LESSON MAKER PRO

Price Changes Revealed

Rewrite expressions to see what changes and what stays.

GRADE 7 · 7.AT.B.6

7.AT.B.6 "Rewrite an expression in different forms to shed light on the represented context and how the quantities in it are related. For example, a + 0.05 · a = 1.05a means that an "increase by 5%" is the same as "multiply by 1.05.""

NAME _____ DATE _____

ONE AMOUNT, TWO FORMS

To find an amount after a percent change, write the percent as a decimal and combine the x terms. The number multiplying x in the new form shows what portion of the starting amount you have.

WORKED EXAMPLE

A ticket costs x dollars. Its price increases by 15%. Write the new price as one term in x.

1. Write the increase as 0.15x.
2. Add it to the original price: x + 0.15x.
3. Combine like terms: 1.15x.

Answer: The new price is 1.15x dollars.

PRACTICE 6 problems

1 A game pass costs x dollars. Rewrite x + 0.08x as one term. What percent increase does it show?

ANSWER _____

2 A jacket costs x dollars before a 30% discount. Write its sale price as one term in x.

ANSWER _____

3 A pack contains x cards. After 6% of the cards are lost, rewrite x - 0.06x as one term.

ANSWER _____

4 A helmet's sale price is 0.82x dollars, where x is its original price. Rewrite 0.82x as x minus a decimal times x. What percent discount does this show?

ANSWER _____

5 A video gets 1.2x views after a boost, where x is its starting number of views. Rewrite 1.2x as x plus a decimal times x. What percent increase does this show?

ANSWER _____

6 A team gives away 2/5 of its x stickers. Rewrite x - (2/5)x as one term. What percent of the stickers remain?

ANSWER _____

APPLY IT Show your work

1 Headphones cost $45 before a 20% sale. Write the sale price first as the original price minus the discount, then as one number times the original price. Find the sale price.

WORK SPACE

ANSWER _____

2 Tickets to a school game cost $8 each. An online store adds a 10% fee to each ticket. Write the cost of x tickets as one number times x. Then find the cost of 5 tickets.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A skateboard costs x dollars. A store takes 25% off, then adds 10% sales tax to the discounted price. Write the final price as one number times x. Explain why the final price is not 0.85x.

WORK SPACE AND ANSWER

ANSWER KEY

Price Changes Revealed

GRADE 7 · 7.AT.B.6

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A game pass costs x dollars. Rewrite x + 0.08x as one term. What percent increase does it show?	**1.08x; an 8% increase.**
2	A jacket costs x dollars before a 30% discount. Write its sale price as one term in x.	**0.70x**
3	A pack contains x cards. After 6% of the cards are lost, rewrite x - 0.06x as one term.	**0.94x**
4	A helmet's sale price is 0.82x dollars, where x is its original price. Rewrite 0.82x as x minus a decimal times x. What percent discount does this show?	**x - 0.18x; an 18% discount.**
5	A video gets 1.2x views after a boost, where x is its starting number of views. Rewrite 1.2x as x plus a decimal times x. What percent increase does this show?	**x + 0.20x; a 20% increase.**
6	A team gives away 2/5 of its x stickers. Rewrite x - (2/5)x as one term. What percent of the stickers remain?	**(3/5)x; 60% remain.**

PART 2 · APPLY IT

1. **$45 - 0.20($45) = 0.80($45) = $36.** A 20% discount leaves 80% of the original price. Multiply 0.80 by 45 to get 36.
2. **8.80x dollars; $44 for 5 tickets.** Each ticket costs $8 + 0.10($8) = $8.80 with the fee. Multiply $8.80 by 5 to get $44.

CHALLENGE

The discounted price is 0.75x, so the final price is 0.75x + 0.10(0.75x) = 0.825x. The tax is 10% of the discounted price, not 10% of x.

Accept equivalent decimal or fraction coefficients. In the challenge, the explanation must show that tax is calculated after the discount.