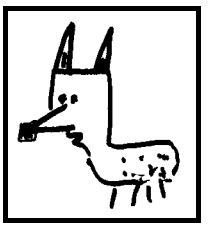
Fred headed down the hallway past the nine vending machines, down two flights of stairs, and out into the cool morning air. He suddenly realized that he hadn't gone jogging this morning, so he broke into a run to get some exercise. He ran past the tennis courts, the university chapel, and the rose

garden. Just north of the rose garden was the Administration Building.

Please get out a piece of paper and write out the answers to each of these *Your Turn to Play* questions before you look at the answers on the next page. You will learn more if you do it this way.

Your Turn to Play

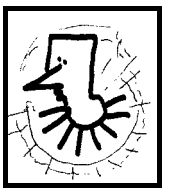
1. If bow ties cost $4.26 apiece, how much would two bow ties cost?
2. When Kingie put dabs of oil paint on his palette, he would squeeze out 9 ml (milliliters) from each tube of paint. If he used 23 colors, how many ml would be on his pallette?
3. If it took Fred two hours to prepare for his classes and he finished his preparation at 7:30 a.m., when did he begin?
4. Fred made seven drawings of baby animals.


"Small Deer"

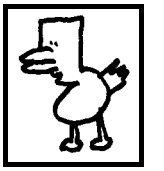

"Kitty"


"Mouse"


"Worm"


"Spider"


"Fish"


"Ducky"

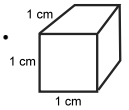
If it took him 15 seconds to make each picture, how long did it take him to do all 7 pictures?

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

1. There are two ways you might have done this problem.

By addition:
$$\begin{array}{r} \$4.26 \\ +\ \$4.26 \\ \hline \$8.52 \end{array}$$

By multiplication:
$$\begin{array}{r} \$4.26 \\ \times \quad 2 \\ \hline \$8.52 \end{array}$$

2. A milliliter (ml) is the same as a cubic centimeter. One milliliter is the volume of a box that is one centimeter on each side. 

A centimeter is about the width of your baby finger.

We need to find 9 times 23.

Hard way:
$$\begin{array}{r} 9 \\ \times\ 23 \\ \hline 27 \\ 18 \\ \hline 207 \text{ ml of paint} \end{array}$$

Easier way:
$$\begin{array}{r} {}^{2}23 \\ \times\ 9 \\ \hline 207 \end{array}$$

3. Two hours earlier than 7:30 a.m. is 5:30 a.m.

4. There are two ways to find out how long it would take to make 7 drawings when each drawing takes 15 seconds:

Hard way:
$$\begin{array}{r} 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ 15 \\ +\ 15 \\ \hline 105 \text{ seconds} \end{array}$$

Easier way:
$$\begin{array}{r} {}^{3}15 \\ \times\ 7 \\ \hline 105 \end{array}$$

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If you would like to learn more about the books written about Fred . . .

FredGauss.com