

Life of Fred Butterflies

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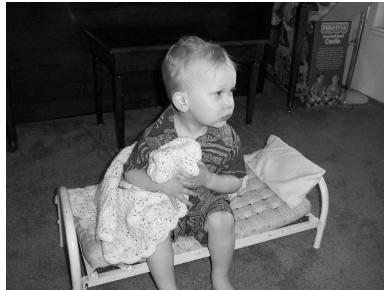
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First printing

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A Note Before We Begin the Second Book in the Series

We all have dreams for our children. So quickly they grow up.



We would like them to have more than we had when we were young. Medicine is better nowadays. Dentistry is better.



Boy looking at toys.
Taken by G. G. Bain in
1910

Even toys have improved a little bit.

Choices for your children's math education have widened. In the old days, the math books all looked pretty much alike. A lesson would tell how to do something and then give 40 problems. Then the next lesson would tell how to do something else and give 40 more problems.

But they never really told why your child should learn the stuff.

Then came the colorful "new" math books. They were filled with photographs of jet airplanes and four-color diagrams. They were sometimes called coffee table math books: heavy, pretty, and expensive.

And each lesson would tell how to do something and give 40 problems. They were like the old math books except they had wore lipstick.

Then came video math “education.” Someone stood at a blackboard and read the lesson to the child. They were even more expensive than the coffee table math books.



Learning by video

Your child had even less experience in learning how to read. Since learning how to learn by reading is one of the most important skills for college and later life, video was a step in the wrong direction.

Each video lesson told how to do some piece of math and gave 40 problems to do.

And they never learned why they were supposed to learn the math.

In the old math books,
in the coffee table math books,
in the video,
math was sealed off from the rest of the world. The pictures of jet airplanes or video of someone at the blackboard brought a predictable response from kids: “So what? Why am I learning this stuff?”

. . . and then there is Fred. All of life is wrapped up in the adventures of this five-year-old.

In this book your child will learn reasons to count by fives,
will learn how to set a table,
will learn about the giant star Betelgeuse, and
a zillion other things.

Mathematics is taught in the *Life of Fred* series in the context of living a full life. A real education—not just memorizing math facts.

HOW THIS BOOK IS ORGANIZED

Each chapter is about six pages. Do a chapter a day.

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 or five questions.

Have your child write out the answers.

After all the questions are answered, then take a peek at my answers that are given on the next page.

Don't just let your child read the questions and look at the answers.
Your child won't learn as much taking that shortcut.

CALCULATORS?

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

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Chapter One

Kingie Dreams

Fred had pulled out a book about butterflies to read to his doll, Kingie. Fred sat in the corner and put Kingie on his lap. It was five o'clock in the afternoon.

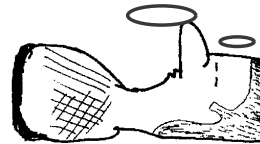
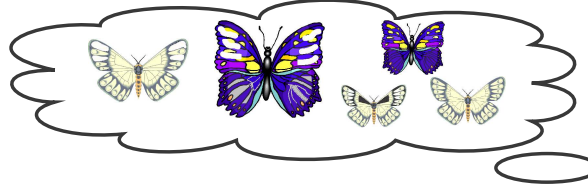
Kingie was a doll that liked to draw and paint. He had been working all day on oil paintings.



5:00

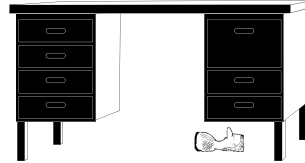
With his little five-year-old voice, Fred was reading to Kingie about butterflies. There were pictures of all kinds of butterflies in the book.

When Fred was about halfway through the book, Kingie shut his eyes and fell asleep. Kingie was dreaming.



Fred usually sang to Kingie each night to help Kingie go to sleep. Since he was already asleep, Fred did not sing.

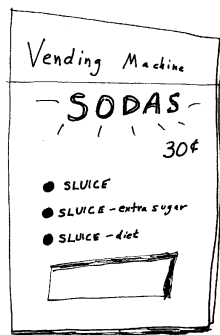
He picked Kingie up and carried him to the spot under his desk where they slept each night.



