## hp calculators

HP 12C Cost, Price and Margin Calculations

Cost, price and margin concepts
Cost, price and margin on the HP12C
Practice solving cost, price and margin problems

## Cost, price and margin concepts

Items that are bought and sold have a cost to the seller and a price to the buyer. The difference between the cost and the price is the gross amount the seller makes on the sale. There are two ways of computing the percentage this difference represents. The term markup uses the cost as the basis for the percentage calculation while margin looks at the price as the basis. The diagram in Figure 1 illustrates the relationship between cost and price.


Figure 1
The cost is the price minus a percent of the price called margin. The price can also be viewed as the cost plus a percentage of the cost called markup. The following expressions relate margin, price and cost with each other.

$$
\operatorname{MAR}(\%)=\left(\frac{P R C-C S T}{P R C}\right) \times 100 \quad P R C=\frac{C S T}{1-(M A R(\%) / 100)} \quad C S T=P R C-\left(\frac{M A R(\%) \times P R C}{100}\right)
$$

Figure 2

## How to calculate cost, price and margin on the HP12C

The table below summarizes the keystroke sequence for each of the calculations above.

| Unknown | Keystrokes |
| :---: | :--- |
| margin | key in price, ENTER, key in cost, $\Delta \%$ CHS |
| cost | key in price, ENTER, key in margin, $\%-$ |
| price | key in cost, ENTER, 1, ENTER, key in margin, $\% \square \square$ |

Figure 3

## Practice with solving interest rate conversion problems

Example 1: A television costs $\$ 195$ and its price is $\$ 300$. What is the margin obtained by the store that sells these TV sets?

Solution: The keystroke sequence to calculate the margin in this case is:

$$
3000 \text { ENTER } 1050 \% \mathrm{CHS}
$$

### 35.00

Figure 4
Answer: $\quad$ The margin is $35 \%$ for a $\$ 195$ cost and a $\$ 300$ price.
Example 2: The store manager wants to sell more TV sets and wants to reduce the price. If she cannot reduce the margin below $28 \%$, what is the lowest price allowed for this TV set? Assume the same $\$ 195$ cost.

Solution: The keystroke sequence to calculate the lower price in this case is:
195 ENTER 10 ENTER $28 \%-1 \div$

### 270.83

Figure 5
Answer: $\quad$ The lowest price for this TV set is $\$ 270.83$ given a $28 \%$ margin and a $\$ 195$ cost.
Example 3: Based on these figures, the store manager decides to sell the TV set for $\$ 284.99$. What is the margin achieved with this price?

Solution: The following keystroke sequence calculates the margin with the new price:
$284 \cdot 96$ ENTER $1050.4 \% \mathrm{CHS}$

### 31.5 B

Figure 6
Answer: $\quad$ With the new price, the margin is now $35 \%$.
Example 4: A new stereo system has a sales price of $\$ 150.75$. Given a $35 \%$ margin, what is its cost?
Solution: The keystroke sequence to calculate the cost with these figures is:
$150 \cdot 75$ ENTER $35 \%-\square$

### 97.99

Figure 7
Answer: $\quad$ The cost is $\$ 97.99$.

Example 5: When calculating the price of a toaster, a $45 \%$ markup was used. What is the margin obtained with the sale of a toaster with this markup?

Solution: $\quad$ The following keystroke sequence calculates the margin given a 45\% markup:

45 ENTER ENTER 1 x $4 \geqslant y, \div$
31.03

Figure 8

Answer: A margin of $31.03 \%$ is equivalent to a $45 \%$ markup.

