

# Percent markdown

In this lesson we'll learn how to calculate the sale price of an item, that is, the price of an item that's sold at a discount.

What is a percent markdown? In retail, a store will discount an item in order to sell it more quickly. The store usually does this as a percentage off the original amount they had planned to charge, and if that's the case we call this a percent markdown.

Here are three different formulas we can use to describe this:

$$\text{Discount Price} = \text{Original Price} - \text{Discount Amount}$$

$$\text{Discount Price} = \text{Original Price} \left( 1 - \frac{\text{Percent Markdown}}{100} \right)$$

$$\text{Discount Amount} = \text{Original Price} \left( \frac{\text{Percent Markdown}}{100} \right)$$

A useful proportion:

$$\frac{\text{Discount Amount}}{\text{Original Price}} = \frac{\text{Percent Markdown}}{100}$$

The percent markdown is the percentage off the original price of the item; sometimes we say the item is on sale for \_\_\_\_% off.

The original price (regular price) is the price the person or store was selling the item for before they discounted it.



The discount amount is the amount in dollars that is taken off the original price.

The sale price is the price of the item after the discount is applied.

Let's do a couple of examples.

### Example

A shirt has an original price of \$25.00, and it's now on sale for \$22.50. What is the percent markdown?

Here's what we know:

Original Price: \$25.00

Sale Price: \$22.50

We can find the discount amount:

$$\$25.00 - \$22.50 = \$2.50$$

Now use the proportion:

$$\frac{\text{Discount Amount}}{\text{Original Price}} = \frac{\text{Percent Markdown}}{100}$$

$$\frac{2.5}{25} = \frac{x}{100}$$

$$\frac{2.5 \cdot 4}{25 \cdot 4} = \frac{x}{100}$$



$$\frac{10}{100} = \frac{x}{100}$$

$$x = 10$$

The percent markdown is 10%.

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Let's look at another example.

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### Example

A doll has an original price of \$22.00, but it's on sale for \$16.50. What is the percent markdown?

A doll was originally \$22.00, but the price is now reduced by \$5.50 (\$22.00 – \$16.50 = \$5.50). Use the proportion:

$$\frac{\text{Discount Amount}}{\text{Original Price}} = \frac{\text{Percent Markdown}}{100}$$

$$\frac{5.5}{22} = \frac{x}{100}$$

$$100 \cdot \frac{5.5}{22} = x$$

$$\frac{550}{22} = x$$

$$x = 25$$



The percent markdown is 25 % .

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Let's look at a final example on calculating the sale price.

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### Example

The regular price of an item is \$150.00, and the item is on clearance for 75 % off the regular price. What is the sale price of the item?

The item was originally \$150.00, but the price is reduced by 75 % , which means we need to figure out what 75 % of \$150.00 is and then subtract that from the regular price.

75 % of \$150.00

$$\frac{75}{100} \cdot \$150.00$$

\$112.50

That means that the sale price of the item is

$$\$150.00 - \$112.50$$

\$37.50

Alternatively, since the item is discounted by 75 % , we know that it will only cost 25 % of its original price (because  $100\% - 75\% = 25\%$  ). So we could also calculate the cost by multiplying the original price by 25 % .



25 % of \$150.00

$$\frac{25}{100} \cdot \$150.00$$

\$37.50

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