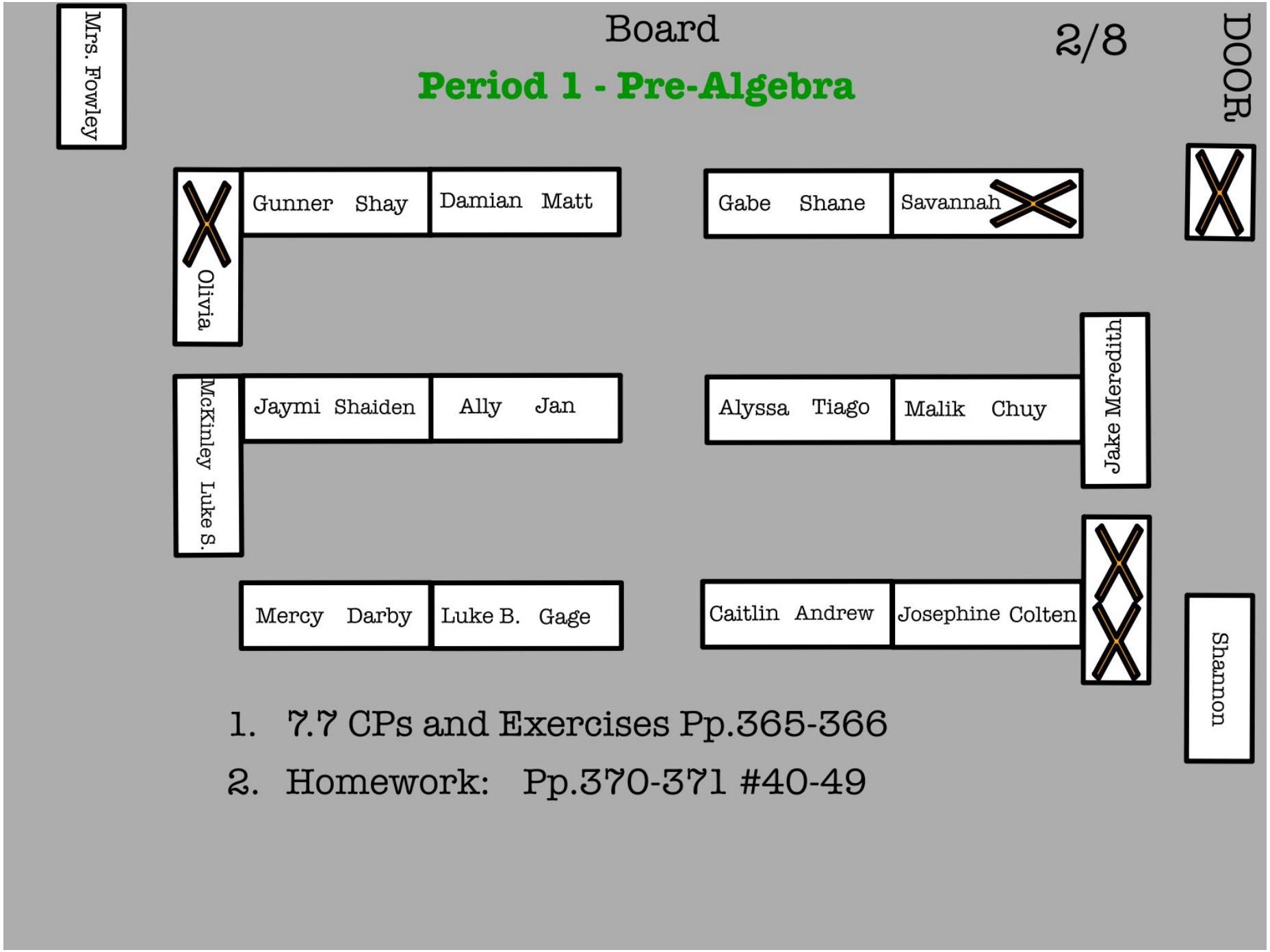
