LESSON MAKER PRO

Money Over Time

Compare how balances grow and values fall.

HIGH SCHOOL · MM.FPM.A.5

MM.FPM.A.5 "Compare simple and compound interest, and straight-line and proportional depreciation."

NAME _____ DATE _____

TWO WAYS TO CHANGE

Simple interest adds the same amount each year. Compound interest earns interest on the new balance. Straight-line depreciation subtracts the same amount each year, while proportional depreciation takes the same percent of the current value each year.

WORKED EXAMPLE

Use the table to find the item's value after 2 years with each depreciation method.

ITEM DEPRECIATION

Starting value	Straight-line loss per year	Proportional loss per year
$240	$30	25%

1. Straight-line: $240 - $30 - $30 = $180.
2. Proportional: $240 × 3/4 × 3/4 = $135.

Answer: $180 with straight-line depreciation; $135 with proportional depreciation.

PRACTICE 4 problems

1 $300 earns 5% simple interest each year for 3 years. What is the balance?

ANSWER _____

2 $100 earns 10% compound interest each year for 3 years. What is the balance?

ANSWER _____

3 An item worth $500 loses $40 each year by straight-line depreciation. What is its value after 4 years?

ANSWER _____

4 An item worth $800 loses 50% of its current value each year. What is its value after 3 years?

ANSWER _____

APPLY IT Show your work

1 You save $200 for a concert trip. After 3 years at 10% per year, how much more would compound interest earn than simple interest?

WORK SPACE

ANSWER _____

2 A $400 tablet loses $80 a year by straight-line depreciation or 20% of its current value each year. After 3 years, which method gives it a higher value, and by how much?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A $600 scooter loses $120 each year by straight-line depreciation or 20% of its current value each year. After how many whole years is the proportional value at least $50 higher for the first time? Show the values that year.

WORK SPACE AND ANSWER

Money Over Time

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	$300 earns 5% simple interest each year for 3 years. What is the balance?	**$345**
2	$100 earns 10% compound interest each year for 3 years. What is the balance?	**$133.10**
3	An item worth $500 loses $40 each year by straight-line depreciation. What is its value after 4 years?	**$340**
4	An item worth $800 loses 50% of its current value each year. What is its value after 3 years?	**$100**

PART 2 · APPLY IT

1. **$6.20 more** Simple interest gives $200 + 3 × $20 = $260. Compound interest gives $200 × 1.1 × 1.1 × 1.1 = $266.20, a difference of $6.20.
2. **Proportional depreciation, by $44.80.** The straight-line value is $400 - 3 × $80 = $160. The proportional value is $400 × 0.8 × 0.8 × 0.8 = $204.80, which is $44.80 higher.

CHALLENGE

After 3 years: $307.20 proportional and $240 straight-line. The difference is $67.20. After 2 years, the difference is only $24.

Accept equivalent calculations that distinguish a fixed yearly amount from a percent of the current value. Money answers may omit trailing zeros when the value is unchanged.