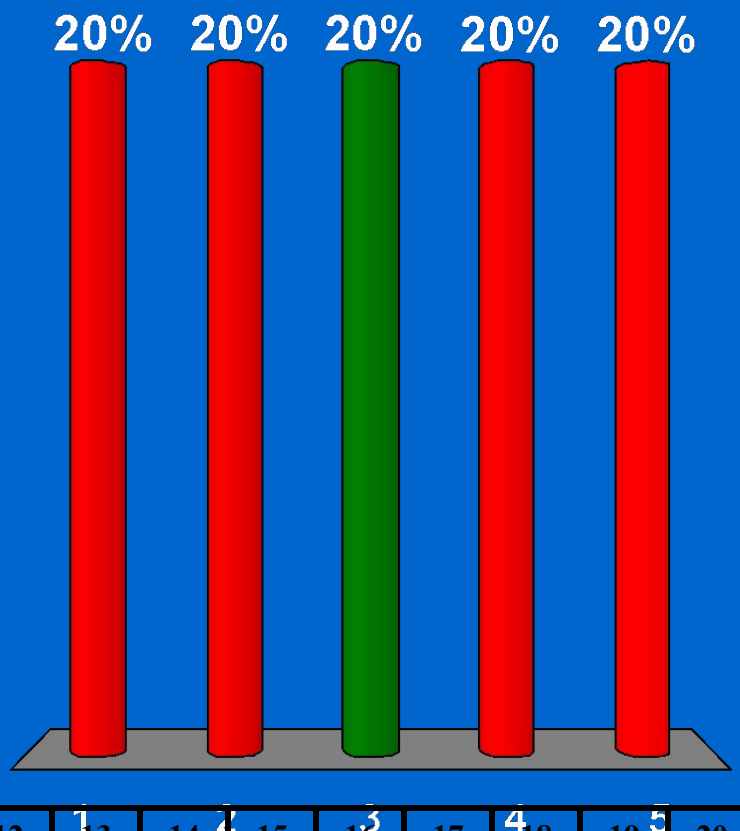
If 150.0 mL of 0.100 *M* HBr and 50.0 mL of 0.100 *M* KOH solutions are mixed, what are the molarities of the ions in the resulting solution?

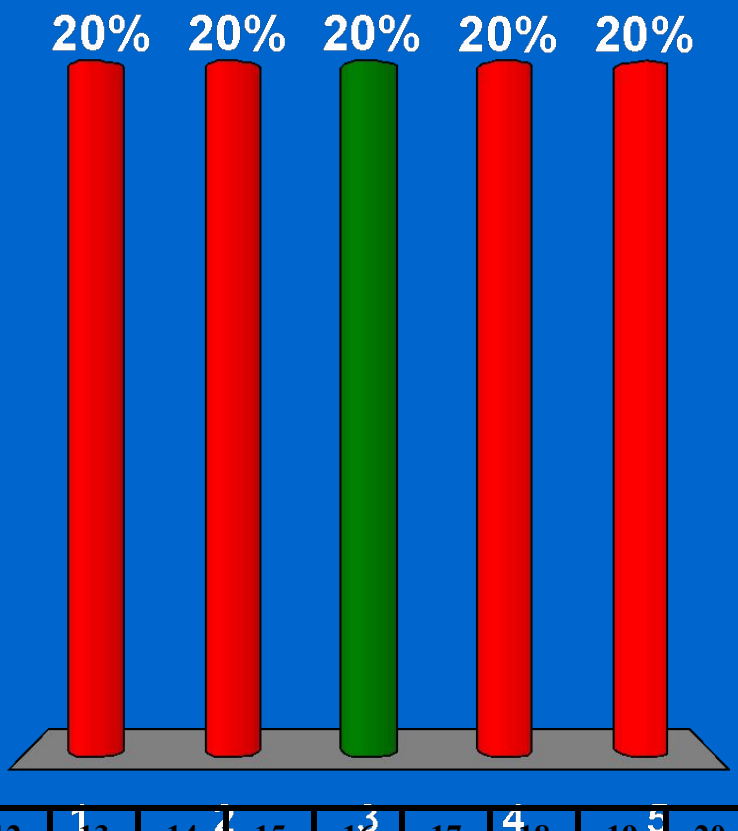
1. 0.0750 *M* in H^+, 0.0750 *M* in Br^-, 0.0250 *M* in K^+
2. 0.0500 *M* in H^+, 0.0750 *M* in Br^-, 0.0500 *M* in K^+
3. 0.0500 *M* in H^+, 0.0750 *M* in Br^-, 0.0250 *M* in K^+
4. 0.0667 *M* in H^+, 0.100 *M* in Br^-, 0.0333 *M* in K^+
5. 0.0500 *M* in H^+, 0.100 *M* in Br^-, 0.100 *M* in K^+



