Particles .. Moles .. Mass

Activity 1: Apprentice Difficulty Level

Question 1:
Express your understanding of the conversions between particles, moles, and mass by completing the following table.

	Formula	Molar Mass (g/mol)	# of Particles		# of Moles		Mass (grams)
A	H_2O	18.0	6.02×10^{23}	CF		CF	
B	H_2O	18.0	6.02×10^{22}	CF		CF	
C	CO_2	44.0	x10	CF	2.00	CF	
D	$CaCl_2$	111.0	x10	CF		CF	55.5
E	CO_2	44.0	x10	CF	3.00	CF	

Question 2:
Express your understanding of the conversions between particles, moles, and mass by completing the following table.

	Formula	Molar Mass (g/mol)	# of Particles		# of Moles		Mass (grams)
A	NO_2	46.0	6.02×10^{23}	CF		CF	
B	NO_2	46.0	6.02×10^{24}	CF		CF	
C	H_2O	18.0	x10	CF	2.00	CF	
D	$CaCl_2$	111.0	x10	CF		CF	27.75
E	H_2O	18.0	x10	CF	3.00	CF	

Question 3:
Express your understanding of the conversions between particles, moles, and mass by completing the following table.

	Formula	Molar Mass (g/mol)	# of Particles		# of Moles		Mass (grams)
A	CO_2	44.0	6.02×10^{23}	CF		CF	
B	CO_2	44.0	3.01×10^{23}	CF		CF	
C	Na_2O	62.0	x10	CF	1.50	CF	
D	H_2O	18.0	x10	CF		CF	27.0
E	Na_2O	62.0	x10	CF	2.00	CF	

Question 4:
Express your understanding of the conversions between particles, moles, and mass by completing the following table.

	Formula	Molar Mass (g/mol)	# of Particles		# of Moles		Mass (grams)
A	H_2O_2	34.0	6.02×10^{23}	CF		CF	
B	H_2O_2	34.0	1.204×10^{24}	CF		CF	
C	CO_2	44.0	x10	CF	0.750	CF	
D	Na_2O	62.0	x10	CF		CF	93.0
E	CO_2	44.0	x10	CF	0.500	CF	

Activity 2: Master Difficulty Level

Question 5:
Express your understanding of the conversions between particles, moles, and mass by completing the following table.

	Formula	Molar Mass (g/mol)	# of Particles		# of Moles		Mass (grams)
A	$NaNO_3$		3.01×10^{23}	CF		CF	
B	$NaNO_3$		1.68×10^{24}	CF		CF	
C	$NaNO_3$		x10	CF	2.50	CF	
D	Na_2SO_4		x10	CF		CF	28.4
E	Na_2SO_4		x10	CF	5.27	CF	

Question 6:
Express your understanding of the conversions between particles, moles, and mass by completing the following table.

	Formula	Molar Mass (g/mol)	# of Particles		# of Moles		Mass (grams)
A	$H_2C_2O_4$		9.03×10^{23}	CF		CF	
B	$H_2C_2O_4$		2.29×10^{24}	CF		CF	
C	$H_2C_2O_4$		x10	CF	4.50	CF	
D	$NaNO_3$		x10	CF		CF	255
E	$NaNO_3$		x10	CF	0.368	CF	

Question 7:
Express your understanding of the conversions between particles, moles, and mass by completing the following table.

	Formula	Molar Mass (g/mol)	# of Particles		# of Moles		Mass (grams)
A	Na_2CO_3		1.204×10^{24}	CF		CF	
B	Na_2CO_3		8.62×10^{23}	CF		CF	
C	Na_2CO_3		x10	CF	0.750	CF	
D	$H_2C_2O_4$		x10	CF		CF	225
E	$H_2C_2O_4$		x10	CF	4.82	CF	

Question 8:
Express your understanding of the conversions between particles, moles, and mass by completing the following table.

	Formula	Molar Mass (g/mol)	# of Particles		# of Moles		Mass (grams)
A	Na_2SO_4		1.806×10^{24}	CF		CF	
B	Na_2SO_4		9.93×10^{23}	CF		CF	
C	Na_2SO_4		x10	CF	1.25	CF	
D	Na_2CO_3		x10	CF		CF	53.0
E	Na_2CO_3		x10	CF	7.16	CF	

Activity 3: Wizard Difficulty Level

Question 9:
Express your understanding of the conversions between particles, moles, and mass by completing the following table.

	Formula	Molar Mass (g/mol)	# of Particles		# of Moles		Mass (grams)
A	$Ca(NO_3)_2$		3.28×10^{23}	CF		CF	
B	$Ca(NO_3)_2$		2.77×10^{24}	CF		CF	
C	$Ca(NO_3)_2$		x10	CF	8.05	CF	
D	$Al_2(CO_3)_3$		x10	CF		CF	62.6
E	$Al_2(CO_3)_3$		x10	CF	0.672	CF	

Question 10:
Express your understanding of the conversions between particles, moles, and mass by completing the following table.

	Formula	Molar Mass (g/mol)	# of Particles		# of Moles		Mass (grams)
A	$Al_2(SO_4)_3$		8.34×10^{23}	CF		CF	
B	$Al_2(SO_4)_3$		4.91×10^{24}	CF		CF	
C	$Al_2(SO_4)_3$		x10	CF	2.12	CF	
D	$Ca(NO_3)_2$		x10	CF		CF	42.7
E	$Ca(NO_3)_2$		x10	CF	0.458	CF	

Question 11:
Express your understanding of the conversions between particles, moles, and mass by completing the following table.

	Formula	Molar Mass (g/mol)	# of Particles		# of Moles		Mass (grams)
A	$Al(NO_3)_3$		6.72×10^{23}	CF		CF	
B	$Al(NO_3)_3$		1.38×10^{24}	CF		CF	
C	$Al(NO_3)_3$		x10	CF	4.51	CF	
D	$Al_2(SO_4)_3$		x10	CF		CF	82.1
E	$Al_2(SO_4)_3$		x10	CF	0.216	CF	

Question 12:
Express your understanding of the conversions between particles, moles, and mass by completing the following table.

	Formula	Molar Mass (g/mol)	# of Particles		# of Moles		Mass (grams)
A	$Al_2(CO_3)_3$		5.49×10^{23}	CF		CF	
B	$Al_2(CO_3)_3$		3.91×10^{24}	CF		CF	
C	$Al_2(CO_3)_3$		x10	CF	7.26	CF	
D	$Al(NO_3)_3$		x10	CF		CF	45.8
E	$Al(NO_3)_3$		x10	CF	0.629	CF	