

3-3

Student Loans

You will need:

- **Student Notes**
- **Textbook**
- **Calculator**
- **3-2 Notes**
- **Notebook Paper**
- **Pen or Pencil**

Items in red are needed
for the lecture.

OBJECTIVES

Explain the options available for student loans.

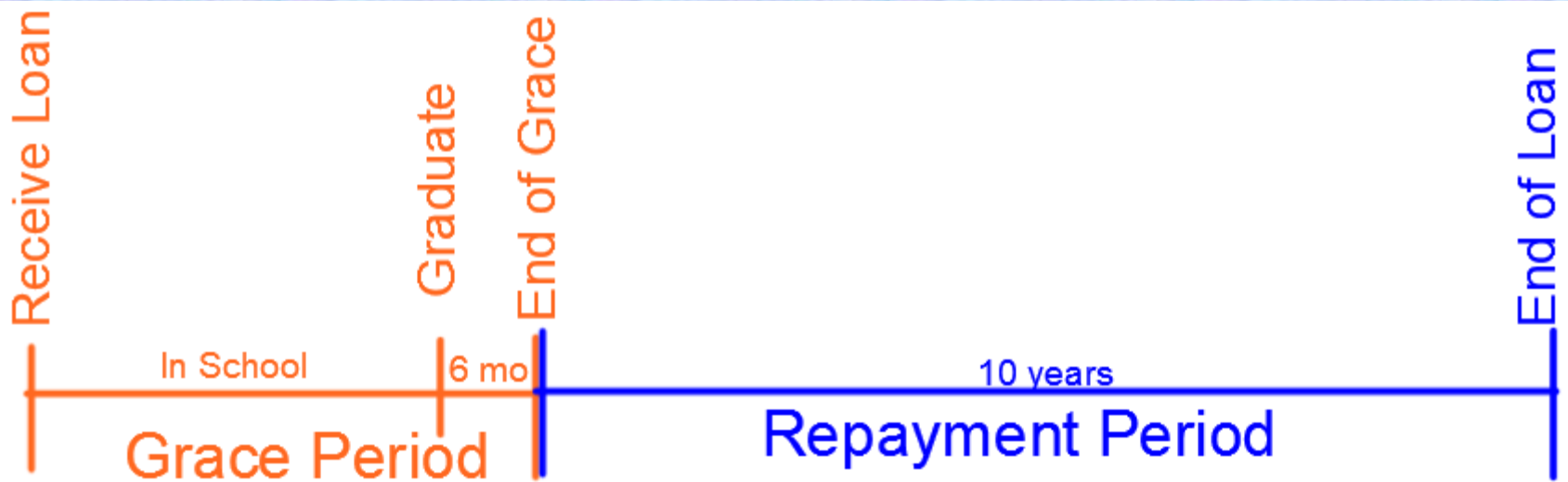
Calculate the interest paid in various student loan situations.

How Can You Pay for College?

- Savings
- Scholarships
- Dual Credit classes in high school
- Student loans

Today we will learn about student loans.

Definitions – Student Loans



Grace Period: The time period that you are in school plus 6 months after you graduate.

Subsidized Student Loan: A loan where the government pays your interest during the grace period.

Capitalized Interest: Unpaid interest that is added to the principal.