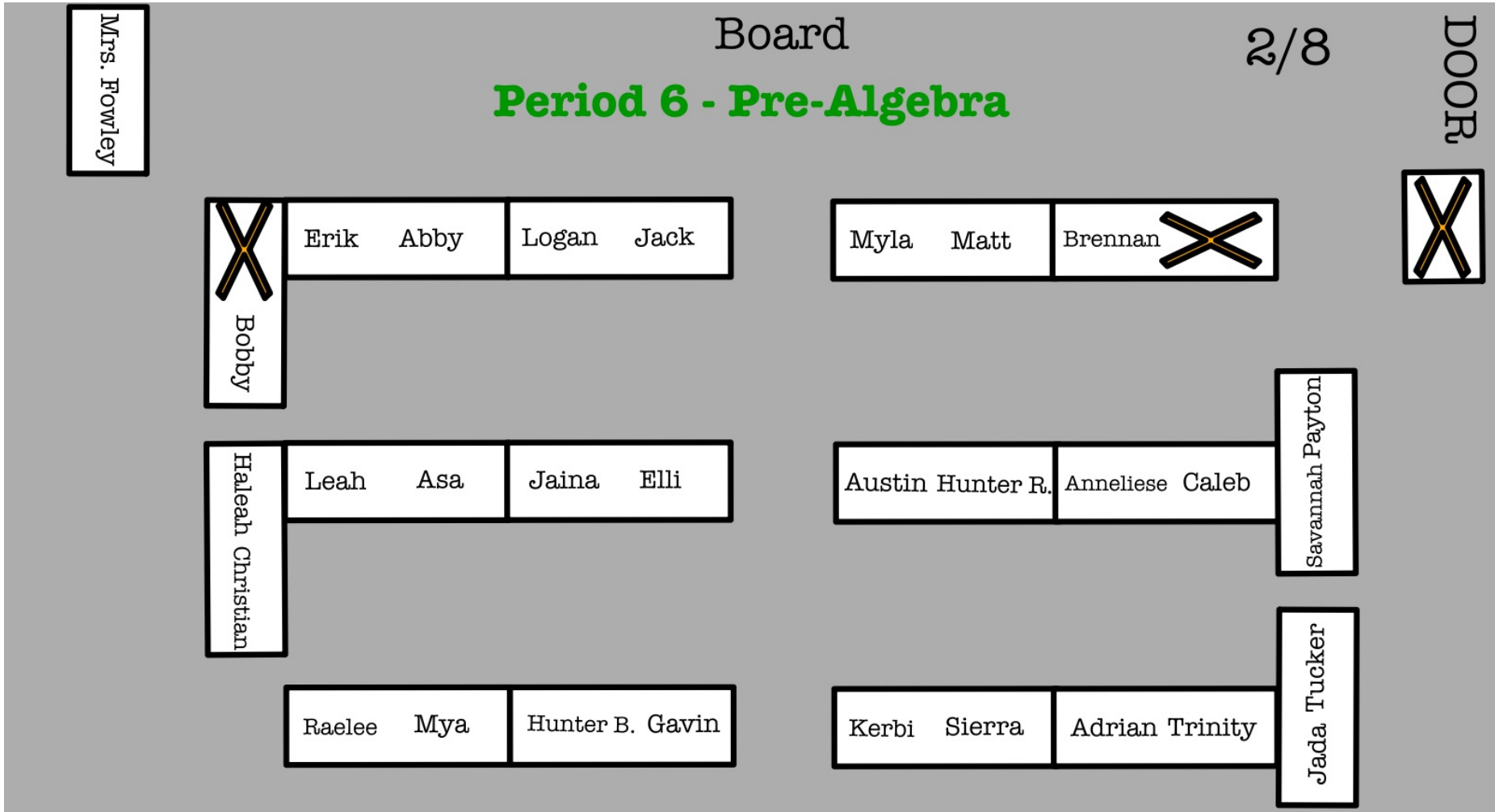
