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Applications of Percent

Percents are everywhere in our everyday lives. Below are a few common applications. Be sure to read the problems carefully to determine what the question is looking for. Show ALL work!

Discount

Discount is a percentage taken off a price. You find the discount percentage based off the original selling price and subtract.

1. A \$16 book is on sale for 35% off. What is the amount of the discount on the book?

$$16(.35) = \$5.60$$

2. A \$140 jacket is on sale for 35% off. What is the sale price of the jacket?

$$140(.35) = \$49$$

$$140 - 49 = \$91$$

3. A shirt is on sale for \$12.75. This is 15% off the original price. What was the original price of the shirt?

paying 85%
 $x(.85) = 12.75$ OR $\frac{12.75}{x} = \frac{85}{100}$ $x = \$15$

4. Mack went to Belk in January and the winter coats had been marked down 40%. She went back this weekend and coats were marked down an additional 30%. How much did Mack pay this weekend for a coat that originally cost \$120?

JAN → $120(.4) = \$48$ off so $120 - 48 = \$72$ in January
 NOW → $72(.30) = \$21.60$ so $72 - 21.60 = \$50.40$ NOW



Sales Tax is a percentage of a sale price added onto goods. This money is then given to state and local governments to help pay for everyday infrastructure such as your roads, schools, stoplights, law enforcement, etc.

5. Ashlyn purchased \$68 worth of groceries. There is a 2% food tax in NC. What is the amount of tax that Ashlyn paid on her \$68 grocery bill?

$$68(.02) = \$1.36$$

6. Mr. King needs to buy floor mats for his car. The floor mats cost \$145.00 before sales tax. The sales tax is 7.5%. What is the total amount Mr. King will pay for the floor mats after taxes?

$$145(.075) = \$10.88 \text{ in tax so } 145 + 10.88 = \$155.88$$

OR $145(1.075)$

7. Ann paid \$5.20 in sales tax for an \$80 purchase. What percent sales tax did Ann pay on her purchase?

$$\frac{5.2}{80} = \frac{x}{100} \quad x = 6.5\% \quad \text{OR} \quad 80(x) = 5.2$$

Discount + Tax

When Mrs. Smith shops, she shops the discounts. This means you must determine the subtotal after the discount is taken THEN add in the tax on that new amount.

8. Darlene wants to buy a sweater that originally cost \$32. It is on sale for 20% off. Sales tax is 6.75%. What is the final price of the sweater with tax?

Discount 1st: $32(.2) = 6.40$ off so $32 - 6.40 = \$25.60$ sale price
 tax 2nd: $25.60(.0675) = \$1.73$ tax so $25.60 + 1.73 = \$27.33$ final

9. Mr. James purchased a lawn mower that originally sold for \$275.00. The lawn mower was on sale for 15% off. The sales tax rate is 7.5%. How much did Mr. James pay for the lawn mower?

*I'm using shortcut this time!
 $275(.85) = \$233.75$ sale price
 $233.75(1.075) = \$251.28$ total + tax

Markup

Markup is the percent a store increases or "marks up" their prices in order to make a profit.

10. Violet opens a business for costumes. She purchases a Mr. Incredible costume for \$5.75. If she marks up her prices 325%, what will be her

amount of profit $5.75(3.25) = \$18.69$ markup

so ~~$5.75 + 18.69$~~

~~$= \$24.44$ selling price~~

11. Violet lets her brother, Jack Jack, determine the price of the Elastigirl costumes. If they purchased the costume for \$4.50 and mark up the price 400%, what is the selling price of the Elastigirl costume?

$4.50(4.00) = \$18$ markup

so selling price is $4.50 + 18$

$= \$22.50$

12. Bath & Body Works pays \$2.35 for each bottle of lotion they sell. What is their percent markup if they sell each bottle for \$12.50? *POC ☺

$\frac{12.5 - 2.35}{2.35} \cdot 100$

$\rightarrow N-0 \div 0$

$432\% \rightarrow$ geez!

Tip

Tip is a percentage of a bill given to people who provide services. It is typically around 20% of the total bill. Tips can be left for waitresses but also services such as hair dressers, manicurists, etc.

13. John's dinner bill totaled \$75. He left a 15% tip. How much money did John leave for a tip?

$75(.15)$

Tip = \$11.25

14. Jill's lunch bill was \$13.85. She gave the server a 15% tip. What was the total cost of Jill's lunch? add back!

$13.85(1.15) * \text{Shortcut!}$

$= \$15.93$

Commission

Commission is earned by salesmen based off the total amount of product that they sell.

15. Jake earns 15% commission on the total amount he sells. If he sells \$545 worth of items, how much commission does Jake earn?

$545(.15)$

commission = \$81.75

16. A company receives 1.5% commission on the sale price of each house sold. For each house he sells, James earns $\frac{1}{3}$ of the company's commission. James sells a house for \$205,000. How much money will James earn?

$205,000(.015) = \$3,075$ Company

$3075 \div 3 = \$1,025$ for James (James gets $\frac{1}{3}$)

17. Two computer salesmen are comparing their earnings. John earns \$12 an hour, plus a 15% commission on his sales. Dave earns \$9 an hour, plus a 17% commission on his sales. If they each sell \$6,500 worth of computers in a 40-hour work week, who earns more money and how much more?

J: $(\$12 \cdot 40) + (6500 \cdot .15) = \1455

D: $(\$9 \cdot 40) + (6500 \cdot .17) = \1465

Dave by \$10

Comparing Sale Prices

18. Charles wants to buy a new CD player. Store X offers the CD player for \$180 and is on sale for 20% off. Store Y offers the same CD player for \$200 and is on sale for 25% off. Store Z offers the same CD player for \$150 and is on sale for 10% off. Which store or stores have the lowest price?

$$X: 180(.20) = \$36 \text{ off} \text{ so } 180 - 36 = \$144^X$$

$$Y: 200(.25) = \$50 \text{ off} \text{ so } 200 - 50 = \$150^Y$$

$$Z: 150(.10) = \$15 \text{ off} \text{ so } 150 - 15 = \$135^Z \text{ lowest!!!}$$

19. Fran can buy 4 plates on sale for \$24 (Method 1), or she can use a coupon for 10% off of the original price of \$8 per plate (Method 2). Which method is least expensive and by how much?

$$M\#1: 4 \text{ for } \$24$$

$$M\#2: 4(.9 \times 8) = \$28.80$$

M#1 by \$4.80

20. Best Buy has a 42" TV that sells for \$1250 and is on sale for 15% off. You have a coupon for \$100 off any purchase over \$1,000. You can only use one discount method. Which will give you the better price?

$$\#1: 1250(.15) = \$187.50 \text{ off}$$

$$\#2: \$100 \text{ off}$$

#1
save more \$ 😊