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

A 0.742-gram sample of KHP, $KC_6H_4(COO)(COOH)$, reacts with 35.0 mL of $Ba(OH)_2$ solution. What is the molarity of the $Ba(OH)_2$ solution?

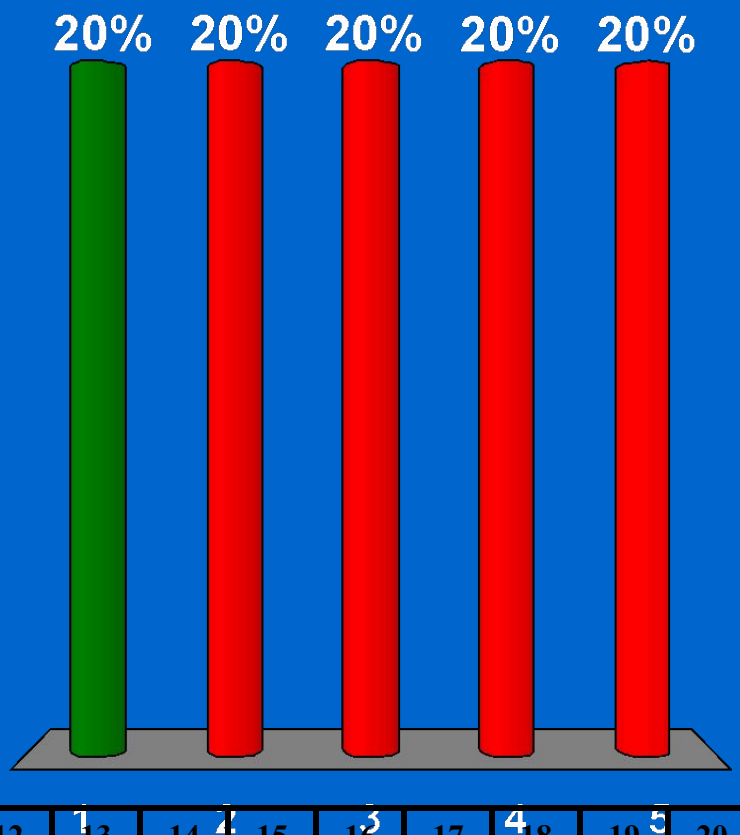
1. 0.127 *M*
2. 0.0636 *M*
3. 0.0520 *M*
4. 0.208 *M*
5. 0.104 *M*



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

Calculate the normality of a solution that contains 4.5 g of $(COOH)_2$ in 3000. mL of solution. (Assume the $(COOH)_2$ is to be completely neutralized.)

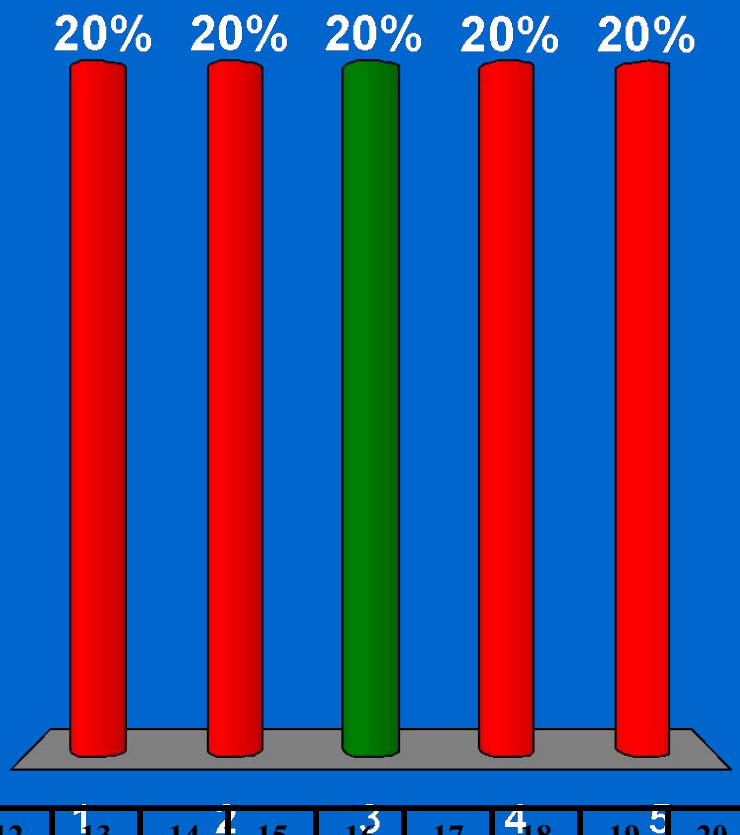
1. 0.033 *N*
2. 0.045 *N*
3. 0.066 *N*
4. 0.090 *N*
5. 0.12 *N*



