

Gas Law Solver

Should be useful to chemistry teachers. It allows user to choose which gas law to solve and which variables will be solved for. After entering knowns into the program the solution is revealed in a "notice" box.

```
'GAS LAW problem solver
' purpose is to solve gas law problems including Dalton's law of parti
al pressure
'4/12/2010
nomainwin

VP = 0
[begin]
WindowWidth = 560
WindowHeight = 520

    groupbox #cfg, "Boyle's Law", 240, 20, 200, 140
        radiobutton #cfg.bP2, "Solve for Pressure 2", [
BoylesLawUKP2], [waitHere], 260, 45, 130, 20
        radiobutton #cfg.bP1, "Solve for Pressure 1", [
BoylesLawUKP1], [waitHere], 260, 70, 130, 20
        radiobutton #cfg.bV2, "Solve for Volume 2", [
BoylesLawUKV2], [waitHere], 260, 95, 130, 20
        radiobutton #cfg.bV1, "Solve for Volume 1", [
BoylesLawUKV1], [waitHere], 260, 120, 130, 20

    groupbox #cfg, "Charles' Law", 20, 20, 200, 140
        radiobutton #cfg.cv2, "Solve for Volume 2", [
CharlesLawUKV2], [waitHere], 40, 45, 130, 20
        radiobutton #cfg.ct2,
"Solve for Temperature 2", [CharlesLawUKT2], [waitHere], 40, 70,
130, 20
        radiobutton #cfg.cv1, "Solve for Volume 1", [
CharlesLawUKV1], [waitHere], 40, 95, 130, 20
        radiobutton #cfg.ct1,
"Solve for Temperature 1", [CharlesLawUKT1], [waitHere], 40, 120,
130, 20

    button #cfg, " &Quit ", [quit], UL, 450, 30
    button #cfg, " Water " , [Dalton], UL, 30,450
    Statictext #cfg.static,
"Click Here i
f gas was collected by water displacement. ",120,460, 600,20
```

```
groupbox #cfg, "Gay-Lussac Law", 20, 240, 200, 140
radiobutton #cfg.Boyles, "Solve for Pressure 2", [
GayLawUKP2], [waitHere], 40, 265, 130, 20
radiobutton #cfg.Charles,
"Solve for Temperature 2", [GayLawUKT2], [waitHere], 40, 290, 130, 20
radiobutton #cfg.Gay, "Solve for Pressure 1", [GayLawUKP1], [
waitHere], 40, 315, 130, 20
radiobutton #cfg.Combined,
"Solve for Temperature 1", [GayLawUKT1], [waitHere], 40, 340, 130, 20
```

```
groupbox #cfg, "Combined Gas Law", 240, 240, 200, 160
radiobutton #cfg.bP2, "Solve for Pressure 2", [CGLUKP2], [
waitHere], 260, 255, 130, 20
radiobutton #cfg.bP1, "Solve for Pressure 1", [CGLUKP1], [
waitHere], 260, 280, 130, 20
radiobutton #cfg.bV2, "Solve for Volume 2", [CGLUKV2], [
waitHere], 260, 305, 130, 20
radiobutton #cfg.bV1, "Solve for Volume 1", [CGLUKV1], [
waitHere], 260, 330, 130, 20
radiobutton #cfg.T2,
"Solve for Temperature 2", [CGLUKT2], [waitHere], 260, 355, 130, 20
radiobutton #cfg.T1, "Solve Temperature 1", [CGLUKT1], [
waitHere], 260, 380, 130, 20
```

```
open "Gas Law Solver" for dialog as #cfg
print #cfg, "trapclose [quit]"
```

```
[waitHere]
wait
```

```
[BoylesLawUKV2]
prompt "pressure 1"; P1
PI = PI -VP
prompt "volume 1";V1
prompt "pressure 2"; P2
V2=(P1*V1)/P2
notice "V2 ="; V2
wait
```

```
[BoylesLawUKP2]
prompt "pressure 1"; P1
P1= P1 -VP
prompt "volume 1"; V1
prompt "volume 2";V2
P2=(P1*V1)/V2
notice "P2 ="; P2
```

wait

```
[BoylesLawUKV1]
prompt "pressure 1" ; P1
P1 = P1 -VP
prompt "volume 2";V2
prompt "pressure 2"; P2
V1=(P2*V2)/P1
notice "V1=";V1
wait
```

```
[BoylesLawUKP1]
prompt "volume 1";V1
prompt "volume 2";V2
prompt "pres sure 2"; P2
P1=(P2*V2)/V1
notice "P1=" ; P1
wait
```

```
[CharlesLawUKT1]
prompt "Temperature 2 in Celsius";T2
prompt "volume 1";V1
prompt "Volume 2";V2
T2 = T2 + 273
T1=(T2*V1)/V2
notice "T1=";T1;" Kelvin"
wait
```

```
[CharlesLawUKT2]
prompt "Temperature 1 in Celsius";T1
prompt "volume 1";V1
prompt "Volume 2";V2
T1 = T1 + 273
T2=(T1*V2)/V1
notice "T2=" ; T2
wait
```

```
[CharlesLawUKV1]
prompt "Temperature 1 in Celsius";T1
prompt "volume 2";V2
prompt "Temperature 2 in Celsius";T2
T1 = T1 + 273
T2 = T2 + 273
V1=(T1*V2)/T2
notice "V1="; V1
wait
```