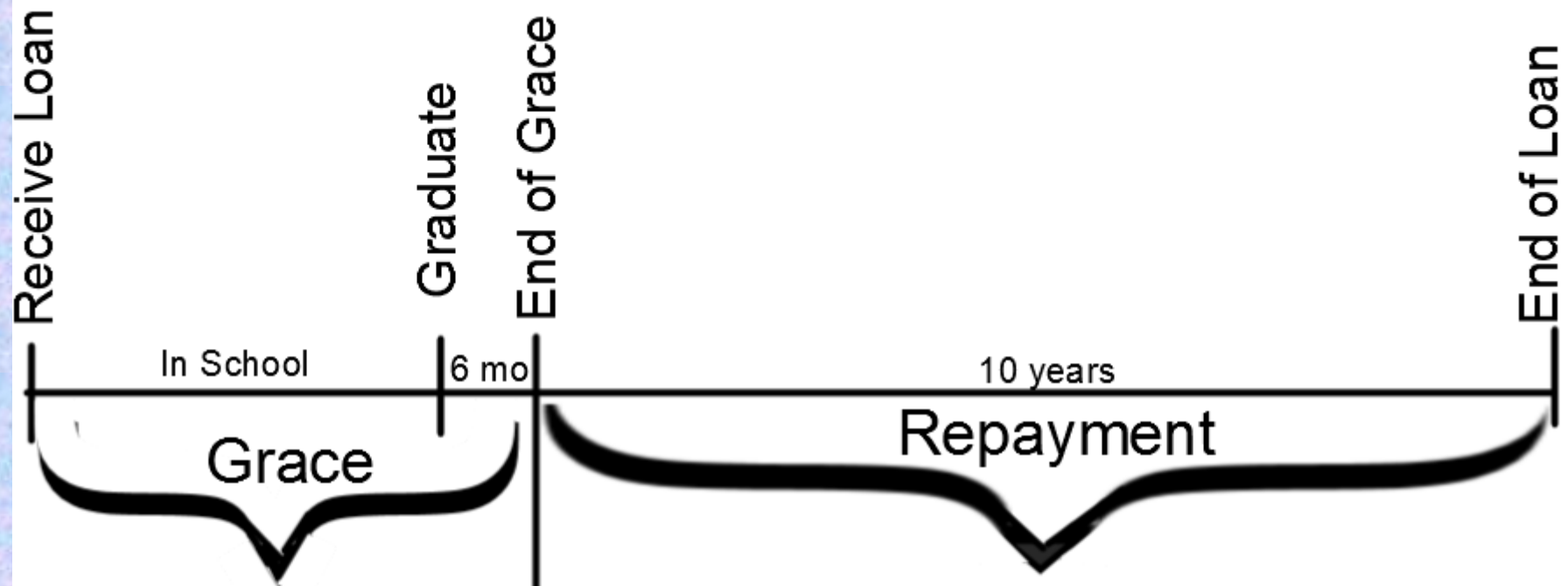
Ariana got a \$9,100 **subsidized** student loan for her first semester at college at 4.29% for 10-years.

How much interest will she pay while she is in school and during the grace period?

\$0

Subsidized Student Loan: A loan where the government pays your interest during the grace period.

Subsidized Student Loan:



Grace Period:
The government
pays the interest

Repayment Period:
Follow the 3-2 Steps
Principal: original loan amount
Rate = given
Time = 10 years

Example 1

Ariana got a \$9,100 **subsidized** student loan for her first semester at college at 4.29% for 10-years.

How much interest will she pay in total?

Follow the steps on 3-2 Notes.

a) Find the monthly payment

Remember:

Monthly Payment Formula:
$$M = \frac{P \left(\frac{r}{12} \right) \left(1 + \frac{r}{12} \right)^{12t}}{\left(1 + \frac{r}{12} \right)^{12t} - 1}$$

M = monthly payment M

P = Principal 9,100

r = annual interest rate (converted) .0429

t = length of loan in years 10

Example 1

Ariana got a \$9,100 **subsidized** student loan for her first semester at college at 4.29% for 10-years.

a) Find the monthly payment

$$M = \frac{9,100 \left(\frac{.0429}{12} \right) \left(1 + \frac{.0429}{12} \right)^{12 \cdot 10}}{\left(1 + \frac{.0429}{12} \right)^{12 \cdot 10} - 1}$$

Remember:

Monthly Payment Formula:

M = monthly payment M

P = Principal 9,100

r = annual interest rate (converted) .0429

t = length of loan in years 10

\$93.39

Example 1

Ariana got a \$9,100 **subsidized** student loan for her first semester at college at 4.29% for 10-years.

b) Find the total monthly payments

$$\begin{aligned}\text{total monthly payments} &= \\ &= \text{monthly payment} \times \# \text{ of years} \times 12 \\ &= 93.39 \times 10 \times 12 \\ &= \mathbf{\$11,206.80}\end{aligned}$$

Example 1

Ariana got a \$9,100 **subsidized** student loan for her first semester at college at 4.29% for 10-years.

