Name _____ Date _____

Go for the Curve!
Comparing Linear and Exponential Functions

Vocabulary

Describe each type of account as simple interest or compound interest based on the scenario given. Explain your reasoning.

1. Andrew deposits $300 into an account that earns 2% interest each year. After the first year, Andrew has $306 in the account. After the second year, Andrew has $312 in the account, and after the third year, Andrew has $318 in the account.

2. Marilyn deposits $600 in an account that earns 1.5% interest each year. After the first year, Marilyn has $609 in the account. After the second year, Marilyn has $618.14 in the account, and after the third year, Marilyn has $627.41 in the account.

Problem Set

Write a function to represent each problem situation.

1. Nami deposits $500 into a simple interest account. The interest rate for the account is 3%. Write a function that represents the balance in the account as a function of time t.

   $P(t) = P_0 + (P_0 \cdot r)t$

   $P(t) = 500 + (500 \cdot 0.03)t$

   $P(t) = 500 + 15t$

2. Carmen deposits $1000 into a simple interest account. The interest rate for the account is 4%. Write a function that represents the balance in the account as a function of time t.

3. Emilio deposits $250 into a simple interest account. The interest rate for the account is 2.5%. Write a function that represents the balance in the account as a function of time *t*.

4. Vance deposits $1500 into a simple interest account. The interest rate for the account is 5.5%. Write a function that represents the balance in the account as a function of time *t*.

5. Perry deposits $175 into a simple interest account. The interest rate for the account is 4.25%. Write a function that represents the balance in the account as a function of time *t*.

6. Julian deposits $5000 into a simple interest account. The interest rate for the account is 2.75%. Write a function that represents the balance in the account as a function of time *t*.

5

Sherwin deposits $500 into a simple interest account. The interest rate for the account is 3.75%. The function $P(t) = 500 + 18.75t$ represents the balance in the account as a function of time. Determine the account balance after each given number of years.

7. 3 years

$P(t) = 500 + 18.75t$

$P(3) = 500 + 18.75(3)$

$P(3) = 556.25$

In 3 years, the account balance will be $556.25.

8. 2 years

9. 10 years

10. 15 years

Name _____ Date _____

11. 50 years

12. 75 years

Hector deposits $400 into a simple interest account. The interest rate for the account is 5.25%. The function $P(t) = 400 + 21t$ represents the balance in the account as a function of time. Determine the number of years it will take for the account balance to reach each given amount.

13. $505

$P(t) = 400 + 21t$

$505 = 400 + 21t$

$105 = 21t$

$5 = t$

It will take 5 years for the account balance to reach $505.

14. $610

15. $1450

16. $2500

17. double the original deposit

18. triple the original deposit

Write a function to represent each problem situation.

19. Ronna deposits $500 into a compound interest account. The interest rate for the account is 4%.

$P(t) = P_0 \cdot (1 + r)^t$

$P(t) = 500 \cdot (1 + 0.04)^t$

$P(t) = 500 \cdot 1.04$

20. Leon deposits $250 into a compound interest account. The interest rate for the account is 6%.

21. Chen deposits $1200 into a compound interest account. The interest rate for the account is 3.5%.

22. Serena deposits $2700 into a compound interest account. The interest rate for the account is 4.25%.

23. Shen deposits $300 into a compound interest account. The interest rate for the account is 1.75%.

24. Lea deposits $450 into a compound interest account. The interest rate for the account is 5.5%.

Name _____ Date _____

Cisco deposits $500 into a compound interest account. The interest rate for the account is 3.25%. The function $P(t) = 500 \cdot 1.0325^t$ represents the balance in the account as a function of time. Determine the account balance after each given number of years.

25. 2 years

$P(t) = 500 \cdot 1.0325^t$

$P(2) = 500 \cdot 1.0325^2$

$P(2) \approx 533.03$

In 2 years, the account balance will be $533.03.

26. 4 years

27. 15 years

28. 20 years

29. 50 years

30. 65 years

5

Mario deposits $1000 into a compound interest account. The interest rate for the account is 5%. The function $P(t) = 1000 \cdot 1.05^t$ represents the balance in the account as a function of time. Use a graphing calculator to estimate the number of years it will take for the account balance to reach each given amount.

31. $1500

It will take about 8.3 years for the account balance to reach $1500.

32. $4000

33. $6000

34. $10,000

35. double the original amount

36. triple the original amount

Use the simple and compound interest formula to complete each table. Round to the nearest cent.

37. Teresa has $300 to deposit into an account. The interest rate available for the account is 4%.

Quantity	Time	Simple Interest Balance	Compound Interest Balance
Units	years	dollars	dollars
Expression	t	$300 + 12t$	$300 \cdot 1.04^t$
	0	300.00	300.00
	2	324.00	324.48
	6	372.00	379.60
	10	420.00	444.07

38. Ye has $700 to deposit into an account. The interest rate available for the account is 6%.

Quantity	Time	Simple Interest Balance	Compound Interest Balance
Units			
Expression			
	0		
	3		
	10		
	20		

Name _____ Date _____

39. Pablo has $1100 to deposit into an account. The interest rate available for the account is 3.5%.

Quantity	Time	Simple Interest Balance	Compound Interest Balance
Units			
Expression			
	0		
	5		
	10		
	30		

40. Ty has $525 to deposit into an account. The interest rate available for the account is 2.5%.

Quantity	Time	Simple Interest Balance	Compound Interest Balance
Units			
Expression			
	0		
	10		
	20		
	50		

41. Xavier has $2300 to deposit into an account. The interest rate available for the account is 3.75%.

Quantity	Time	Simple Interest Balance	Compound Interest Balance
Units			
Expression			
	0		
	2		
	5		
	15		

42. Denisa has $100 to deposit into an account. The interest rate available for the account is 6.25%.

Quantity	Time	Simple Interest Balance	Compound Interest Balance
Units			
Expression			
	0		
	5		
	15		
	30		