[CharlesLawUKV2]

```
prompt "Temperature 1 in Celsius" ;T1
prompt "volume 1"; V1
prompt "Temperature 2";T2
T1= T1 + 273
T2 = T2 + 273
V2=(T2*V1)/T1
notice "V2=";V2
wait
```

[CGLUKT1]

```
prompt "Pressure 1= "; P1
P1 = P1 -VP
prompt "Volume 1= ";V1
prompt "Temperature 2 (in Celsius) = ";T2
prompt "Pressure 2= "; P2
prompt "Volume 2= ";V2
T2 = T2 + 273
T1 = (P1*V1*T2)/(P2*V2)
notice "T1 = ";T1; " Kelvin"
wait
```

[CGLUKP2]

```
prompt "Pressure 1= "; P1
P1 = P1 -VP
prompt "Volume 1= ";V1
prompt "Temperature 2 (in Celsius) = ";T2
prompt "Temperature 1= ";T1
prompt "Volume 2= ";V2
T2 = T2 + 273
T1 = T1 + 273
P2 = (P1*V1*T2)/(T1*V2)
notice "P2 = "; P2
wait
```

[CGLUKT2]

```
prompt "Pressure 1= "; PI
P1 = PI -VP
prompt "Volume 1= ";V1
prompt "Temperature 1 (in Celsius) = ";T1
prompt "Pressure 2= "; P2
prompt "Volume 2= ";V2
T1 = T1 + 273
T2 = (P2*V2*T1)/(P1*V1)
```

```
notice "T2 = ";T2; " Kelvin"
wait
```

[CGLUKV1]

```
prompt "Pressure 1= " ;P1
P1 = P1 -VP
prompt "Temperature 1= ";T1
prompt "Temperature 2 (in Celsius) = ";T2
prompt "Pressure 2= " ;P2
prompt "Volume 2= ";V2
T1 = T1 + 273
T2 = T2 + 273
V1 = (P2*V2*T1)/(P1*T2)
notice "V1 = " ;V1
wait
```

[CGLUKV2]

```
prompt "Pressure 1= "; P1
P1 = P1 -VP
prompt "Volume 1= ";V1
prompt "Temperature 1 (in Celsius) = ";T1
prompt "Pressure 2= "; P2
prompt "Temperature 2 in (Celsius) = ";T2
T1 = T1 + 273
T2 = T2 + 273
V2 = (P1*V1*T2)/(P2*T1)
notice "V2 = ";V2
wait
```

[CGLUKP1]

```
prompt "Temperature 2= "; T2
prompt "Volume 1= ";V1
prompt "Temperature 1 (in Celsius) = ";T1
prompt "Pressure 2= "; P2
prompt "Volume 2= ";V2
T2 = T2 + 273
T1 = T1 + 273
P1 = (P2*V2*T1)/(T2*V1)
notice "P1 = ";P1
wait
```

[GayLawUKP2]

```
prompt "Temperature 1 (in Celsius) = ";T1
prompt "Temperature 2 (in Celsius) = ";T2
prompt "Pressure 1= "; P1
P1 = P1 -VP
```

```
T2 = T2 + 273
T1 = T1 + 273
P2 = (P1*T2)/T1
notice "P2 = "; P2
wait
```

```
[GayLawUKP1]
prompt "Temperature 1 (in Celsius) = ";T1
prompt "Temperature 2 (in Celsius) = ";T2
prompt "Pressure 2= "; P2
T2 = T2 + 273
T1 = T1 + 273
P1 = (T1*P2)/T2
notice "P1 = "; P1
wait
```

```
[GayLawUKT2]
prompt "Temperature 1 (in Celsius) = ";T1
prompt "Pressure 1 = ";P1
P1 = P1 -VP
prompt "Pressure 2= "; P2
T1 = T1 + 273
T2 = (T1*P2)/P1
notice "T2 = "; T2
wait
```

```
[GayLawUKT1]
prompt "Temperature 2= "; P1
prompt "Volume 1= "; V1
prompt "Temperature 1 (in Celsius) = ";T1
prompt "Pressure 2= "; P2
prompt "Volume 2= ";V2
T2 = T2 + 273
T1 = T1 + 273
P1 = (P2*V2*T1)/(P1*V1)
notice "P1 = "; P1
wait
```

```
[Dalton]
prompt "Celsius Temperature ";C
VP= 4.553 + .3335*C + .01108 *C^2 + .0001826 * C^3 + 2.337e-6 * C^4
+ 1.948e-8 * C^5
notice "H2O Partial Pressure is "; VP ; " mmHg"
wait
```

```
[quit]
```

```
close #cfg  
end
```