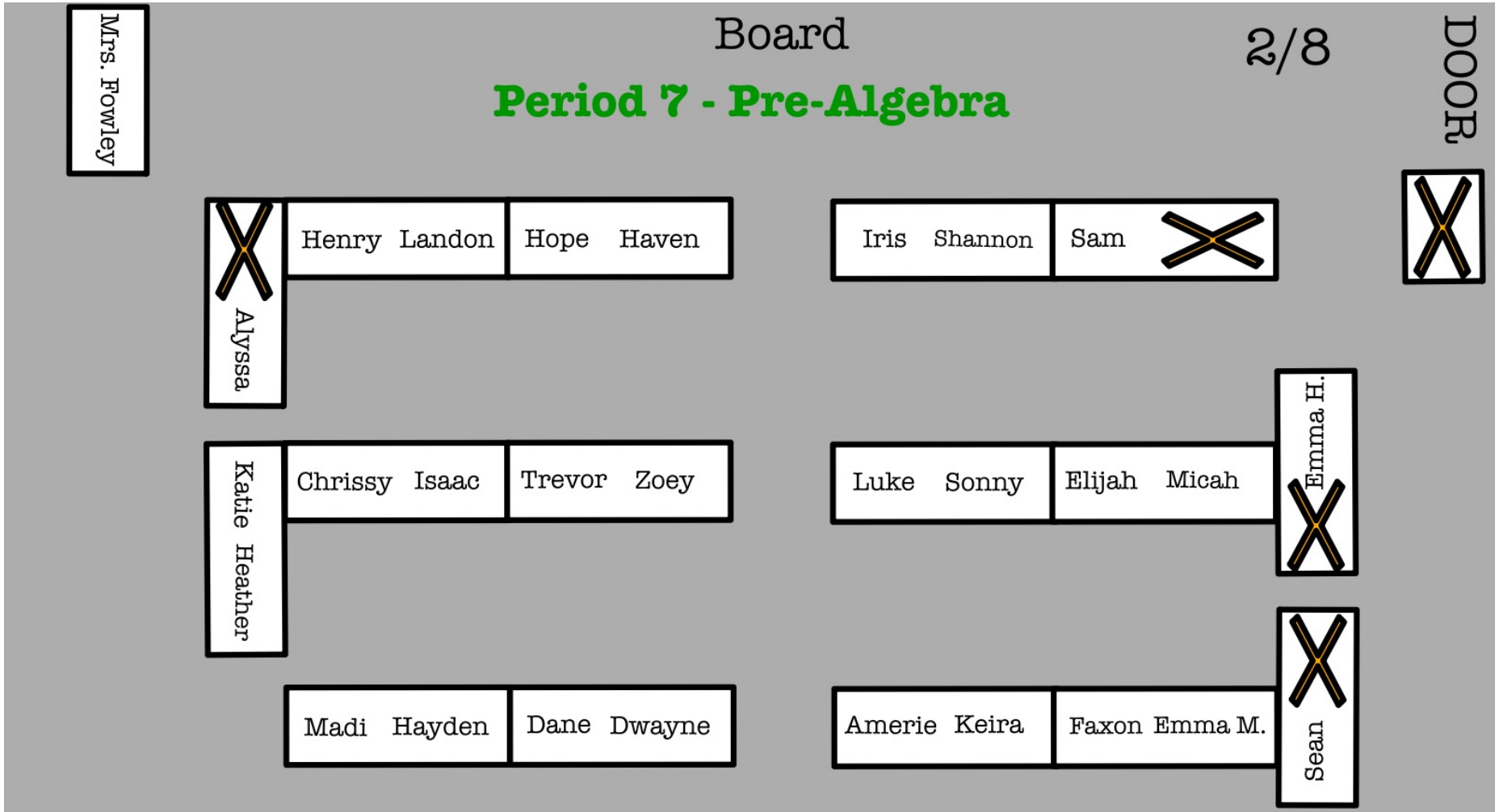