Fred wasn't sleepy yet. He put a bookmark in the butterfly book and put it back in its place on the shelf.

He turned out the light and headed out into the hallway outside his office. Fred is a teacher at KITTENS University. He and Kingie live in his office on the third floor of the math building.

There were nine vending machines in the hallway. Five of them were on one side, and four of them on the other side. Some were candy machines. One offered doughnuts. One offered crackers. One offered a soft drink called Sluice.

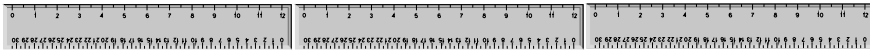


Sluice is a very, very, very sweet soda. It is mostly sugar with a little bit of water. Fred stood in front of the machine. He hadn't eaten anything all day.

He decided not to get a Sluice. It sometimes made him sick.

Fred did not have parents to watch over him.* No one had ever told Fred about eating the right foods.

Fred was five years old, but he was only one yard tall. He was as tall as a yardstick. One yard is three feet.



-----one yard -----

Because of his poor eating habits, Fred had not grown an inch in a long time.

Fred started to head down the stairs.

“Hi!” said Betty. She was coming up the stairs as Fred was heading down the stairs. “I was just going to your office to see you.”

Betty was one of Fred’s students at KITTENS. She was one of the first people to meet Fred when he came to the university to teach four years ago. She and her boyfriend, Alexander, have shared many adventures with Fred over the years.

* It’s a sad story that is told in *Life of Fred: Calculus*. It may not be suitable for the prepubescent mind.

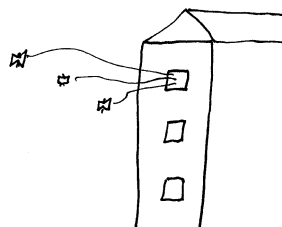
“Hi Betty,” Fred answered. “I was just going outside to get some fresh air. Kingie has been doing oil painting all day in my office. The room smells a bit like oil paint.”

Betty said, “That sounds like a good idea. May I join you?”

When they got outside, Fred asked Betty why she had come to see him.

She was about to tell him about a calculus problem* that she was working on, when she looked up at the building.

“What’s that coming out of your window!” Betty exclaimed. “It looks like little pieces of colored paper.”



Fred could see better than Betty since his eyes were only five years

*

She had been trying to solve $\int \frac{1}{x^3 + 1} dx$ which is a problem from calculus.

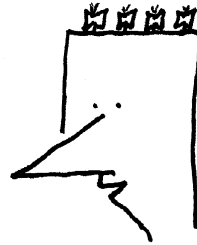
The big long S \int means “find the area under the curve.”

It all looks very mysterious right now, but once you have studied arithmetic, algebra, geometry, and trig, learning how to find the area under $\frac{1}{x^3 + 1}$ will be no harder than what you are doing right now, which is learning about the numbers that add to 9.

old. He said, “No, that is not colored paper. Those are butterflies.”

Betty counted nine butterflies that came out of Fred’s window. Five of them landed on the flowers. The other four landed on Fred’s head.

They tickled Fred.



Please take out a piece of paper and write your answers. Afer you are all done, you can check your work on the next page.

Your Turn to Play

1. $5 + 4 = ?$
2. $4 + 5 = ?$
3. What time is it?



4. Fred is one yard tall. How many feet is that? (If you have forgotten, it is okay to look back two pages to find the answer.)
5. How many members does the set $\{1, 2, 3, 4, 5, 6\}$ have? (This was in *Life of Fred: Apples*.)
6. $2 + 5 = ?$ (This was also in *Apples*.)

