## $\approx\}\ulcorner\propto \infty \Sigma \pi$

$38 \%$ MATH 1030 \#5b $1^{7111^{00}}$
Use and Abuse of Percentages
Describing Change

$$
142 \% \quad 331 / 3 \%
$$

EX 1 Eighty percent of students need a review before moving on to a new topic. If there are 48 students in the class, how many need a review?

## Describing Change

(using percentages
Absolute Change $=$ new value - reference value to describe change)
ex Last year, the price of gas was about $\$ 3.45 /$ gallon. Now, the price of gas is about $\$ 3.2 \% \mathrm{gal}$.

The absolute change is $3.45-3.20=0.25 / \mathrm{gal}$.
Relative Change $=\frac{\text { absolute change }}{\text { reference value }}$.
ex for above example.

$$
\text { rel. change }=\frac{0.25}{3.45} \simeq 7.257 \text { decrease. }
$$

EX 2: You bought a car for $\$ 17,500$. Now it is worth $\$ 5,000$. Find the absolute and relative change in the car's value.

EX 3: Find the relative change when a quantity
a) triples.
b) quadruples.

Comparing with Percents (Using percentages for comparisons)
Absolute difference = compared value - reference value.
ex My height is $65.5^{\prime \prime}$ and my best friend's height is $68^{\prime \prime}$. abs. diff $=68-65.5=2.5^{\prime \prime}$ Relative difference $=\frac{\text { absolute difference }}{\text { reference value }}$.
ex For above example (i.e .my fiend is rel. diff. $=\frac{2.5}{65.5}=3.82 \%$ (3.82\% taller than I am)
EX 4: Compare the life expectancy in Canada ( 81.2 years) to life expectancy in Russia ( 65.9 years).

## Of vs More or Less Than

A stock has gone to: $150 \%$ of the original price.
$150 \%$ more than the original price.
$50 \%$ less than the original price.

EX 5: State each answer as a percent.
a) Saul earns $45 \%$ more than Carrie. How many times larger is his income?
b) A store is having a $40 \%$ off sale. How does the item's price compare with that of the original?
c) The area of Colorado is $24 \%$ less than the area of Norway. Norway's area is what percent of Colorado's?

