Percent Word Problems

Percent Increase/Decrease: $\dfrac{Change}{Orginal} = \dfrac{x}{100}$

1. Dana's test score improved from a 75% to a 90%. What was the percent increase?

change: $\overset{8}{\cancel{9}}\overset{1}{0}$
-75
15

original: 75

$\dfrac{15}{75} = \dfrac{x}{100}$

$\dfrac{75x}{75} = \dfrac{1500}{75}$

$\boxed{x = 20\%}$

$75\overline{)1500}\quad \overset{20}{}$
$\underline{-150}\downarrow$
00

2. In 2004, the median home sale price was $450,000. In 2007, the median home sale price is $300,000. What is the percent decrease? Round your answer to the nearest tenth.

change: $450,000$
$-300,000$
$150,000$

original: $450,000$

$\dfrac{150,000}{450,000} = \dfrac{x}{100}$

$\dfrac{45x}{45} = \dfrac{1500}{45}$

$\boxed{x = 33.3\%}$

$45\overline{)1500}\quad \overset{33.3}{}$
$\underline{-135}\downarrow$
150
$\underline{-135}$
15

3. The temperature rose from 86° to 106°. Find the percent change. Round your answer to the nearest tenth.

change: $\overset{\circ}{1}\overset{9}{0}6$
-86
20

original: 86

$\dfrac{20}{86} = \dfrac{x}{100}$

$\dfrac{86x}{86} = \dfrac{2000}{86}$

$\boxed{x = 23.3\%}$

$86\overline{)2000.00}\quad \overset{23.25}{}$
$\underline{-172}$
280
$\underline{-258}$
220
$\underline{-172}$
480

$$\frac{430}{50}$$

Discount - Finding the Sale Price
Step 1: Subtract the discount from 100% and write the difference as a decimal.
Step 2: Multiply the percentage found in the first step by the original dollar amount.

4. A jacket originally costs $54. Find the price of the jacket if it is on sale at 20% off.

Original : $54

$$\begin{array}{r} 100 \\ -\ 20 \\ \hline 80 \end{array}$$

.80

$$\begin{array}{r} \overset{3}{54} \\ \times\ .80 \\ \hline 43.20 \end{array}$$

$$\boxed{\$43.20}$$

Discount - Finding the Original Price
Step 1: Subtract the discount from 100% and write the difference as a decimal.
Step 2: Divide the sale price by the percentage found in the first step.

5. A television is on sale for $256 which is 30% off the original price. What was the original price rounded to the nearest dollar?

Sale price: 256

$$\begin{array}{r} 100 \\ -\ 30 \\ \hline 70 \end{array}$$

.70

$$.70\,\overline{)256.00}$$

$$\boxed{\text{Original: }\$366}$$

$$\begin{array}{r} 365.7 \\ 70\,\overline{)25600.0} \\ -210 \\ \hline 460 \\ -420 \\ \hline 400 \\ -350 \\ \hline 500 \\ -490 \\ \hline 10 \end{array}$$

Tax
Step 1: Add the tax percentage to 100% and write the sum as a decimal.
Step 2: Multiply the percentage found in the first step by the dollar amount.

6. If there is a 6% sales tax on a $24 item, what is the total amount that you would have to pay?

$$100$$
$$+\ 6$$
$$\overline{1.06,}$$

$$1.06$$

$$1.\overset{2\ 1}{0}6$$
$$\times\ \ 24$$
$$\overline{4\ 2\ 4}$$
$$2\ 1\ 2\ 0$$
$$\overline{2\ 5.4\ 4}$$

$$\boxed{\$25.44}$$

Mark Up- Finding the Original Price
Step 1: Add the percent mark up to 100% and write the sum as a decimal.
Step 2: Divide the mark up price by the percentage found in the first step.

7. The price of a sweater has been marked up to $75 which is 45% more than the original price. What was
    the original price? Round your answer to the nearest dollar.

mark up price: $75

$$100$$
$$+\ 45$$
$$\overline{1.45,}$$

$$1.45$$

$$1.45 \overline{)7500,}$$

$$\boxed{\text{original: } \$52}$$

$$\begin{array}{r} 51.7 \\ 145\overline{)7500.0} \\ -725\downarrow \\ \hline 250 \\ -145 \\ \hline 1050 \\ -1015 \\ \hline 35 \end{array}$$