

Life of Fred Cats

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A Note Before We Begin

Bedtime reading? Each chapter is six pages—a perfect length. Or a first-thing-after-breakfast reading. Or a right-after-lunch activity. A chapter each day will be something to look forward to.

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 three or four questions. They are not the boring workbook sheets that many elementary math books have: a million problems that are all alike.

Instead, the Your Turn to Play questions are fun. And some of them actually require . . . thought!

Have your child write out the answers—not just orally answer them.

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

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

WHAT WE WANT FOR OUR KIDS

We have high aspirations for them. They will climb peaks, see things, and experience joys.

Today, the world is changing so fast that predicting what it will look like on their 21st birthday is almost impossible.

Many of us can't even name the little electronic “thingys” that kids are carrying around and playing with today.

The only safe prediction is that the world will be different.





Fred and I would like to join you for a while as we walk into that future.

Here are my bets as to what will be crucial for your child's education . . .

1. **Reading** will be increasingly important.

When your child was five years old, almost everything he or she learned was what someone told him or her.

In college, half of what is learned is from reading.

In a graduate school history class, you don't watch WWII movies; you read about it.

Most of those who really excel in business, in the clergy, in science, or engineering—read and read and read.

The *Life of Fred* series encourages reading as no other math curriculum does. Many moms have reported that their kids want to do more than one lesson a day.

2. Learning how the mathematics **fits into real life** is critical.

Every math teacher is asked, "When are we ever gonna use this stuff?"

In Fred's life, he *first* encounters the need for some piece of math, and *then* we do it—everything from patterns of hearts drawn in the snow



smooth fluffy smooth fluffy smooth fluffy smooth

(which we do in Chapter 4) to hyperbolic trig functions (in *Life of Fred: Calculus*).


3. Your child's education should be **integrated**.

Does it make sense to place the subjects into little watertight compartments? Are there no connections between science and history? Are there no connections between art, music, and mathematics?

This book does teach $7 + 6 = 13$ and that the cardinality of the set $\{\odot, \rightarrow, \square\}$ is 3, and a zillion other pieces of mathematics.*

But . . . be advised . . . I teach children—not mathematics. An integrated education, where all the parts of life flow together, is paramount in my thought.

In this book, your kids (and you!) see broad vistas:

- ✓ Astronomy. The Big Dipper is not a constellation. (Chapter 1)
- ✓ Human relations. The loudest talker is sometimes the least important person. (Chapter 2)
- ✓ Physiology. Why the clerk at C. C. Coalback's Electric Heater store looks so tired. 
- ✓ Music. The full piano score for Fred's song "Happy." (Chapter 5)
- ✓ Geography. The four major oceans of the world. (Chapter 13)
- ✓ English. Fred's collection of homonyms. (Chapter 14)

. . . and oil painting, how Magellan named the Pacific Ocean, and four-dimensional cubes.

* The *Life of Fred* series contains **more mathematics** than any other math curriculum that I know of.

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Chapter One

The Big Dipper

Fred's eyes went open. He was cold. He hugged his doll Kingie close to him. He still felt cold.

With his flashlight, he looked at the clock on the wall of his office. It was 2 a.m.—two hours after midnight.



He got out of his sleeping bag and walked over to turn on the lights.

With the light on, he could see his footprints in the frost on the floor. Fred knew that it was cold outside. It was a February Tuesday in Kansas.

Something was wrong.

Did I leave the window open? he thought to himself. He checked. The window was closed.

Last night when Fred went to bed he could see Orion through the window.



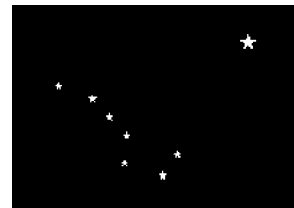
Now when he looked through the window, he saw a different constellation.

This official constellation is called Ursa Major (Big Bear). Most of the stars in Ursa Major are hard to see.



Big Flea?

But there are seven stars in Ursa Major that lots of people recognize. They form the Big Dipper. In fact, those seven stars are so famous that they are on the Alaska state flag.



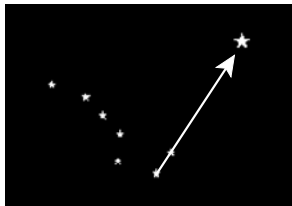
State Flag of Alaska



ladle

A dipper is like a ladle.

If you are ever lost at night, the Big Dipper can help you find your way. The two stars at the end of the dipper point to the North Star. The North Star is north.



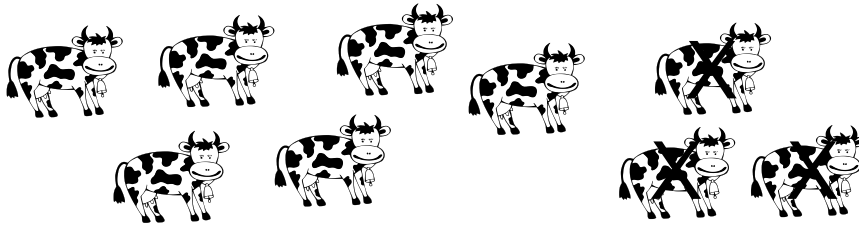
How to find the North Star

Fred shivered. He put on a shirt and pants over his pajamas.

He put on his socks and his shoes. He giggled and thought to himself: *Putting on shoes and socks are not commutative.* It does make a difference which order you do them. Putting on socks and then shoes gives you a different result than putting on shoes and then socks.