c) Find the total interest

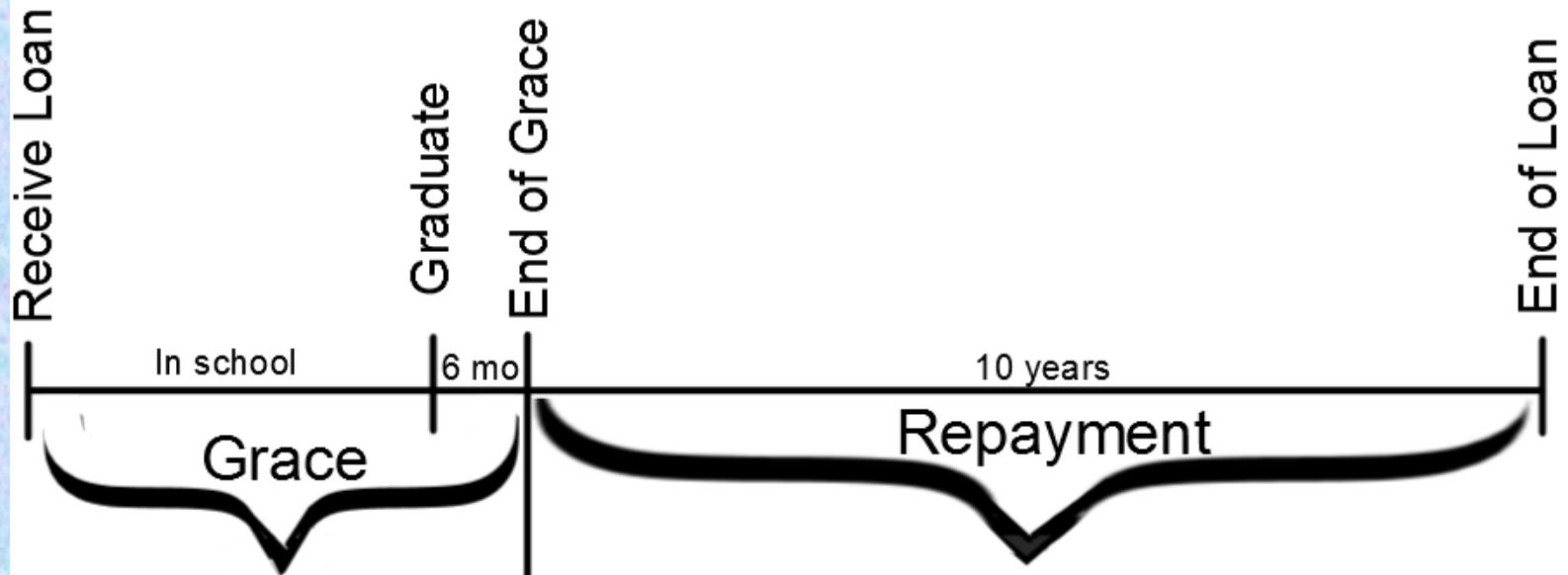
$$\begin{aligned}\text{total interest} &= \\ &= \text{total monthly payments} - \text{original principal} \\ &= 11,206.80 - 9,100 \\ &= \mathbf{\$2,106.80}\end{aligned}$$

Suppose that Ariana received an **Unsubsidized** Student Loan with a grace period for the same terms as example 1.

She knows that she will begin making loan payments after the grace period but interest will accrue from the moment the funds are credited to her account and will be capitalized into her loan.

How much will she have paid in interest?

Unsubsidized Student Loan:



Grace Period:

The unpaid interest is calculated using $I = PRT$
principal = original loan amount
rate = given
time = years in school + .5

Repayment Period:

Follow the 3-2 Steps

Principal: Original principal + unpaid grace period interest

Rate = given

Time = 10 years

Example 2

Suppose that Ariana received an Unsubsidized Student Loan with a grace period for the same terms as example 1. She knows that she will begin making loan payments after the grace period but interest will accrue from the moment the funds are credited to her account and will be capitalized into her loan. How much will she have paid in interest?

Step 1: Interest during Grace Period

Simple Interest formula

I = Interest I

P = Principal (beginning amount) 9,100

R = Rate (converted) .0429

T = Time 4.5

$$I = PRT$$

$$I = 9,100 \times .0429 \times 4.5$$

$$I = \mathbf{\$1,756.76}$$

Example 2

Suppose that Ariana received an Unsubsidized Student Loan with a grace period for the same terms as example 1. She knows that she will begin making loan payments after the grace period but interest will accrue from the moment the funds are credited to her account and will be capitalized into her loan. How much will she have paid in interest?