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

A solution of H_2SO_4 contains 9.11 mg of H_2SO_4 per mL. What is the normality of the solution? (Assume the H_2SO_4 is to be completely neutralized by a base.)

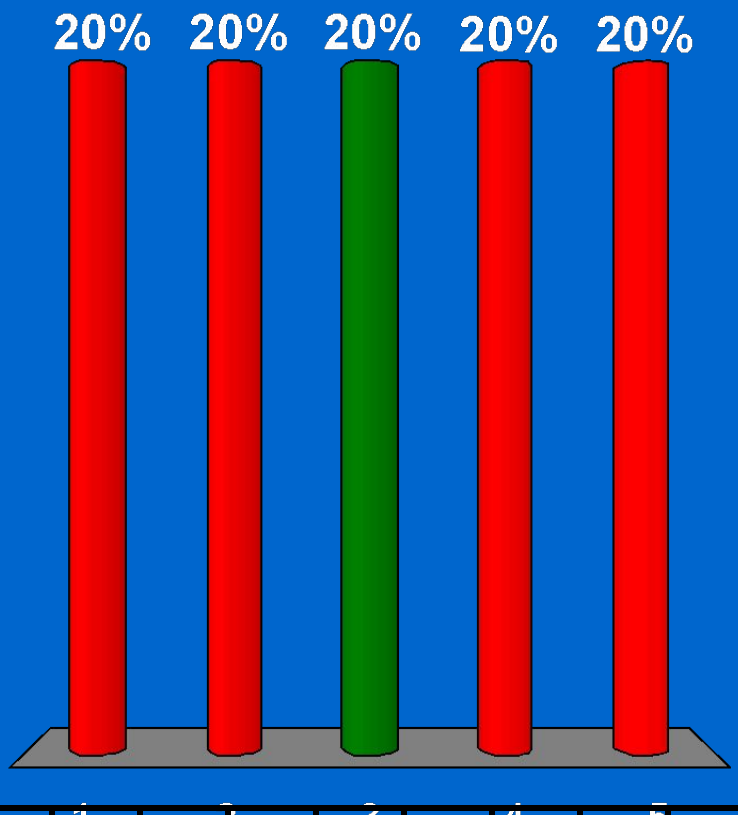
1. 0.0482 *N*
2. 0.684 *N*
3. 0.186 *N*
4. 0.372 *N*
5. 0.0930 *N*



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

How many equivalent weights of phosphoric acid are contained in 500. mL of 2.00 *M* phosphoric acid? (Assume the acid is to be completely neutralized by a base.)