..... ANSWERS

1. $5 + 4 = 9$

2. $4 + 5 = 9$

3. 5 o'clock or 5:00



4. One yard is three feet.

5. The set $\{1, 2, 3, 4, 5, 6\}$ has six members in it.

Here are some other sets with six members:

$\{A, B, C, D, E, F\}$

$\{*, \ast, \clubsuit, \spadesuit, \heartsuit, \diamondsuit\}$

$\{\bullet, \circ, \blacksquare, \blacklozenge, \blacktriangledown, \blacktriangleright\}$

and the set of the days of the week that don't have an *h* in their spelling: $\{\text{Sunday, Monday, Tuesday, Wednesday, Friday, Saturday}\}$.

6. $2 + 5 = 7$

In *Apples* we did all the numbers that add to 7:

$$0 + 7 = 7$$

$$1 + 6 = 7$$

$$2 + 5 = 7$$

$$3 + 4 = 7$$

$$4 + 3 = 7$$

$$5 + 2 = 7$$

$$6 + 1 = 7$$

$$7 + 0 = 7$$

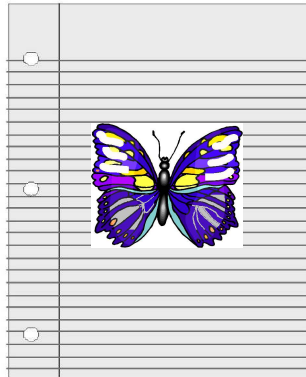
Chapter Two

Drawing Butterflies

The butterflies tickled Fred's head. He giggled, and the butterflies all flew away. The four butterflies joined the five that were on the flowers.

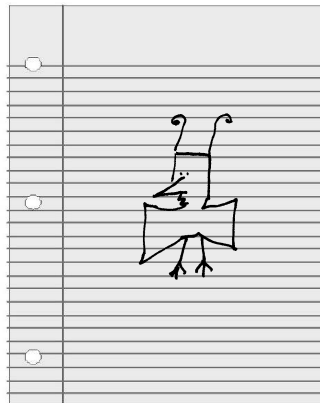
Betty and Fred sat very quietly on a bench to watch those nine butterflies.

Betty took out a piece of paper and drew one of the butterflies.

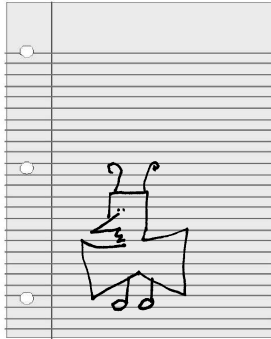


She gave Fred a piece of paper so that he could also draw.

Betty looked at Fred's drawing and smiled. She said, "I don't think their feet look like that."



Fred got another sheet of paper and drew a new picture.



Fred thought that this picture was much better. Now the butterfly had shoes on.

Betty had forgotten about asking about the calculus problem $\int \frac{1}{x^3+1} dx$. Instead, she asked, “How did those nine butterflies fly out of your office window?”

Fred said, “I left the window open.”

Fred’s answer was true, but it was not what Betty was really asking. She tried again: “I mean how did those butterflies get into your office in the first place?”

Fred wasn’t sure. He answered, “I guess they flew in.”

“But this is February in Kansas,” Betty said. “This morning it was -15 degrees, and when it is 15 degrees below zero, you don’t have butterflies flying around.”

They decided to go back to his office and find out what was going on.

Fred climbed the steps one-at-a-time:

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16

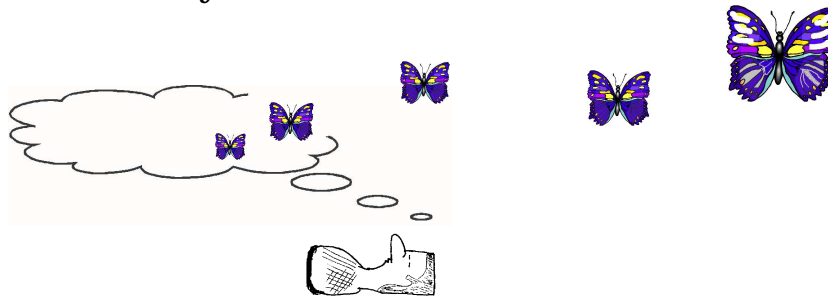
Betty's legs were a lot longer than Fred's.
She took the stairs two-at-a-time:

2 4 6 8 10 12 14 16

When Fred was climbing the stairs, he tried to think of where the butterflies had come from.