Step 2: Find new Principal balance

New Principal Balance=

Original Principal + Grace Period Interest

= 9,100 + 1,756.76

= **\$10,856.76**

Example 2

How much interest will she pay in total?

Follow the steps on 3-2 Notes.

a) Find the monthly payment

$$M = \frac{P \left(\frac{r}{12} \right) \left(1 + \frac{r}{12} \right)^{12t}}{\left(1 + \frac{r}{12} \right)^{12t} - 1}$$

Remember:

Monthly Payment Formula

M = monthly payment M

P = Principal 10,856.76

r = annual interest rate (converted) .0429

t = length of loan in years 10

Example 2

How much interest will she pay in total?

Follow the steps on 3-2 Notes.

a) Find the monthly payment

$$M = \frac{10856.76 \left(\frac{.0429}{12} \right) \left(1 + \frac{.0429}{12} \right)^{12 \cdot 10}}{\left(1 + \frac{.0429}{12} \right)^{12 \cdot 10} - 1}$$

Remember:

Monthly Payment Formula

M = monthly payment M

P = Principal 10,856.76

r = annual interest rate (converted) .0429

t = length of loan in years 10

\$111.42

How much interest will she pay in total?

Follow the steps on 3-2 Notes.

b. Find the total monthly payments

total monthly payments =

= monthly payment x # of years x 12

= 111.42 x 10 x 12

= **\$13,370.40**

How much interest will she pay in total?

Follow the steps on 3-2 Notes.

c. Find the total interest

total interest =

= total monthly payments – original principal

= 13,370.40 – 9,100

= **\$4,270.40**

This is twice as much interest as a subsidized loan!!!!

