Name:

APPLICATION: Comparing Loan Payments

Level 1

Paying Off a Credit Card
Zeke racked up $4000 in credit card debt before graduating college. Now, he has his first job, and after budgeting for his other needs, he wants to pay down his credit card debt. His card has a 16.44% APR and a minimum monthly payment of $75. He's trying to decide if he should pay $75 monthly or some other amount. Use an amortization table to help him answer his questions.
(Note: Technically as the balance decreases, your minimum monthly payment would also decrease)

1. **What amounts will be fixed in this scenario? Which amounts may vary?**

2. **Create your own amortization spreadsheet for Zeke in a new tab that doesn't have a specific term and where he will vary the payment amounts. Re-paste the link to the spreadsheet below. Be sure your sharing permissions allow your teacher to view it.**

3. **How long will it take Zeke to pay off his cards if he doesn't use it any more and pays just the minimum payments?**

4. **By the time Zeke pays off his entire balance,**
   a. How much interest will he have paid?

   b. What will his college purchases have cost him in total?

5. **How is this graph different from Sharif's auto loan in the lesson? What aspects of the credit card debt are different from the auto loan debt?**

6. **Zeke wonders how long will it take to pay off the credit card balance if instead he increases his monthly payments to $150? In the second tab, make a copy of your amortization table using $150 as the payment amount. How long will it take to pay off if Zeke ups his monthly payments to $150?**

7. **How much would he save on interest with the $150 payments?**

8. **Adjust the payment amount and see how it changes the time to pay off the loan. Approximately how large would his payments have to be to pay off the card in exactly 2 years?**

Level 2

Budgeting for Student Loans
Sandra has a $31,000 balance of Federal Direct student loan debt she took out while obtaining her 4-year degree. These loans all have an interest rate of 3.73%. She has an offer for a job making $40,000, and is now trying to decide what repayment plan to choose for her student loans. The two repayment plans she is considering are the standard plan with a term of 10 years and the extended plan with a payoff term of 25 years.

1. **Create your own amortization spreadsheet for Sandra in a new tab where she can change the loan term to see how it affects her loan and the payment amount will automatically be calculated. Re-paste the link to the spreadsheet below. Be sure your sharing permissions allow your teacher to view it.**

2. **How much will Sandra's monthly payment be on the 10-year plan? On the 25-year plan?**

3. **By the time Sandra pays off her entire balance, how much interest will she have paid for each plan?**

4. **Assume Sandra chooses the standard repayment plan. How long will it take to pay off if Sandra increases her monthly payments by $100? By $200?**

5. **Sandra's friend Kat is in her first year of college and has $1,000 in federal direct subsidized loans, $4,500 in federal direct unsubsidized loans at 3.73% APR.**

    a. Which loans will begin accruing interest while Kat is in school?

    b. Using the compound interest formula provided and the fact that student loan interest compounds daily, how much would she owe on her loans including any interest?

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

    c. Plug this value in your spreadsheet to find out what her monthly payment would need to be under the standard repayment plan for just these loans if she took out no more.

    d. Kat wants to see if she can afford to pay the interest that accrues while in school so that her balance doesn't increase by graduation. Using the compound interest formula, she calculates that each month, this would be $14 in interest per month and it would save her $145 over four years. What are some other reasons that Kat might want to consider starting to pay her interest right away?

Level 3

The True Price of a Car
Jerry is considering three different auto loans for the purchase of a $43,000 Tesla Model S. He has a strong credit score and qualifies for pretty good loan terms. The important factors are outlined in the table below.

Term	APR
3-Year	4.12%
5-Year	4.95%
7-Year	6.26%

1. **Create your own amortization spreadsheet in a new tab for Jerry to compare the three loans. Re-paste the link to the spreadsheet below. Be sure your sharing permissions allow your teacher to view it.**
   (Tip: First complete the amortization table for one loan, then copy-paste your formulas and modify the loan terms for the others)

2. **How much would Jerry pay in interest for each of the three loans making just the monthly payments?**

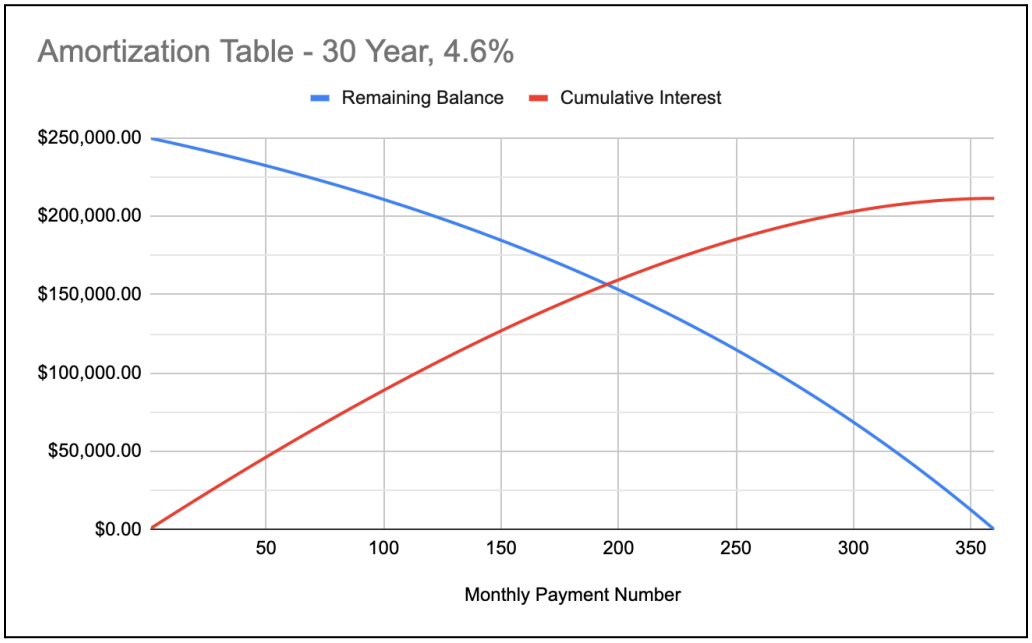
3. **If he kept the 5 year loan term, what would the interest rate need to drop to to get under $750 monthly payments?**

4. **Jerry has only $525 budgeted for transportation costs each month. Experiment with different loan terms to find the minimum loan term, in months, needed to get his monthly payments under $525 assuming the same APR as the 7-year loan.**

5. **If he paid an extra $50/month to pay the 7-year loan down more quickly, what cell could you adjust the spreadsheet to include this value automatically for all payments? How long would the loan take to pay off with this extra payment?**

6. **Loan terms have been getting longer and longer, a 7 year loan was rare 50 years ago but is becoming more common. Why do you think this might be?**

7. **Jerry is also looking toward saving for his first home. He uses a spreadsheet to generate this graph for a mortgage loan of $250,000 with an interest rate of 4.6% and a term of 30 years. Approximately what is the total amount paid in interest over the term of this loan?**



8. **He increases the interest rate 1% to 5.6%, and produces another graph. Using this information, explain why even small increases in mortgage rates can be a big deal for potential homeowners.**