Mrs. Fowley
Board
2/8
DOOR
Period 1 - Pre-Algebra
Olivia
Gunner
Shay
Damian
Matt
Gabe
Shane
Savannah
McKinley
Luke S.
Jaymi
Shaiden
Ally
Jan
Alyssa
Tiago
Malik
Chuy
Jake Meredith
Mercy
Darby
Luke B.
Gage
Caitlin
Andrew
Josephine
Colten
Shannon
1. 7.7 CPs and Exercises Pp.365-366
2. Homework: Pp.370-371 #40-49



1. 7.7 CPs and Exercises Pp.365-366
2. Homework: Pp.370-371 #40-49



1. 7.7 CPs and Exercises Pp.365-366
2. Homework: Pp.370-371 #40-49

The amount earned or paid for the use of money is called **interest**. The amount of money deposited or borrowed is the **principal**. Interest that is earned or paid only on the principal is called **simple interest**. The percent of the principal earned or paid per year is the **annual interest rate**.

Simple Interest Formula

Simple interest I is given by the formula $I = Prt$ where P is the principal, r is the annual interest rate (written as a decimal), and t is the time in years.

Example 1 Finding Simple Interest

Find the interest earned after 2 years for the bond described above.

rate = 4% 0.04 + P = $1500

Solution

$I = Prt$ **Write simple interest formula.**

$= (1500)(0.04)(2)$ **Substitute 1500 for *P*, 0.04 for *r*, and 2 for *t*.**

$= 120$ **Multiply.**

Answer The bond will earn $120 in interest after 2 years.

B = $1,620

Checkpoint

1. A $1000 bond earns 6% simple annual interest. What is the interest earned after 4 years?

P, r = 0.06, t, I

$I = Prt$

$I = 1{,}000 \cdot 0.06 \cdot 4 = \$240$

Balance When an account earns interest, the interest is added to the money in the account. The **balance** A of an account that earns simple annual interest is the sum of the principal P and the interest Prt.

$$A = P + Prt \quad \text{or} \quad A = P(1 + rt)$$

or $A = P + I$

Example 2 — Finding an Interest Rate

Summer Job You get a summer job at a bakery. Suppose you save \$1400 of your pay and deposit it into an account that earns simple annual interest. After 9 months, the balance is \$1421. Find the annual interest rate.

Solution

Because t in the formula $A = P(1 + rt)$ is the time in years, write 9 months as $\frac{9}{12}$, or $\frac{3}{4}$ year. Then solve for r after substituting values for A, P, and t in $A = P(1 + rt)$.

$A = P(1 + rt)$	**Write formula for finding balance.**
$1421 = 1400\left[1 + r\left(\frac{3}{4}\right)\right]$	**Substitute.**
$1421 = 1400 + 1050r$	**Distributive property**
$21 = 1050r$	**Subtract 1400 from each side.**
$0.02 = r$	**Divide each side by 1050.**

Answer The annual interest rate is 2%.

Checkpoint

Find the unknown quantity for an account that earns simple annual interest.

2. $A = \underline{?}$, $P = \$1000$, $r = 2.5\%$, $t = 2$ years

3. $A = \$1424.50$, $P = \underline{?}$, $r = 3.5\%$, $t = 6$ months $= 0.5$ yrs

$A = P(1 + rt)$

$A = 1{,}000(1 + 0.025 \cdot 2)$

$A = 1{,}000(1.05)$

$\boxed{A = \$1{,}050}$

$A = P(1 + rt)$

$1{,}424.50 = P(1 + 0.035 \cdot 0.5)$

$\frac{1{,}424.50}{1.0175} = \frac{P(1.0175)}{1.0175}$

$\boxed{\$1{,}400 = P}$

Compound Interest

Compound interest is interest that is earned on both the principal and any interest that has been earned previously. Suppose you deposit $50 into a savings account that earns 2% interest compounded annually. The table below shows the balance of your account after each of 3 years.

Simple $I = Prt$ $A = P(1+rt)$

Year	Principal at start of year	Balance at end of year
1	50	$50(1 + 0.02) = 50(1 + 0.02)^1$ $= \$51$
2	$50(1 + 0.02)^1$	$50(1 + 0.02)^1 \cdot (1 + 0.02) = 50(1 + 0.02)^2$ $= \$52.02$
3	$50(1 + 0.02)^2$	$50(1 + 0.02)^2 \cdot (1 + 0.02) = 50(1 + 0.02)^3$

Compound Interest Formula

When an account earns interest compounded annually, the balance A is given by the formula

$$A = P(1 + r)^t$$

where P is the principal, r is the annual interest rate (written as a decimal), and t is the time in years.