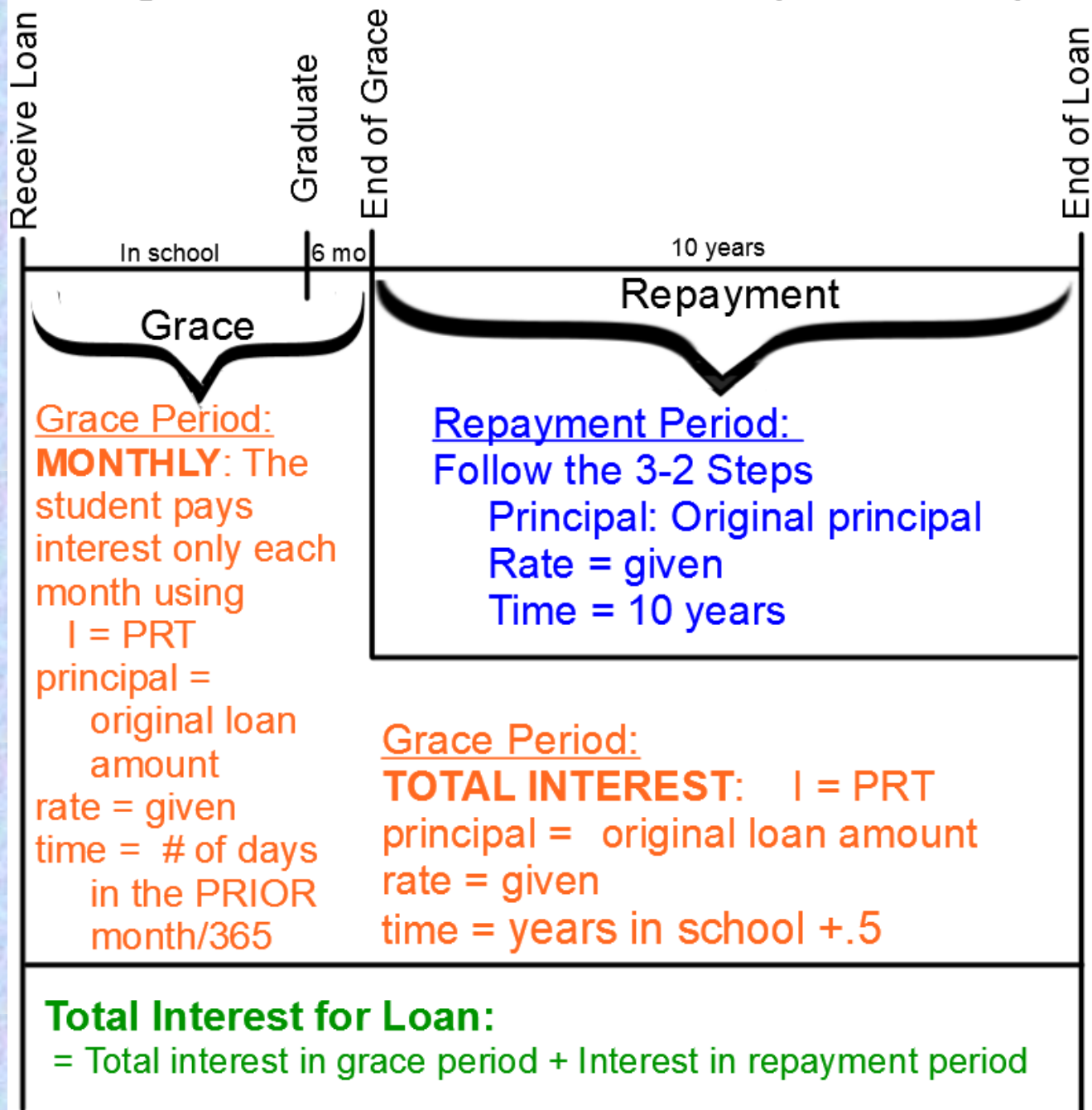
Example 3a

Suppose that Ariana received a **Regular Student Loan (Private)** with a grace period for the principal only for the same terms as example 1. She will have to pay interest every month during the grace period then begin regular payments after the grace period.

a) What would have been her monthly interest payment on April 1st?

(March has 31 days)

Regular Student Loan (Private):



Example 3a

Suppose that Ariana received a **Regular Student Loan (Private)** with a grace period for the principal only for the same terms as example 1. She will have to pay interest every month during the grace period then begin regular payments after the grace period.

a) What would have been her monthly interest payment on April 1st?

(March has 31 days)

Simple Interest formula

I = Interest I

P = Principal (beginning amount) 9,100

R = Rate (converted) .0429

T = Time 31/365 days

$$I = PRT$$

$$I = 9,100 \times .0429 \times (31/365)$$

$$I = \mathbf{\$33.16}$$

Example 3b

Suppose that Ariana received a **Regular** Student Loan (Private) with a grace period for the principal only for the same terms as example 1. She will have to pay interest every month during the grace period then begin regular payments after the grace period.

b) How much interest would she pay in total?

How much interest will she pay in total?

Example 3b

Repayment Period:

Follow the 3-2 Steps

Principal: Original principal

Rate = given

Time = 10 years

3-2 Steps:

a) Find the monthly payment

Same as Subsidized!

\$93.39

How much interest will she pay in total?

Follow the steps on 3-2 Notes.

b. Find the total monthly payments

Same as Subsidized!

= \$11,206.80

How much interest will she pay in total?

Follow the steps on 3-2 Notes.

