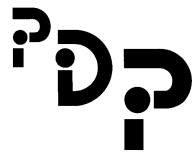


Zillions of Practice Problems
Pre-Algebra 2 with Economics

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How This Book Is Organized

Life of Fred: Pre-Algebra 2 with Economics has 34 chapters before the final bridge. So does this book.

As you work through each chapter in *Life of Fred: Pre-Algebra 2 with Economics* you can do the problems in the corresponding chapter in this book.

Each chapter in this book is divided into two parts.

- ★ The first part takes each topic and offers a zillion problems.
- ★ The second part is called the *Mixed Bag*. It consists of a variety of problems from the chapter and review problems from the beginning of the book up to that point.

Please write down your answers before turning to the back of the book to look at my answers. If you just read the questions and then read my answers you will learn very little. As my mother used to tell me,



Chapter Two

Getting Paid in Nickels

First part: Problems from this chapter

144. Lucy always loved trains. Even when she was very little, she wanted toy trains rather than dolls or footballs.



For Lucy's first birthday her parents gave her four dolls.



"Yucky!" she exclaimed. That was the first word she ever spoke. Up to that moment she had been silent. She had been thinking about trains and had never needed to tell anyone else about her thoughts.

She repeated, "Yucky!" Lucy's mother dutifully wrote in Lucy's baby book under Baby's First Word: *Yucky*.*

Lucy handed her 4 dolls to her brother and took his engine and two train cars in exchange. Luke, her brother didn't make a fuss. He knew that one-year-olds often went through phases. Luke was certain that Lucy was just going through a "train phase" and that she'd be interested in other things. Then he could get his train cars back. There was no need to force her to give back the train and make her cry. Instead, he just pulled 51 other train cars out of his closet and played with them.

Lucy's eyes lit up. She ran to her bedroom and gathered up some of her other yucky dolls. She was going to trade 4 dolls for every 3 train cars. How many dolls would she need?

300. There was one doll that Lucy would never give up. It was her engineer doll—the guy who drove the train. Lucy called him Ginny, not realizing that Ginny is a girl's name. For Lucy, the name Ginny was short for Engineer.



Ginny's head was 5 cm (cm = centimeter) tall. That was two-ninths of his total height. How tall was Ginny?

The conversion factor will be $\frac{5 \text{ cm}}{2/9 \text{ total height}}$

* Some people tell me, your author, that my first word was *pizza*.

Chapter Two Getting Paid in Nickels

Second part: the Mixed Bag: a variety of problems from this chapter and previous chapters

316. Lucy needed passengers for her long train. Her brother, Luke, had 72 dolls. She took them back and gave Luke nothing. When you are a one-year-old, you think that anything you can grab is yours. Thieves who are 17-years-old are just one-year-olds in disguise.

Lucy had an engine and 53 train cars and 73 dolls on her bedroom floor.

Ginny, the engineer
2 pig dolls—Porky and Ima
68 girl dolls
1 boy doll
1 crocodile doll named Scizzors (She spelled it with three z's.)

1 red engine
1 green train car
1 blue train car
1 brown train car
50 gray train cars

If the domain (the first set) is the dolls and the codomain is the train cars, is this a function? *Lucy put Ginny in the engine, the pig dolls in the brown car, the 68 girl dolls in the green car, and the boy doll in the blue car. (She left the 50 gray cars empty.)*

455. On Lucy's first birthday her parents had given her four dolls. They had also given her some pink nail polish. They hoped that these gifts would encourage her to do "girl stuff." Her mom showed her how to paint one of her nails.

Lucy thought *What a waste of paint! I know what this should be used for.* That is how one of Luke's train cars became pink. Luke did not like this at all.



The bottle was $\frac{9}{10}$ full when Lucy started painting the car. (That's because her mom had used $\frac{1}{10}$ of the bottle to paint one of Lucy's nails.) When Lucy was done, there was $\frac{1}{6}$ of the bottle left. How much had she used in painting the train car pink?

Chapter Eight

In Business

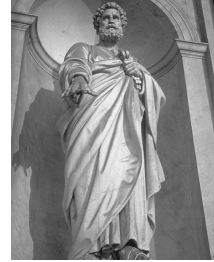
First part: Problems from this chapter

166. On the Internet Lucy saw the bargain that she couldn't live without. She knew that Lucy Railroad would require train stations, and train stations would require statues.

Statues add class to anything she thought. I'm going to have lots of statues in my house when I grow up.

Lucy sent in \$10,000. (She put it on her credit card since she didn't have a checking account yet.) There was a \$1,000 shipping charge.

How many statues would she get?



Train Station Statues!
On sale now!
\$500 each!

229. Actually, it wasn't Lucy's credit card. It was her parents' card.* Several weeks later at the breakfast table:

Mom: (to Dad) Honey. Did you look at our credit card bill?

Dad: (while eating his eggs and sausages) What about it?

