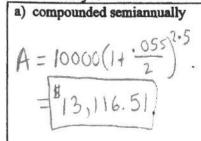
Math 43	3
Palekar	/Greenberg

H# COMPOUND INTEREST

Name:	Key
Date:	

1) State the Compound Interest Formula:

2) Find the accumulated value of an investment of \$10,000 for 5 years at an interest rate of 5.5% if the money is



b) compounded quarterly
$$A = 10000 \left(1 + \frac{.055}{4}\right)^{4.5}$$

$$= 1513,140.67$$

a) compounded semiannually
$$A = 10000(1 + \frac{.055}{2})^{2.5}.$$

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$$A = 10000(1 + \frac{.055}{4})^{1.5}.$$

$$A = 10000(1 + \frac{.055}{4})^{1.5}.$$

$$A = 10000(1 + \frac{.055}{12})^{1.5}.$$

3) Suppose that you have \$6000 to invest. Which investment yields the greater return over 4 years: 8.25% compounded quarterly or 8.3% compounded semiannually?

$$A_{1} = 6000 \left(1 + \frac{.0825}{4.}\right)^{4.4} = \boxed{\$8317.84}$$

$$A_{2} = 6000 \left(1 + \frac{.083}{2}\right)^{2.4} = \boxed{\$8306.64}$$

4) How much money should be deposited today in an account that earns 6% compounded semiannually so that it will accumulate to \$10,000 in three years? [Round answer up to the nearest cent.]

$$10,000 = P(1 + \frac{.06.}{2})^{2.3}$$

$$10000 = P(1.03)^{6}$$

$$P = \frac{10000}{(1.03)^{6}} = 48374.84$$

5) Determine, to the nearest tenth, the number of years it would take for an investment to triple in value if it is deposited into an account with an annual interest rate of 5% compounded monthly.

$$A = P(1+\frac{1}{12})^{nt}$$

$$3P = P(1+\frac{05}{12})^{12t}$$

$$3 = (1.00416666667)^{12t}$$

$$4 = 22.0 \text{ years}$$

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 In 1626, Peter Minuit convinced the Wappinger Indians to sell him Manhattan Island for \$24. If the Native Americans had put the \$24 into a bank account paying compound interest at a 5% rate, how much would the investment be worth in the year 2006 if the interest were compounded daily? [Use Ti]

$$A = P(1+\frac{1}{5})^{nt}$$

$$A = 24(1+\frac{.05}{365})^{365\cdot380} = 4278,004859.35$$

Parents wish to have \$80,000 available for a child's education. If the child is now 5 years old, how much money must be set aside at 6% compounded semiannually to meet their financial goal when the child is 18?

$$80,000 = P(1 + \frac{.06}{2})^{2.13}$$

 $80,000 = P(1.03)^{26} \rightarrow P = \frac{80000}{(1.03)^{26}} = 537095.58$

8) Solve each equation.

a)
$$2x^{\frac{3}{4}} - 28 = 100$$
b) $\left(\frac{1}{2}\right)^{x-2} = 4^{5x}$
c) $5^{x} = 42.8$

$$x \log 5 = \log 47.8$$

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$$x = 64$$

$$x = 64$$

$$x = 256$$

$$x = 256$$
c) $5^{x} = 42.8$

$$x \log 5 = \log 47.8$$

$$x = \log 47.8$$