c. Find the total interest

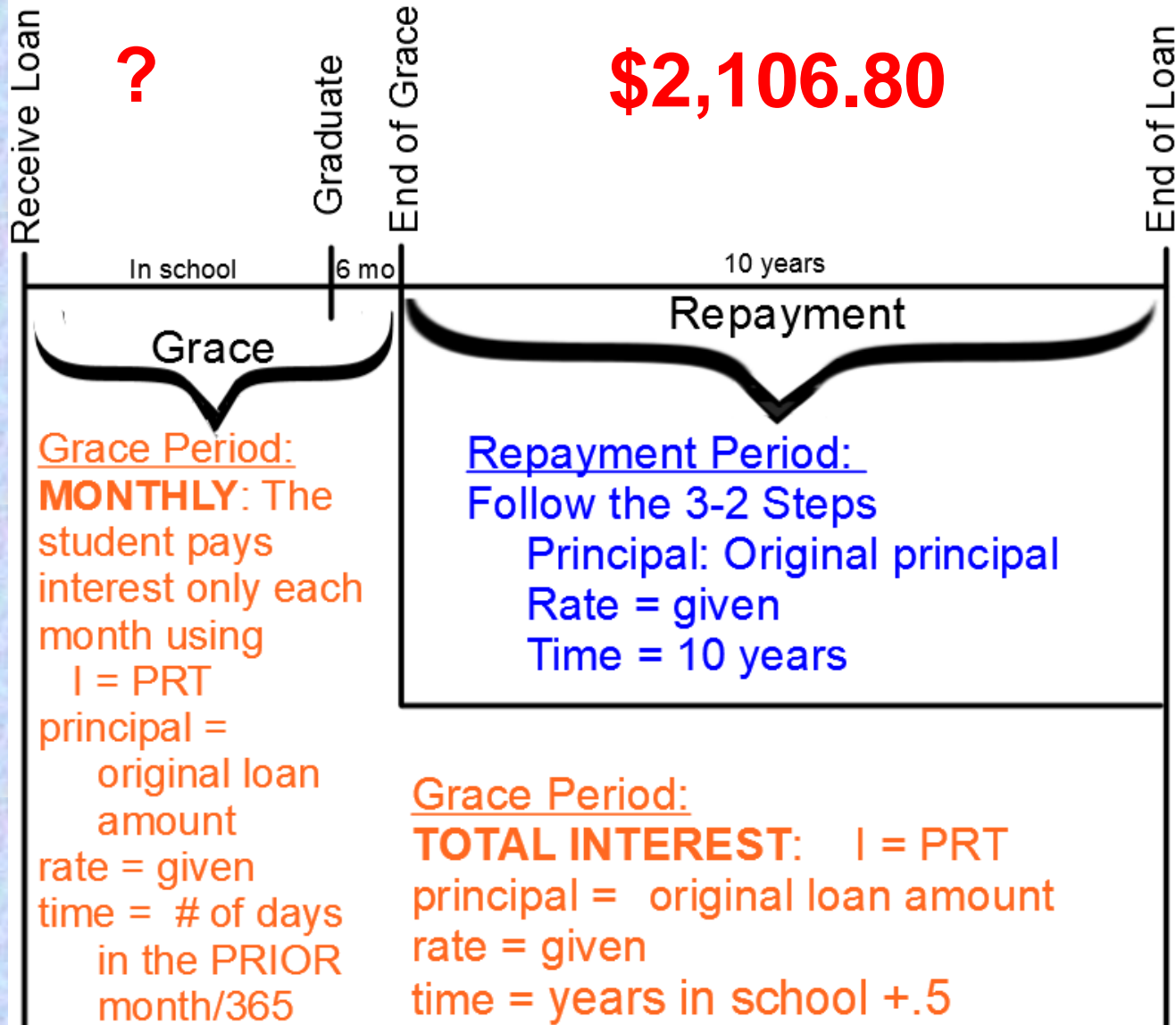
Same as Subsidized!

$$= \$2,106.80$$

Is this your final answer?

NO! This is just the interest during the repayment period!

Regular Student Loan (Private):



Total Interest for Loan:

= Total interest in grace period + Interest in repayment period

Example 3b

Find the interest paid during the entire grace period:

Grace Period:

TOTAL INTEREST: $I = PRT$

principal = original loan amount

rate = given

time = years in school +.5

Remember:

