mport math  
  
class Calculator:  
 def add(self, a, b):  
 return a + b  
  
 def subtract(self, a, b):  
 return a - b  
  
 def multiply(self, a, b):  
 return a \* b  
  
 def divide(self, a, b):  
 if b != 0:  
 return a / b  
 else:  
 print("Error: Division by zero")  
  
 def power(self, base, exponent):  
 return base \*\* exponent  
  
 def square\_root(self, num):  
 if num >= 0:  
 return math.sqrt(num)  
 else:  
 print("Error: Invalid input for square root")  
  
class PhysicsCalculator(Calculator):  
 def calculate\_velocity(self, initial\_velocity, acceleration, time):  
 return initial\_velocity + (acceleration \* time)  
  
 def calculate\_distance(self, initial\_velocity, time, acceleration):  
 return (initial\_velocity \* time) + (0.5 \* acceleration \* (time \*\* 2))  
  
 def calculate\_force(self, mass, acceleration):  
 return mass \* acceleration  
  
# Example usage:  
calculator = Calculator()  
  
# Basic mathematical calculations  
print(calculator.add(5, 3)) # Output: 8  
print(calculator.subtract(10, 4)) # Output: 6  
print(calculator.multiply(6, 2)) # Output: 12  
print(calculator.divide(20, 5)) # Output: 4  
print(calculator.power(2, 3)) # Output: 8  
print(calculator.square\_root(25)) # Output: 5  
  
physics\_calculator = PhysicsCalculator()  
  
# Physics calculations  
print(physics\_calculator.calculate\_velocity(10, 2, 5)) # Output: 20  
print(physics\_calculator.calculate\_distance(10, 5, 2)) # Output: 85  
print(physics\_calculator.calculate\_force(20, 5)) # Output: 100