

## Acceleration (continued):

1. The acceleration of gravity ( $a_g$ )

On Earth:

a. 32 ft/sec<sup>2</sup> (British)b. 9.8 m/sec<sup>2</sup> (Metric)c. Thus, one "g" = 32 ft/sec<sup>2</sup> or 9.8m/sec<sup>2</sup>

## 2. Key words:

a. "Boost": accelerationb. "Retro-burn" : negative accelerationc. Negative g's: negative acceleration

## 3. Acceleration due to a change in direction:

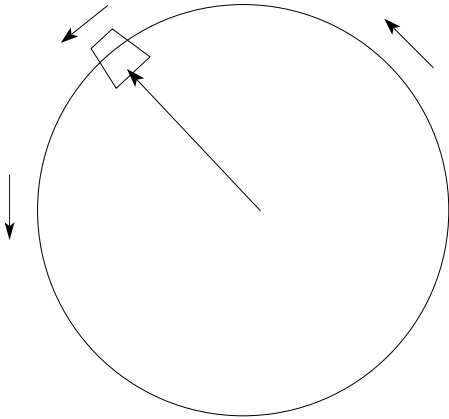
Since acceleration is defined as

a change in velocity ,

and velocity is defined as

speed and direction ,then a change in direction results in acceleration.

## Example 1: Beach Bucket



Remember when you were a kid playing with a beach bucket?

It wasn't long before you discovered that if you had some water in the bottom of the bucket and if you swung the bucket in a circle fast enough, the water stayed in the bottom of the bucket in the same fashion as gravity when it was still.

Assuming that the speed at which you swung the bucket was constant, what **was** constantly changing?

## Example 2: The "Gravitron"

The carnival ride known affectionately by some as the "Vomitron."

You may have heard (or actually said yourself) "It was as if I weighed twice as much as normal."

Fact is, there was no "as if" part. You really **did** weigh more!

Remember:

(1) "Weight" is a measure of Force

and,

(2)  $F = ma$  (!) "Mass" (that's you) time "acceleration" = "Force" (weight)