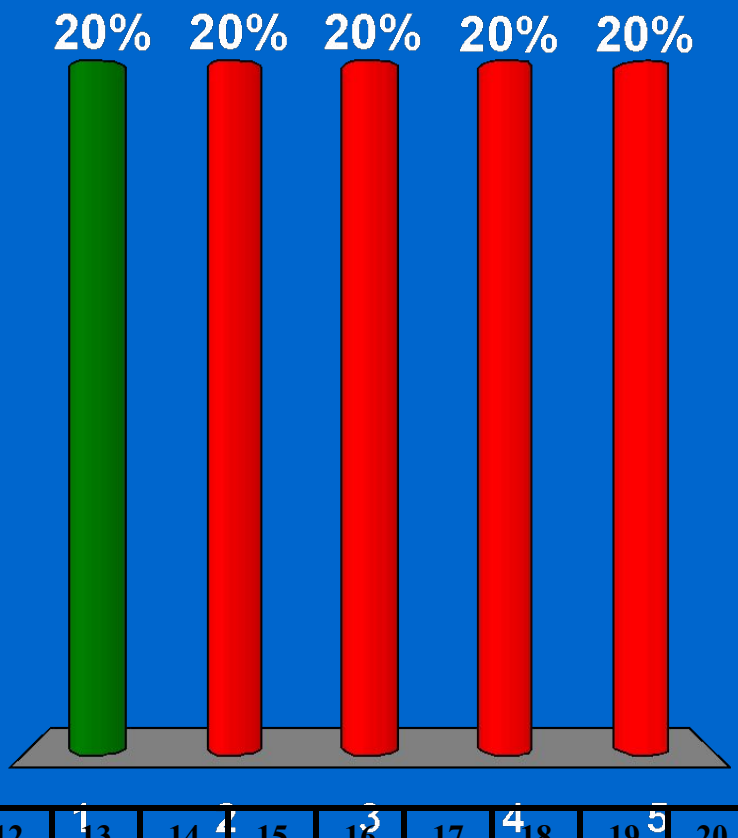
1. 1.00 eq
2. 2.00 eq
3. 3.00 eq
4. 4.00 eq
5. 6.00 eq



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

What mass of NaOH would be required to neutralize the acid in 75.0 mL of 0.880 *N* HCl?

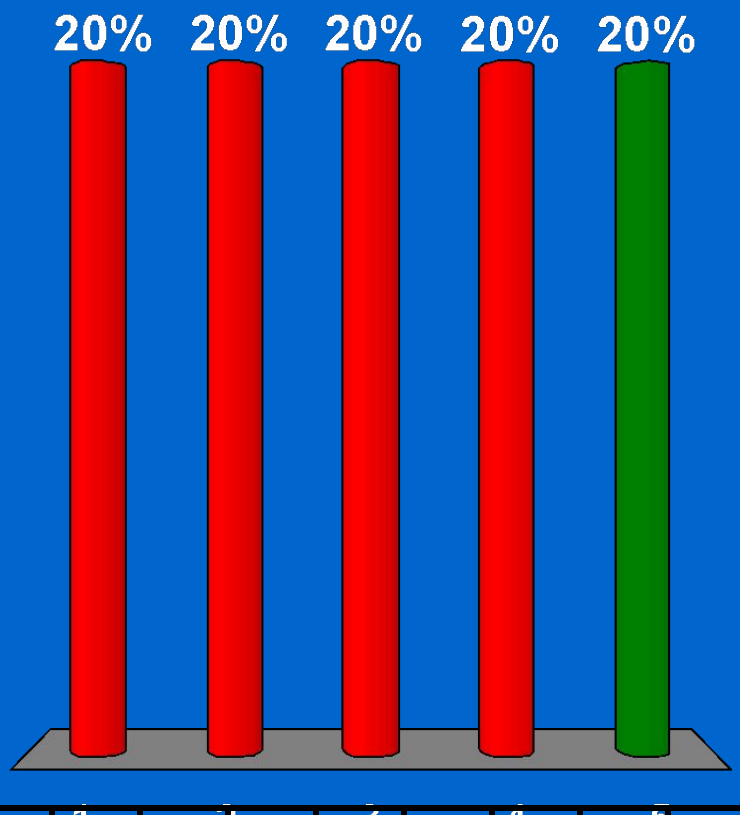
1. 2.64 g
2. 5.28 g
3. 2.6 kg
4. 3.83 g
5. 6.60 g



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

If 20.8 mL of $Ba(OH)_2$ solution reacts with 0.306 g of KHP, $KC_6H_4(COO)(COOH)$, what is the normality of the $Ba(OH)_2$ solution?

