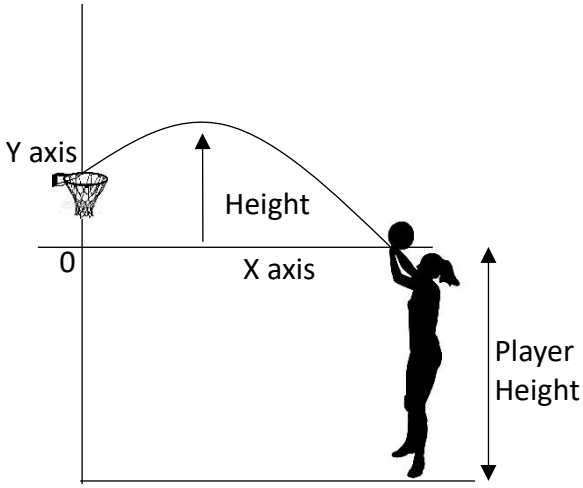
Program 1

Write a program to find the height of the ball thrown by a basketball player



Formula: $h(t)=-16t^2+vt$

Where $h(t)$ is the height at t seconds

t time in seconds

v is the velocity in which the ball is thrown

Time taken by the ball to reach maximum height is

Formula $t=\frac{-b}{2a}$

t time in seconds

a is the value 16

b is the velocity

If 5 feet basketball player thrown the ball velocity at 32 feet/second then calculation is as follows

$h(t)=-16t^2+vt$

$h(t)=-16t^2+32t$

find t $t=\frac{-b}{2a}$

$t=\frac{-(32)}{2X(-16)}=\frac{-32}{-32}=1$

now $t = 1$

Substitute the value of t in formula

$h(t)=-16t^2+32t$

$h(1)=-16(1)^2+32(1)$

$h(1)=-16+32$

$h(1)=16$ feet

so the height of player is 5 feet $h(1)=16+5=21$ Feets

Program

```
#declare a value
a=-16
#read velocity from user
b=int(input("Enter the velocity  :  "))

#read player height
pHeight=float(input("Enter player height : "))

#calculate time use formula
t=float(-b/(2*a))
print("Time : ",t," seconds")

#to calculate the height use formula
h=(a*(t**2))+(b*t)

#print the result
print("Height is :  ",h," feet")

#add the player height with ball height
h=h+ pHeight
print("Total Height is :  ",h," feet")
```

output

```
Enter the velocity  :  32
Enter player height :  5
Time :  1.0  seconds
Height is :   16.0  feet
Total Height is :   21.0  feet
```