He had been reading a book about butterflies to Kingie. Did the butterflies in the book come alive and fly out the window? No, that would be silly.

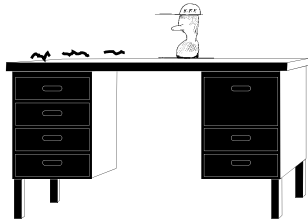
Kingie had been dreaming about butterflies. Did his dream break open and the butterflies fly out the window?



No. That would also be silly.

When they got to Fred's office, he told Betty that Kingie was sleeping. He said that they should be quiet so they wouldn't wake him up.

He carefully opened his office door. When he looked in, he got a surprise. Kingie was awake and sitting on top of Fred's desk.



“What happened?”
Fred asked.

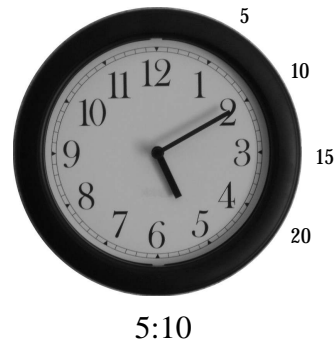
Now, as everyone knows, when dolls talk, sometimes only their owners can hear them. So when Kingie told Fred what was happening, Betty didn't hear anything Kingie said.

Kingie told Fred, “First of all, I didn't go to sleep for the whole night. It is only ten minutes after five o'clock right now.

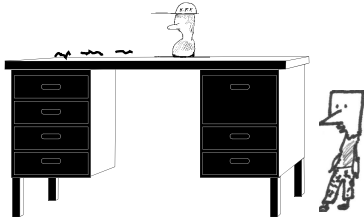
“Second, you forgot to sing to me, so I knew it wasn't time for my nighttime sleep.

“Third, what are those bugs on the top of your desk?”

Fred ran over to his desk to look.



He couldn't see any bugs on the top of his desk.



Please write your answers on a piece of paper before you look at my answers on the next page.

Your Turn to Play

1. Why couldn't Fred see the bugs?
2. Kingie started his nap at



5:00

He ended his nap at



5:10

How long had Kingie slept?

3. Betty went up the stairs two at a time.
2, 4, 6, 8, 10, 12, 14, 16. Continue this series up to 40.
Your answer will look like: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22. . . .
4. Here is the set of days of the week that have an *s* in their names: {Sunday, Tuesday, Wednesday, Thursday, Saturday.} Write the set of the days of the week that have an *h* in their names.

..... ANSWERS

1. I think Fred couldn't see the bugs since he was too short to see the top of his desk.

That's not the only possible answer.

Some people might have written that Fred couldn't see the bugs because Kingie was standing in the way.

Some people might have written that Fred couldn't see the bugs because those things on the top of his desk were not bugs. They were pieces of string.

Moral: There is not always just one right answer to a question.

2. If Kingie started his nap at 5:00 and slept for 1 minute, he would have woken up at 5:01.

If he started at 5:00 and slept for 2 minutes, he would have woken up at 5:02.

If he started at 5:00 and slept for 3 minutes, he would have woken up at 5:03.

If he started at 5:00 and slept for 4 minutes, he would have woken up at 5:04.

If he started at 5:00 and slept for 5 minutes, he would have woken up at 5:05.

If he started at 5:00 and slept for 6 minutes, he would have woken up at 5:06.

If he started at 5:00 and slept for 7 minutes, he would have woken up at 5:07.

If he started at 5:00 and slept for 8 minutes, he would have woken up at 5:08.

If he started at 5:00 and slept for 9 minutes, he would have woken up at 5:09.

If he started at 5:00 and slept for 10 minutes, he would have woken up at 5:10.

3. 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40

4. There is only one day of the week that has an *h* in its name. {Thursday}.

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