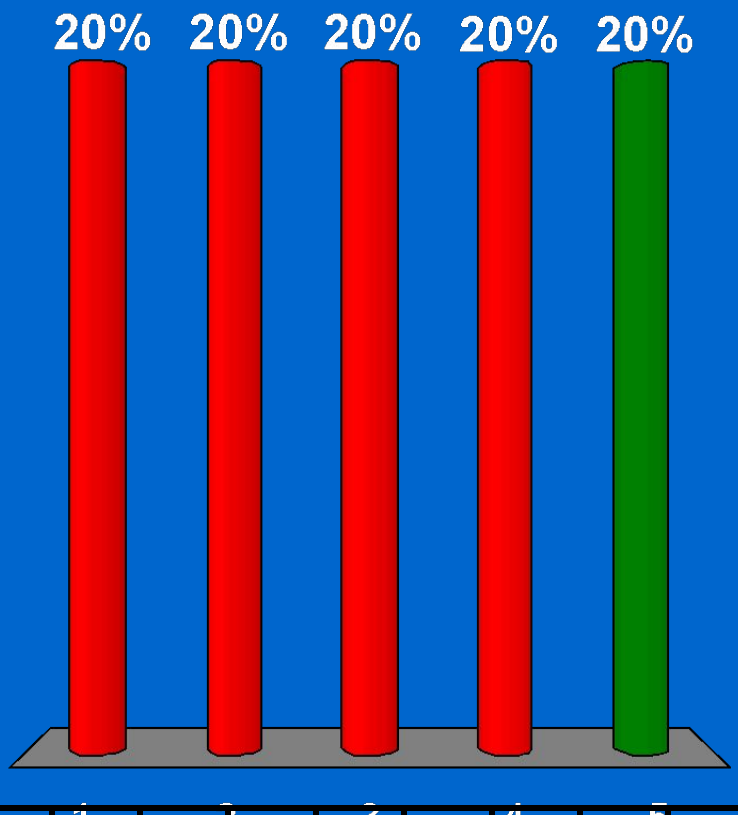
1. 0.0361 *N*
2. 0.144 *N*
3. 0.300 *N*
4. 0.175 *N*
5. 0.0721 *N*



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

What is the oxidation number of phosphorus in KH_2PO_4?

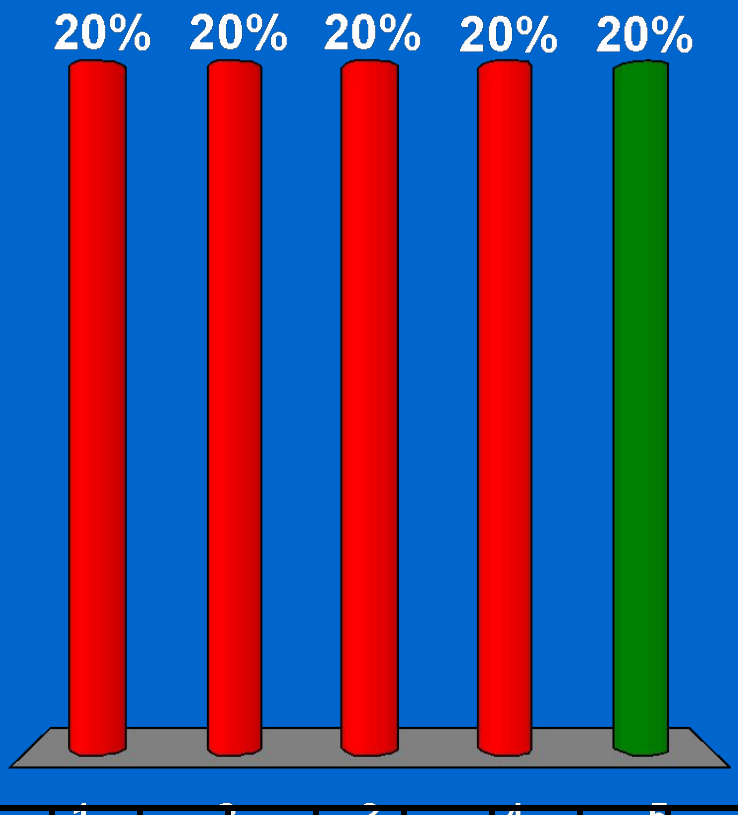
1. +1
2. +2
3. +3
4. +4
5. +5



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

What is the oxidation number of P in the $H_2PO_4^-$ ion?

