A picture containing text, clock

Description automatically generated

Velocity (Changing of position)

Diagram

Description automatically generated

All the force are vectors

Diagram

Description automatically generated



Text, letter

Description automatically generated

Diagram

Description automatically generated with medium confidence

Text

Description automatically generated

The p1 is calculated by p0+v0\*0.1 = [0+10\*0.1, 0+10\*0.1, 0+0\*0.1] => [1,1,0]

The v1 is calculated by v0+a\*t = [10-(0\*0.1), 10+(-9.81\*0.1),0] => [10, 9.019, 0]

Text

Description automatically generated with medium confidence

The p2 is calculated by p1+v1\*0.1 = [1+10\*0.1, 1+9.019\*0.1, 0+0\*0.1] => [1,1.9,0]

The v2 is calculated by v0+a\*t = [10-(0\*0.2), 10+(-9.81\*0.2),0] => [10, 8.038 ≈ 8.04, 0]

Diagram

Description automatically generated

The p3 is calculated by p2+v2\*0.1 = [1+10\*0.1, 1.9+(8.04\*0.1), 0+0\*0.1] => [1,2.704 ≈ 2.70,0]

The v3 is calculated by v0+a\*t = [10-(0\*0.3), 10+(-9.81\*0.3),0] => [10, 7.057≈ 7.06, 0]

Bigger timestep

A picture containing text

Description automatically generated

Diagram

Description automatically generated with medium confidence

Smaller timestep=> slower simulation, lots of calculation

Bigger timestep=> faster simulation, less accurate

Text

Description automatically generated

A picture containing shape

Description automatically generated

A picture containing shape

Description automatically generated

A picture containing shape

Description automatically generated

A picture containing chart

Description automatically generated

Diagram

Description automatically generated

# Practice Quiz

Graphical user interface, text, application

Description automatically generated

Graphical user interface, text, application

Description automatically generated

Graphical user interface, text, application

Description automatically generatedf=ma

4=10a

a=4/10=0.4

A picture containing table

Description automatically generated

mass = 100

force = (0,0,40)

acceleration = (0,0,0.4)

velocity=(0,0,0)

position = (0,0,0)

timestep = 0.1

t0=0

acceleration = (0,0,0.4)

v=[0,0,0]

p=[0,0,0]

t1=0.1

f=[0,0,40]

v=[0,0, 0.4\*0.1]=[0,0,0.04]

p=[0,0,t0z+(t0v\*0.1)]= [0,0,0]

t2=0.2

f=[0,0,40]

v=[0,0,0.04\*0.2]=[0,0,0.08]

p=[0,0,t1z+(t1v\*0.1)]= [0,0,0+(0.04\*0.1)]= [0,0,0.004]

t3=0.3

f=[0,0,40]

v=[0,0,0.08+0.04]=[0,0,0.12]

p=[0,0,t2z+(t2v\*0.1)]= [0,0,0.004+(0.08\*0.1)]= [0,0,0.012]

Application

Description automatically generated with medium confidence

Gravity=9.8

Mass=10

Coefficient =3

Acceleration=0

F=ma

R-mg=ma

R-(10\*9.8) = 10\*0

R=98

Fmax=μR

= 3\*98

=294