Mom: There's this charge for \$10,000 from the Train Station Statuaries Company. Did you buy something?

Dad: (He shook his head, because his mouth was full.)

Both of them turned their eyes toward Lucy who was eating her Toot!® brand cereal.

If the domain is the two parents and the codomain are Lucy and Luke, would this be a function: *Assign each parent to Lucy.*

330. Toot!® brand cereal is the cereal for people who love railroads. Each little bite of cereal is a little locomotive that is 95% oats and 5% engine oil. Their slogan: It tastes like a real locomotive! A handful of Toot!® (130 grams) would contain how much engine oil?



* If only one parent had owned the card, then it would be her parent's card.

Chapter Twenty-three

Liberty

First part: Problems from this chapter

123. Luke had done his 25 trips. All the tools were now at the train station. For the last seven years most of her train work had been intellectual—lots of reading, talking with people, and thinking about the Lucy Railroad. Lucy was now ready to do some physical work.



Lucy told herself that her train station might need a little bit of work before it was perfect.

She wasn't afraid of work. She had done more work in the first seven years of her life than some people do in their entire life.

A little nailing, a little patching, a little painting—Lucy laid out her plans. It would take 5 days to get the whole job done. What fraction of the work would be done each day?

253. If it took her $5\frac{1}{3}$ days to do the whole job, what fraction would be done each day?

340. The station needed a little electrical work. She worked for 6 hours in the forenoon and installed 7 electrical outlets per hour. In the afternoon she worked for 8 hours. That day she installed a total of 90 outlets. At what rate was she installing outlets in the afternoon? Use six pretty boxes.

470. Lucy had brought her sleeping bag so that she could sleep overnight at the station. She was tired after the 14 hours of electrical work, but for Lucy this was all fun. She was fulfilling her dreams. Her brother Luke on the other hand was also tired. He had been playing tag with his friends all afternoon after school.

Luke didn't notice that Lucy hadn't come home. He was just happy being in his bedroom without the 18 train station statues.

Chapter Twenty-three Liberty

Lucy's dad noticed that the garage was devoid of his tools. He knew that she would bring them back after she was done with them.

Lucy's mom happened to notice that Lucy had been gone all day and hadn't shown up for dinner.* She found out from Luke that her daughter was probably at the train station.

At nine at night she took a flashlight and headed to the station. She knew that the station would be dark since there was no electricity there.

She was wrong.

She could see light pouring out all the cracks in the building. She found Lucy tucked in her sleeping bag reading Prof. Eldwood's *Modern Train Station Repair*, 1850.

She kissed her little choo-choo lamb on the forehead and told her to "sleep tight."



Which of these are commutative?

{ shutting your eyes
{ going to sleep

{ dreaming
{ waking up

{ dreaming about locomotives
{ dreaming about pizzas

* Moms are often the first to notice when their children are missing.

327. Lucy's goal in life was to create the Lucy Railroad. The definition of *tool* is something that helps you accomplish your goal more easily. In a sentence or two explain why learning lots about trains is a tool for Lucy.

One sentence: The more that Lucy learned about trains, the more easily she could do the things needed to create her railroad when she grew up.

Education is a tool that is super valuable in today's world. Two hundred years ago having a good back and strong hands were important tools.

Today, how often do you see "Help Wanted" ads for bodies. They want minds (= experience and education).

328. Lucy has 36 dolls that she would be happy to get rid of.

She could trade 3 dolls for 2 hammers.

She could trade 4 hammers for 5 screwdrivers.

She could trade 6 screwdrivers for 5 train cars.

Convert those 36 dolls into train cars.

$$\begin{aligned} & \frac{36 \text{ dolls}}{1} \times \frac{2 \text{ hammers}}{3 \text{ dolls}} \times \frac{5 \text{ screwdrivers}}{4 \text{ hammers}} \times \frac{5 \text{ train cars}}{6 \text{ screwdrivers}} \\ = & \frac{36 \text{ dolls}}{1} \times \frac{2 \cancel{\text{ hammers}}}{3 \cancel{\text{ dolls}}} \times \frac{5 \cancel{\text{ screwdrivers}}}{4 \cancel{\text{ hammers}}} \times \frac{5 \text{ train cars}}{6 \cancel{\text{ screwdrivers}}} \\ = & 25 \text{ train cars} \end{aligned}$$

329. Solve $9y - 13 = 3y + 17$

Add 13 to both sides $9y = 3y + 30$

Subtract $3y$ from both sides $6y = 30$

Divide both sides by 6 $y = 5$

330. Each little bite of cereal is a little locomotive that is 95% oats and 5% engine oil. A handful of Toot!® (130 grams) would contain how much engine oil?

Five percent of 130 grams

$$5\% \text{ of } 130 = ?$$

When you know both sides of the *of*, you multiply.

$$0.05 \times 130 = 6.5$$

Each handful of Toot!® contains 6.5 grams of engine oil.

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