Addition is commutative. If you add $3 + 6$ you get 9. If you add $6 + 3$ you will also get 9.

Subtraction is not commutative. Nine take away three ($9 - 3$) makes sense. If you have nine cows and you take away three of them, you will have six cows left.



$$9 - 3 = 6$$

On the other hand, what does $3 - 9$ mean? If you start with three cows, it is really hard to take away nine cows. It would be like putting on your shoes before putting on your socks.



$$3 - 9 = ?$$

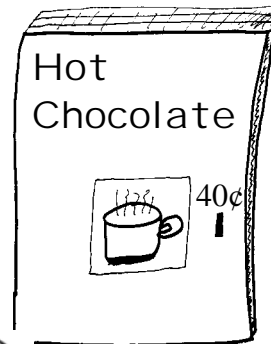
Fred opened his office door and headed out into the hallway. (Definitely not commutative. He would have had real difficulty getting into the hallway and then opening the door.)

The nine vending machines were humming quietly. Five on one side and four on the other. The hallway was as cold as his office.

Fred skipped the ice-cold Sluice machine. He ignored the Icy Ice Cream machine.



Instead, he chose the hot chocolate. For forty cents you get hot chocolate and a mug.



He took some nickels out of his pocket and counted out 40¢.



He carried the mug of hot chocolate back to his office and put it right next to Kingie. He knew that a cup of hot chocolate would keep his doll warm. Fred, himself, wasn't very hungry or thirsty right now.

Please take out a piece of paper and write your answers down before checking your work on the next page. Please.

Your Turn to Play

1. Are brushing your teeth and combing your hair commutative?
2. The Big Dipper has four stars in the cup and three stars in the handle. How many stars are in the Big Dipper?



$$4 + 3 = ?$$

3. The Big Dipper is not an official constellation. (Many adults do not know that.) The Big Dipper is an asterism—a pattern of stars that is not an official constellation.

Orion's belt is an asterism.

There are five vowels in English: A, E, I, O, and U.

This is the set of vowels in the word *asterism*: {a, e, i}. What is the cardinal number associated with this set?



..... ANSWERS

1. It doesn't matter whether you brush your teeth first or comb your hair first. These two things are commutative.

2. $4 + 3 = 7$

Four stars plus three stars equals seven stars.

In algebra, you will do the same thing with letters:

$$4x + 3x = 7x$$

$$4y + 3y = 7y$$

$$4abc + 3abc = 7abc$$

3. The cardinal number associated with {a, e, i} is 3. The cardinality of a set is the number of members in the set. (We did this in Chapter 16 of the previous book: *Life of Fred: Butterflies.*)


The cardinality of {#, \$, @, ✂, ✈} is 5.

The cardinality of { } is 0.

The doctor took Fred's arm and they headed out into the hallway. The doctor shut the door to the examination room. He said to Fred, "Do you realize . . ."

He showed him the newspaper.

THE KITTEN Caboodle




The Official Campus Newspaper of KITTENS University

Tuesday 3 a.m. 10¢


news flash

Tiger Cub Escapes

KANSAS: Early this morning the whole campus was put on alert. One of the four tiger cubs has escaped from the university zoo.



University president said that he didn't know anything about the missing tiger cub.



Mama missing one of her cubs

$$\begin{array}{r} 4 \\ - 1 \\ \hline 3 \end{array}$$

3 cubs left

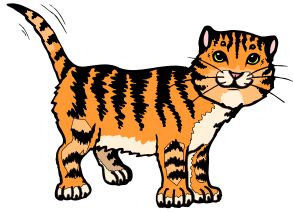
WARNING!

If you see the cub, do not approach it—danger!
Call the KITTENS University Zoo and specially trained men will come and capture it.

All Fred could say was, "Oops."
The doctor called the zoo.

Your Turn to Play

1. If the tiger had 7 cubs and 2 escaped, how many would be left?
2. A tiger cub has 5 claws on each foot.



Counting by fives, how many would she have on all four feet?

3. Here are ten mice that would make a nice lunch for a tiger cub. Counting by twos, how many eyes do these ten mice have?



4. Write the set of the five vowels in English.
Here is a start: {A, . . .

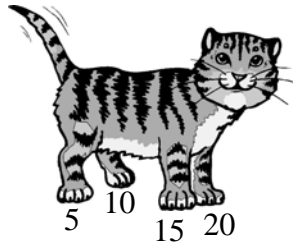
5. The phone call to the zoo cost a quarter.
How many cents is that?



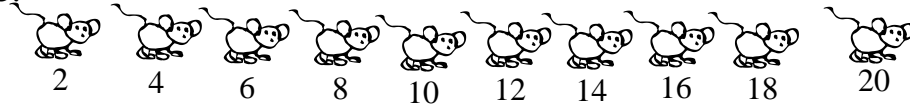
..... ANSWERS

1. A tiger had 7 cubs and 2 escaped.
$$\begin{array}{r} 7 \\ - 2 \\ \hline 5 \end{array}$$

2.

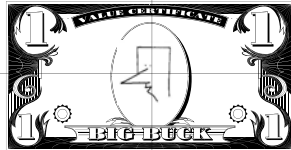


3.



4. The set of vowels is {A, E, I, O, U}.

5. If we take a dollar and divide it into four equal parts, we get four quarters.



$$\$1 = 100\text{¢} = 25\text{¢} + 25\text{¢} + 25\text{¢} + 25\text{¢}$$



$$= 25\text{¢}$$

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