# (a+b)² = a² + 2ab + b²

def equation\_1():

print("Equation 1")

a = int(input("enter number of A for equation 1: "))

b = int(input("enter number of B for equation 1: "))

d1 = (a+b)\*\*2

d2 = (a\*\*2) + (2\*a\*b) + (b\*\*2)

d3 = d1 == d2

print(d1)

print(d2)

print(d3)

if d1 and d2:

print("LHS = RHS")

print("-" \* 10)

equation\_1()

# (a-b)² = a² – 2ab + b²

def equation\_2():

print("Equation 2")

a = int(input("enter number of A for equation 2: "))

b = int(input("enter number of B for equation 2: "))

e1 = (a-b)\*\*2

e2 = (a\*\*2) - (2\*a\*b) + (b\*\*2)

e3 = e1 == e2

print(e1)

print(e2)

print(e3)

if e1 and e2:

print("LHS = RHS")

print("-" \* 10)

equation\_2()

# a² + b² = (a-b)² +2ab

def equation\_3():

print("Equation 3")

a = int(input("enter number of A for equation 3: "))

b = int(input("enter number of B for equation 3: "))

f1 = (a\*\*2) + (b\*\*2)

f2 = (a-b)\*\*2 + (2\*a\*b)

f3 = f1 == f2

print(f1)

print(f2)

print(f3)

if f1 and f2:

print("LHS = RHS")

print("-" \* 10)

equation\_3()

# (a+b+c)² = a²+b²+c²+2ab+2ac+2bc

def equation\_4():

print("Equation 4")

a = int(input("enter number of A for equation 4: "))

b = int(input("enter number of B for equation 4: "))

c = int(input("enter number of B for equation 4: "))

g1 = (a+b+c)\*\*2

g2 = (a\*\*2) + (b\*\*2) + (c\*\*2) + (2\*a\*b) + (2\*a\*c) + (2\*b\*c)

g3 = g1 == g2

print(g1)

print(g2)

print(g3)

if g1 and g2:

print("LHS = RHS")

print("-" \* 10)

equation\_4()

# (a-b-c)² = a²+b²+c²-2ab-2ac+2bc

def equation\_5():

print("Equation 5")

a = int(input("enter number of A for equation 5: "))

b = int(input("enter number of B for equation 5: "))

c = int(input("enter number of B for equation 5: "))

h1 = (a-b-c)\*\*2

h2 = (a\*\*2) + (b\*\*2) + (c\*\*2) - (2\*a\*b) - (2\*a\*c) + (2\*b\*c)

h3 = h1 == h2

print(h1)

print(h2)

print(h3)

if h1 and h2:

print("LHS = RHS")

print("-" \* 10)

equation\_5()

# a³-b³ = (a-b) (a² + ab + b²)

def equation\_6():

print("Equation 6")

a = int(input("enter number of A for equation 6: "))

b = int(input("enter number of B for equation 6: "))

i1 = (a\*\*3) - (b\*\*3)

i2 = (a-b) \* ((a\*\*2) + (a\*b) + (b\*\*2))

i3 = i1 == i2

print(i1)

print(i2)

print(i3)

if i1 and i2:

print("LHS = RHS")

print("-" \* 10)

equation\_6()

# a³+b³ = (a+b) (a² – ab + b²)

def equation\_7():

print("Equation 7")

a = int(input("enter number of A for equation 7: "))

b = int(input("enter number of B for equation 7: "))

j1 = (a\*\*3) + (b\*\*3)

j2 = (a+b) \* ((a\*\*2) - (a\*b) + (b\*\*2))

j3 = j1 == j2

print(j1)

print(j2)

print(j3)

if j1 and j2:

print("LHS = RHS")

print("-" \* 10)

equation\_7()

# (a+b)³ = a³+ 3a²b + 3ab² + b³

def equation\_8():

print("Equation 8")

a = int(input("enter number of A for equation 8: "))

b = int(input("enter number of B for equation 8: "))

k1 = (a+b)\*\*3

k2 = (a\*\*3) + ((3\*(a\*\*2)\*b)) + (3\*a\*(b\*\*2)) + (b\*\*3)

k3 = k1 == k2

print(k1)

print(k2)

print(k3)

if k1 and k2:

print("LHS = RHS")

print("-" \* 10)

equation\_8()

# (a-b)³ = a³- 3a²b + 3ab² – b³

def equation\_9():

print("Equation 9")

a = int(input("enter number of A for equation 9: "))

b = int(input("enter number of B for equation 9: "))

l1 = (a-b)\*\*3

l2 = (a\*\*3) - ((3\*(a\*\*2)\*b)) + (3\*a\*(b\*\*2)) - (b\*\*3)

l3 = l1 == l2

print(l1)

print(l2)

print(l3)

if l1 and l2:

print("LHS = RHS")

print("-" \* 10)

equation\_9()

# a² – b² = (a-b)(a+b)

def equation\_10():

print("Equation 10")

a = int(input("enter number of A for equation 10: "))

b = int(input("enter number of B for equation 10: "))

m1 = (a\*\*2) - (b\*\*2)

m2 = (a-b) \* (a+b)

m3 = m1 == m2

print(m1)

print(m2)

print(m3)

if m1 and m2:

print("LHS = RHS")

print("-" \* 10)

equation\_10()

**OUTPUT**

**Equation 1**

enter number of A for equation 1: 76

enter number of B for equation 1: 8

7056

7056

True

LHS = RHS

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**Equation 2**

enter number of A for equation 2: 8

enter number of B for equation 2: 76

4624

4624

True

LHS = RHS

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**Equation 3**

enter number of A for equation 3: 90

enter number of B for equation 3: 0

8100

8100

True

LHS = RHS

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**Equation 4**

enter number of A for equation 4: 99

enter number of B for equation 4: 9

enter number of B for equation 4: 8

13456

13456

True

LHS = RHS

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**Equation 5**

enter number of A for equation 5: 98

enter number of B for equation 5: 89

enter number of B for equation 5: 78

4761

4761

True

LHS = RHS

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**Equation 6**

enter number of A for equation 6: 77

enter number of B for equation 6: 76

17557

17557

True

LHS = RHS

----------

**Equation 7**

enter number of A for equation 7: 76

enter number of B for equation 7: 75

860851

860851

True

LHS = RHS

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**Equation 8**

enter number of A for equation 8: 435

enter number of B for equation 8: 56

118370771

118370771

True

LHS = RHS

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**Equation 9**

enter number of A for equation 9: 678

enter number of B for equation 9: 564

1481544

1481544

True

LHS = RHS

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**Equation 10**

enter number of A for equation 10: 5678

enter number of B for equation 10: 4535

11673459

11673459

True

LHS = RHS

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