Reaction Order and Rate Law Expression Worksheet

Given the following equations and experimental data, write the correct

a. Rate Law Expression
b. Reaction Order
c. Determine k, the Specific Rate Constant (including units)

1. $A_2 + B_2 \rightarrow 2\,AB$

Exp #	$[A_2]$	$[B_2]$	Rate (mole dm^{-3} s^{-1})
1	0.001	0.001	0.01
2	0.001	0.002	0.02
3	0.001	0.003	0.03
4	0.001	0.004	0.04
5	0.002	0.004	0.16
6	0.003	0.004	0.36

a.

b.

c.

2. $C + D \rightarrow E$

Exp #	[C]	[D]	Rate (mole dm^{-3} s^{-1})
1	0.1	0.01	0.02
2	0.1	0.02	0.04
3	0.1	0.03	0.06
4	0.1	0.04	0.08
5	0.2	0.04	0.08
6	0.3	0.04	0.08

a.

b.

c.

3. F + G → H

Exp #	[F]	[G]	Rate (mole dm^{-3} s^{-1})
1	0.01	0.4	0.02
2	0.02	0.4	0.04
3	0.03	0.4	0.06
4	0.1	0.2	0.10
5	0.1	0.4	0.20
6	0.1	0.6	0.30

a.

b.

c.

4. C + D → E

Exp #	[C]	[D]	Rate (mole dm^{-3} s^{-1})
1	0.1	0.01	0.02
2	0.1	0.02	0.08
3	0.1	0.03	0.18
4	0.1	0.04	0.32
5	0.2	0.04	1.28
6	0.3	0.04	2.88

a.

b.

c.

5. F + G → H

Exp #	[F]	[G]	Rate (mole dm^{-3} s^{-1})
1	0.01	0.4	0.02
2	0.02	0.4	0.16
3	0.03	0.4	0.54
4	0.1	0.2	5
5	0.1	0.4	20
6	0.1	0.6	45

a.

b.

c.