Name: Linear and Exponential Functions | 4.8

Ready, Set, Go!

Ready

Topic: Simple interest

*When a person borrows money, the lender usually charges "rent" on the money. This "rent" is called interest. Simple interest is a percent "**r**" of the original amount borrowed "**p**" multiplied by the time "**t**", usually in years. The formula for calculating the interest is* **i = prt.**

Calculate the simple interest owed on the following loans.

1. *p = $1000* *r = 11%* *t = 2 years* *i =* _____
2. *p = $6500* *r = 12.5%* *t = 5 years* *i =* _____
3. *p = $20,000* *r = 8.5%* *t = 6 years* *i =* _____
4. *p = $700* *r = 20%* *t = 6 months* *i =* _____

*Juanita borrowed $1,000 and agreed to pay 15% interest for 5 years. Juanita did not have to make any payments until the end of the 5 years, but then she had to pay back the amount borrowed "**P**" plus all of the interest "**i**" for the 5 years "**t**." Below is a chart that shows how much money Juanita owed the lender at the end of each year of the loan.*

End of year	Interest owed for the year	Total Amount owed to the lender to pay back the loan.
1	$1000 X .15 = $150	A = Principal + interest = $1150
2	$1000 X .15 = $150	A = P + i + i = $1300
3	$1000 X .15 = $150	A = P + i + i + i = $1450
4	$1000 X .15 = $150	A = P + i + i + i + i = $1600
5	$1000 X .15 = $150	A = P + i + i + i + i + i = $1750

5. Look for the pattern you see in the chart above for the amount (A) owed to the lender. Write an function that best describes A with respect to time (in years).

6. At the end of year 5, the interest was calculated at 15% of the original loan of $1000. But by that time Juanita owed $1600 (before the interest was added.) What percent of $1600 is $150?

7. Consider if the lender charged 15% of the amount owed instead of 15% of the amount of the original loan. Make a fourth column on the chart and calculate the interest owed each year if the lender required 15% of the amount owed at the end of each year. Note that the interest owed at the end of the first year would still be $150. Fill in the 4th column.

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Set

Topic: The 4 forms of a linear equation

8. Below are the 4 forms of the same linear equation. For each equation, do the following
   (a) Circle the rate of change
   (b) Name the point that describes the y-intercept
   (c) Name the point that describes the x-intercept

Slope-intercept	Point-slope	Standard	Recursive formula	(b)	(c)
8. $y = 3x - 2$	$y - 13 = 3(x - 5)$	$3x - y = 2$	$f(0) = -2$ $f(n) = f(n-1) + 3$		
9. $y = \frac{1}{4}x + 7$	$y - 5 = \frac{1}{4}(x + 8)$	$x - 4y = -28$	$f(0) = 7$ $f(n) = f(n-1) + \frac{1}{4}$		
10. $y = -\frac{2}{3}x + 3$	$y + 1 = -\frac{2}{3}(x - 6)$	$2x + 3y = 9$	$f(0) = 3$ $f(n) = f(n-1) - \frac{2}{3}$		

Go

Topic: Solving multi-step equations

Solve the following equations

11. $12 + 6x - 4 = 5 + 2(3x - 1)$

12. $5(2x + 4) = 3(x + 5) - 19$

13. $7 - 3(4x + 2) = 6(2x + 3) - 17$

14. $2(x + 1) = 6(x - 3)$

15. What does it mean when you have solved an equation?

16. Explain how a linear equation can have more than one solution.

Need Help? Check out these related videos:

Solving equations: http://www.purplemath.com/modules/solvelin4.htm

Interest: http://www.khanacademy.org/finance-economics/core-finance/v/introduction-to-interest