LESSON MAKER PRO

Models Tell Stories

Read each function as a statement about a real situation.

HIGH SCHOOL · HSF-LE.B

CCSS.Math.Content.HSF-LE.B "Interpret expressions for functions in terms of the situation they model"

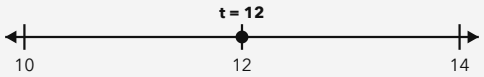
NAME _____ DATE _____

READ THE EXPRESSION

In $f(t)=a(b)^t$, a is the starting amount and b is the multiplier for each time period. To interpret f(k), substitute k, calculate, and state what the result means in the situation.

WORKED EXAMPLE

The compression model $K(t)=4096(1/2)^t$ gives a photo file's size in kilobytes after t compression steps. Use the marked step. Find and interpret K(12).



1. Substitute 12: $K(12)=4096(1/2)^{12}$.
2. Compute: $(1/2)^{12}=1/4096$.
3. Multiply: $K(12)=4096(1/4096)=1$.

Answer: After 12 compression steps, the file size is 1 kilobyte.

PRACTICE 4 problems

1 A music download cost is $D(x)=36+8x$ dollars, where x is the number of songs. What does 8x represent?

ANSWER _____

2 A battery model is $B(t)=700(0.85)^t$, where t is measured in weeks. What does 0.85 mean?

ANSWER _____

3 A ball's height is $H(x)=-9x^2+81$, where x is time in seconds. What does 81 represent?

ANSWER _____

4 The cost of custom stickers is $C(x)=27x+45$ dollars. Find C(6) and state what it means.

ANSWER _____

APPLY IT Show your work

1 A gaming lounge charges $R(h)=19h+35$ dollars for h hours. Find R(7). Explain what 35 means.

WORK SPACE

ANSWER _____

2 A video model is $V(d)=125(1.2)^d$, where d is days after posting. Find V(3). Explain what 1.2 means.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two study apps lose active users each week: $A(t)=625(3/5)^t$ and $B(t)=625(4/5)^t$. Find A(4) and B(4). Which app has fewer active users after 4 weeks? Explain using the expressions.

WORK SPACE AND ANSWER

Models Tell Stories

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A music download cost is D(x)=36+8x dollars, where x is the number of songs. What does 8x represent?	**The cost of the songs, at $8 per song.**
2	A battery model is $B(t)=700(0.85)^t$, where t is measured in weeks. What does 0.85 mean?	**Each week, 85% of the previous battery amount remains.**
3	A ball's height is $H(x)=-9x^2+81$, where x is time in seconds. What does 81 represent?	**The ball's starting height is 81 units.**
4	The cost of custom stickers is C(x)=27x+45 dollars. Find C(6) and state what it means.	**C(6)=207. The total cost of 6 custom stickers is $207.**

PART 2 · APPLY IT

1. **R(7)=168. The $35 is the fixed starting fee.** Substitute 7: 19(7)+35=133+35=168. The constant is charged even when no hourly time is used.
2. **V(3)=216. The views are multiplied by 1.2 each day, so the model shows a 20% daily increase.** Compute $125(1.2)^3=125(1.728)=216$. A multiplier of 1.2 means 120% of the previous day's views.

CHALLENGE

A(4)=81 and B(4)=256. App A has fewer active users because both start at 625, but A is multiplied by 3/5 each week, which is less than B's multiplier of 4/5.

Accept equivalent descriptions of starting amounts, fixed fees, multipliers, and percent change. Require a contextual unit when students interpret a function value.