Name: _____ Date: _____

Two Discounts Do Not Make Half Off

Circle group

A store has a sign over its jackets. It says 30 percent off. Near the register, another sign says to take 20 percent more off. Many shoppers think this means 50 percent off. It does not.

Say a jacket costs $80. First, take 30 percent off. That is $24. The sale price is now $56. Next, take 20 percent off the new price. Not the old price. Twenty percent of $56 is $11.20. The jacket costs $44.80. The shopper saved $35.20. That is 44 percent of $80, not 50 percent.

Here is a quick way to see it. After the first discount, you pay 70 percent. Think of that as 0.70. After the second, you pay 80 percent. Think of that as 0.80. Multiply them. You get 0.56. So you pay 56 percent of the first price. You save 44 percent.

The order does not matter. Multiplication gives the same answer either way. But each percent is taken from a different amount. A percent of a smaller number is a smaller piece. This helps you compare deals.

Questions

1. What two discounts are on the jacket?

_____

_____

2. What is the price after the first discount?

_____

_____

3. What price does the shopper pay in the end?

_____

_____

4. What share of the first price does the shopper pay at the end?

_____

_____

5. Why is the second discount less than 20 percent of $80?

_____

_____

6. Would the price change if the 20 percent came first? Why?

_____

_____

Words to know

discount: an amount taken off the regular price
percent: a part out of every hundred
multiplication: the math of repeated groups, used to find a product
compare: to look at two things to see how they are alike or different

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Two Discounts Do Not Make Half Off

Triangle group

A store hangs a sign over its jackets: 30 percent off. A second sign near the register says to take an extra 20 percent off any sale item. Many shoppers add the two together and expect half of the price to disappear. The math does not work that way.

Suppose a jacket costs $80. The first discount is 30 percent of $80, which is $24, so the sale price becomes $56. The extra 20 percent is taken from the new price, not from the old one. Twenty percent of $56 is $11.20, so the final price is $44.80. The shopper saved $35.20, which is 44 percent of the original price, not 50.

There is a quicker way to see this. Paying 70 percent of the price after the first discount means multiplying by 0.70. Paying 80 percent after the second discount means multiplying by 0.80. Multiply the two together and you get 0.56, so the shopper pays 56 percent of the starting price. That leaves a total discount of 44 percent.

The order of the discounts does not change the answer, since multiplication gives the same result either way. What matters is that each percent applies to a different amount, and a percent of a smaller number is a smaller piece. Knowing this helps a shopper compare deals fairly, such as one tag that says 40 percent off against two stacked discounts, and it keeps the final price from being a surprise at the register.

Questions

1. What two discounts are used on the jacket in the example?

_____

_____

2. What is the sale price after the first discount?

_____

_____

3. What final price does the shopper pay for the jacket?

_____

_____

4. What share of the starting price does the shopper pay in the end?

_____

_____

5. Why is the second discount worth less than 20 percent of the original price?

_____

_____

6. Would the final price change if the 20 percent discount came first? Why or why not?

_____

_____

Words to know

discount: an amount taken off the regular price
percent: a part out of every hundred
original: the first one, before anything was changed
multiplication: the math of repeated groups, used to find a product
compare: to look at two things to see how they are alike or different

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Two Discounts Do Not Make Half Off

Square group

A department store displays a banner above its rack of winter jackets announcing a markdown of 30 percent. A second notice beside the register invites customers to take an additional 20 percent off any item that is already on sale. Many shoppers casually add the two figures together and expect half of the price to vanish, but the arithmetic does not cooperate with that assumption.

Consider a jacket that originally costs $80. The first discount removes 30 percent of $80, which is $24, so the sale price drops to $56. The additional 20 percent is calculated from this new price rather than from the original one. Twenty percent of $56 is $11.20, which leaves a final price of $44.80. The shopper has therefore saved $35.20, which amounts to 44 percent of the original price instead of the 50 percent that many people expect.

A faster route to the same conclusion uses multiplication. Paying 70 percent of the price after the first discount is equivalent to multiplying by 0.70, and paying 80 percent after the second is equivalent to multiplying by 0.80. The product of those two numbers is 0.56, which means the shopper ends up paying 56 percent of the starting price, and the combined discount is 44 percent.

Reversing the order of the discounts would not change the result, because multiplication produces the same product in either direction. The crucial point is that each percentage applies to a different base amount, and a percentage of a smaller number is always a smaller piece. Understanding this allows a shopper to compare offers fairly, for example one tag advertising 40 percent off against two stacked discounts, and it prevents unpleasant surprises when the total appears at the register.

Questions

1. Which two discounts are applied to the jacket in the example?

_____

_____

2. What is the sale price once the first discount has been taken?

_____

_____

3. What final price does the shopper end up paying for the jacket?

_____

_____

4. What portion of the starting price does the shopper pay after both discounts?

_____

_____

5. Why is the second discount worth less than 20 percent of the original price?

_____

_____

6. Would reversing the order of the two discounts change the final price? Explain.

_____

_____

Words to know

discount: an amount taken off the regular price
percent: a part out of every hundred
original: the first one, before anything was changed
multiplication: the math of repeated groups, used to find a product
compare: to look at two things to see how they are alike or different

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: Two Discounts Do Not Make Half Off

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: Two Discounts Do Not Make Half Off

Easier · 155 words · Flesch-Kincaid grade 2

1. 30 percent off, then 20 percent more off.
2. $56.
3. $44.80.
4. 56 percent of the first price.
5. It comes off the lower price of $56, not off $80.
6. No. Multiplication gives the same answer in either order.

Triangle: Two Discounts Do Not Make Half Off

This passage · 223 words · Flesch-Kincaid grade 5.9

1. 30 percent off, and then an extra 20 percent off.
2. $56.
3. $44.80.
4. 56 percent of the starting price.
5. It is taken from the lower sale price, not from the original price.
6. No, because multiplication gives the same result in either order.

Square: Two Discounts Do Not Make Half Off

Harder · 265 words · Flesch-Kincaid grade 11.2

1. A markdown of 30 percent, followed by an additional 20 percent off.
2. $56.
3. $44.80.
4. 56 percent of the starting price.
5. It is calculated from the reduced sale price of $56 instead of from the original price.
6. No, because multiplication gives the same product regardless of the order of the factors.