Simple Interest formula

I = Interest I

P = Principal (beginning amount) 9,100

R = Rate (converted) .0429

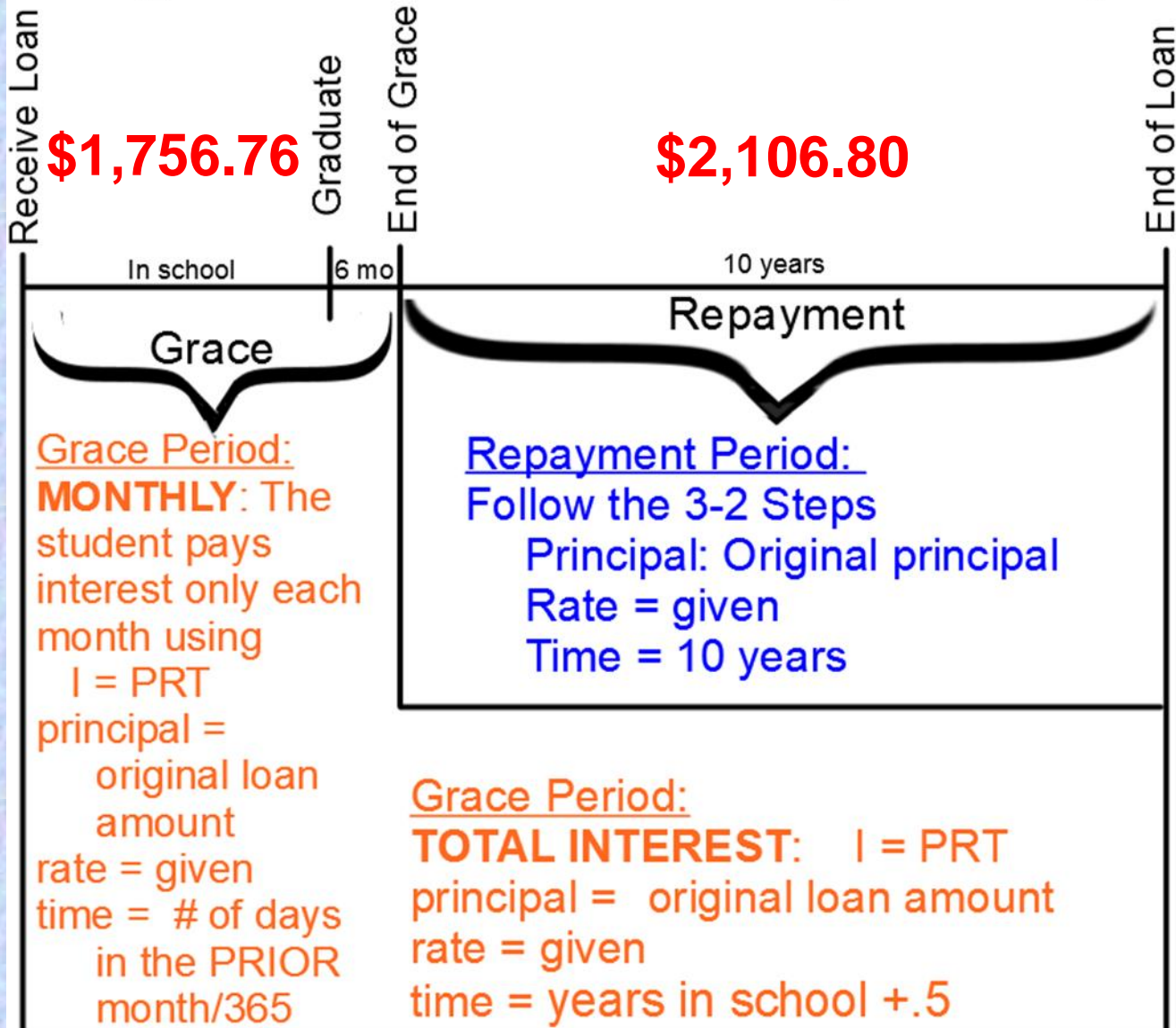
T = Time 4.5

$I = PRT$

$$I = 9,100 \times .0429 \times 4.5$$

$$I = \mathbf{\$1,756.76}$$

Regular Student Loan (Private):



\$1,756.76

\$2,106.80

In school
6 mo
Grace

10 years
Repayment

Grace Period:
MONTHLY: The student pays interest only each month using $I = PRT$
principal =

original loan amount
rate = given
time = # of days in the PRIOR month/365

Repayment Period:
Follow the 3-2 Steps
Principal: Original principal
Rate = given
Time = 10 years

Grace Period:
TOTAL INTEREST: $I = PRT$
principal = original loan amount
rate = given
time = years in school + .5

Total Interest for Loan:

= Total interest in grace period + Interest in repayment period

How much interest will she pay in total?

Total Interest for Loan:

$$\begin{aligned} &= \text{Total interest in grace period} + \text{Interest in repayment period} \\ &= \$2,106.80 + \$1,756.76 \\ &= \mathbf{\$3,863.56} \end{aligned}$$

This is your final answer!

Please work on you assignment.
It is due at the end of next class.

Grade goes here	Read Pg: 164 to 170 Do Pg 171: #2-13	Last First P__ A:3-3