

Name \_\_\_\_\_ Date \_\_\_\_\_ Pd \_\_\_\_\_

### 7.1 Rational Functions DAY THREE CYU

Use when you get it right all by yourself

**S** Use when you did it all by yourself, but made a silly mistake

**H** Use when you could do it alone with a little help from teacher or peer

**G** Use when you completed the problem in a group

**X** Use when a question was attempted but wrong (get help)

**N** Use when a question was not even attempted

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Real-World Application with Rational Functions	1	3, 4	2
Reasonable domain restrictions	1	3, 4	2

*Solve the world problems. Show all thought process to earn full credit. Think about notation and units.*

1. The total revenue from the sale of a popular book is approximated by the rational function  $R(x) = \frac{1000x^2}{x^2+4}$ , where  $x$  is the number of years since publication and  $R(x)$  is the total revenue in millions of dollars.

a) Find the total revenue at the end of the first year.

b) Find the total revenue at the end of the second year.

c) Find the revenue during the second year only.

d) Find a reasonable domain for the function of  $R$ .

2. The function  $f(x) = \frac{100,000x}{100-x}$  models the cost in dollars for removing  $x$  percent of the pollutants from a bayou in which a nearby company dumped creosol.

a) Find the cost of removing 20% of the pollutants from the bayou. [HINT: Find  $f(20)$ ]

b) Find the cost of removing 60% of the pollutants and then 80% of the pollutants.

c) Find the domain of function  $f$  that seems reasonable.

3. The dose of medicine prescribed for a child depends on the child's age  $A$  in years and the adult dose  $D$  for the medication. Young's Rule is a formula used by pediatricians that gives a child's dose  $C$  as

$$C = \frac{DA}{A+12}.$$

a) What does the  $A$  stand for in the formula?

b) What does the  $D$  stand for in the formula?

c) What does the  $C$  stand for in the formula?

d) What would be a reasonable domain for Young's Rule?

e) Suppose that an 8-year-old child needs medication, and the normal adult dose is 1000mg. What size dose should the child receive?

4. Calculating body-mass index is a way to gauge whether a person should lose weight. Doctors recommend that body-mass index values fall between 18.5 and 25. The formula for body-mass index  $B$  is  $B = \frac{703w}{h^2}$ , where  $w$  is weight in pounds and  $h$  is height in inches. Should a 148-pound person who is 5 feet 6 inches tall lose weight? ALSO, give a reasonable domain.

---

**CYU Reflection:** *How far can you go: basic, intermediate, or advanced?*

**Rate your mastery level!**

How confident are you with the skills this CYU covered? Circle the score you would give yourself.