Example 3 Calculating Compound Interest

P 0.024 r

You deposit $1500 into an account that earns 2.4% interest compounded annually. Find the balance after 6 years.

t

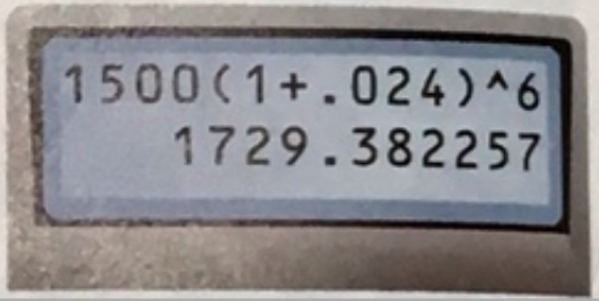
Solution

$A = P(1 + r)^t$ **Write formula.**

$= 1500(1 + 0.024)^6$ **Substitute.**

$= 1500(1.024)^6$

≈ 1729.38 **Use a calculator.**



Answer The balance of the account after 6 years is about $1729.38.

1.024 ^ 6 = ____ x^2 ^

x^a x^y 6

For an account that earns simple annual interest, find the interest and the balance of the account. L: evens, R: odds

8. $P = \$1250, r = 4\%, t = 10$ years

$I = Prt$

$I = 1{,}250 \cdot 0.04 \cdot 10$

$\boxed{I = \$500}$

$A = P + I$

$A = 1{,}250 + 500$

$\boxed{A = \$1{,}750}$

9. $P = \$325, r = 7\%, t = 8$ years

$I = Prt$

$I = 325 \cdot 0.07 \cdot 8$

$\boxed{I = \$182}$

$A = P + I$

$A = 325 + 182$

$\boxed{A = \$507}$

$$\begin{array}{r} 325 \\ \times 0.56 \\ \hline 1950 \\ +1625X \\ \hline 18200 \end{array}$$

$100 \cdot 0.02 \cdot 1 = \$2$

$25 \cdot 0.02 \cdot 1$ 50¢ $\}$ $25 \cdot 0.02 \cdot 1$ 50¢ $\}$ $25 \cdot 0.02 \cdot 1$ 50¢ $\}$ $25 \cdot 0.02 \cdot 1$ 50¢ $= \$2$

15. The table shows three ALL accounts that earn simple annual interest. Copy and complete the table by finding the unknown quantity.

Balance (A)	Principal (P)	Interest rate (r)	Time (t)
$5,000	$4,000	5%	?
$11,160	?	8%	36 months
$3,207	$3,000	?	18 months

$A = P(1 + rt)$

$5{,}000 = 4{,}000(1 + 0.05 \cdot t)$

$5{,}000 = 4{,}000 + 200t$

$-4{,}000 \quad -4{,}000$

$1{,}000 = 200t$

$\frac{1{,}000}{200} = \frac{200t}{200}$

$5 = t$

5 yrs

36 mo = 3 yrs

$11{,}160 = P(1 + 0.08 \cdot 3)$

$11{,}160 = P(1.24)$

$\frac{11{,}160}{1.24} = \frac{P(1.24)}{1.24}$

$\$9{,}000 = P$

$1.24\overline{)11{,}160.00}$ → 9000.

-1116

0000

18 mo = 1.5 yrs

$3{,}207 = 3{,}000(1 + r \cdot 1.5)$

$3{,}207 = 3{,}000 + 4{,}500r$

$-3{,}000 \quad -3{,}000$

$207 = 4{,}500r$

$\frac{207}{4{,}500} = \frac{4{,}500r}{4{,}500}$

$0.046 = r = 4.6\%$

$4500\overline{)207.000}$ → 0.046

-18000

27000

-27000

0

For an account that earns interest compounded annually, find the balance of the account. Round your answer to the nearest cent.

20. $P = \$1750, r = 2.3\%, t = 4$ years **21.** $P = \$680, r = 6.2\%, t = 10$ years

$A = P(1+r)^t$

$A = 1750(1+0.023)^4$

$A = 1750(1.023)^4$

$1.023 \boxed{x^y} 4 = \# \cdot 1750$

or

$\boxed{\wedge}$

$\approx \boxed{\$1,916.64}$

$A = P(1+r)^t$

$A = 680(1+0.062)^{10}$

$A = 680(1.062)^{10}$

$1.062 \boxed{\wedge} 10 = \# \cdot 680$

or

$\boxed{x^y} 10$

$\approx \boxed{\$1,240.95}$