Name: KEY

Date: _____

Compound Interest Assignment

1) You invest $2500 into an education fund when you're young. The fund pays compound interest of 6% and you invest the money for 13 years. How much do you have for college?

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

$P = 2500$
$r = 0.06$
$t = 13$

$A = 2500(1+0.06)^{13}$
$A = 2500(1.06)^{13}$
$A = \$5332.32$

2) Jenny invests an inheritance of $18 000 for 6 years at 3.5% compound interest. How much will she now have?

$P = 18\,000$
$r = 0.035$
$t = 6$

$A = P(1+r)^t$
$A = 18\,000(1+0.035)^6$
$A = 18\,000(1.035)^6$
$A = \$22\,126.60$

3) You have $4500 to invest for 10 years. You can invest it with simple interest at 7%, or compound interest at 5%. Which one will earn you more money?

SIMPLE

$I = Prt$
$I = (4500)(0.07)(10)$
$I = 3150$

total
$= 4500$
$+ 3150$
7650

COMPOUND

$P = 4500$
$r = 0.05$
$t = 10$

$A = P(1+r)^t$
$A = 4500(1+0.05)^{10}$
$A = 4500(1.05)^{10}$
$\$7330.03$

the simple interest in this case

4) Mickey invests $5 000 000 that he made at Disneyland at 3% compound interest for 4 years. How much **interest** has he earned?

$P = 5\,000\,000$
$r = 0.03$
$t = 4$
$A = P(1+r)^t$

$A = 5\,000\,000(1+0.03)^4$
$A = 5\,000\,000(1.03)^4$
$A = 5\,627\,544.05$

$5\,627\,544.05$
$-5\,000\,000.00$
$\$627\,544.05$

5) Joey withdraws $12 340 after 5 years of compound interest at 4.25%. How much did he originally invest?

$A = 12\,340$
$r = 0.0425$
$t = 5$
$P = ?$

$A = P(1+r)^t$
$12\,340 = P(1+0.0425)^5$
$12\,340 = P(1.0425)^5$
$12\,340 = 1.2313466\,P$
$P = \$10\,021.55$

6) Randene wants to see the power of compound interest. She invests $2000 at 7% simple interest for 3 years, and $2000 at 7% compound interest for 3 years How much more interest does she earn using compound interest?

SIMPLE
$I = Prt$
$I = (2000)(0.07)(3)$
$I = 420$
total = 2420

COMPOUND
$A = 2000(1+0.07)^3$
$A = 2000(1.07)^3$
$A = 2450.09$

2450.09
−2420.00
$30.09 more with compound

7) If you want to have $5000 for college tuition in 5 years time, how much would you originally have to invest at 5% compound interest?

$A = 5000$
$r = 0.05$
$t = 5$

$A = P(1+r)^t$
$5000 = P(1+0.05)^5$
$5000 = P(1.05)^5$

$5000 = 1.27628P$
$P = \$3917.64$

8) If you invest $20 at 3.15% compound interest for a future family member to withdraw in 300 years, how much would they have?

$P = 20$
$r = 0.0315$
$t = 300$

$A = P(1+r)^t$
$A = 20(1+0.0315)^{300}$
$A = 20(1.0315)^{300}$

$A = \$219\,684.64$

9) Explain, in words, why compound interest earns more money than simple interest:

For compound interest, you make interest on previously earned interest

For simple, you only make interest on your original principal amount.