1. -3
2. +2
3. +3
4. +4
5. +5

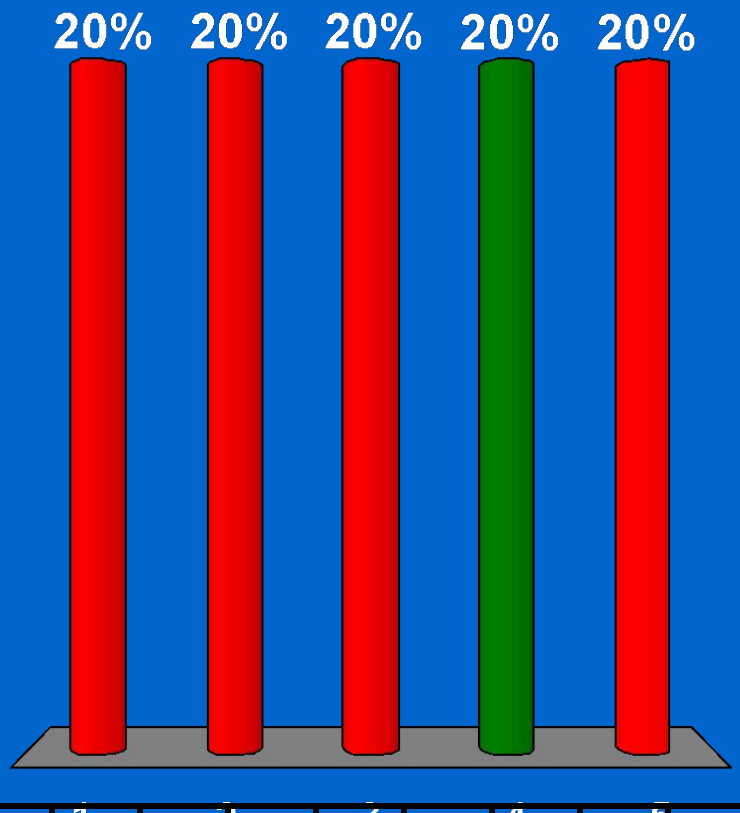


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

Balance the following formula unit equation for a reaction. What is the sum of **all** of the coefficients?

$K_2Cr_2O_7 + HCl \longrightarrow KCl + CrCl_3 + Cl_2 + H_2O$

1. 20
2. 22
3. 26
4. 29
5. 32

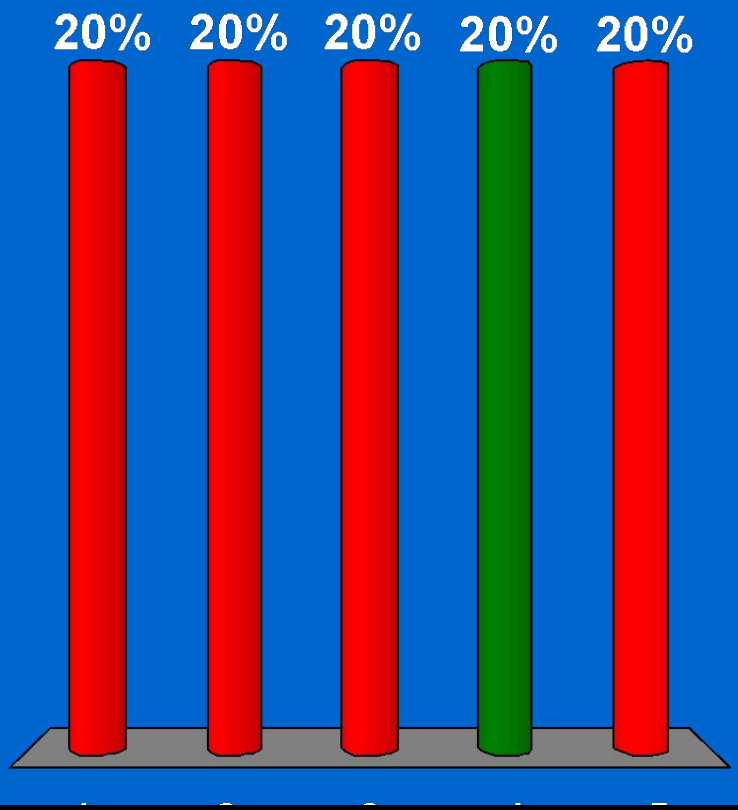


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

Balance the following net ionic equation. What is the sum of the coefficients?

$(COOH)_2 + MnO_4^- + H^+ \longrightarrow CO_2 + Mn^{2+} + H_2O$

1. 27
2. 29
3. 31
4. 33
5. 35

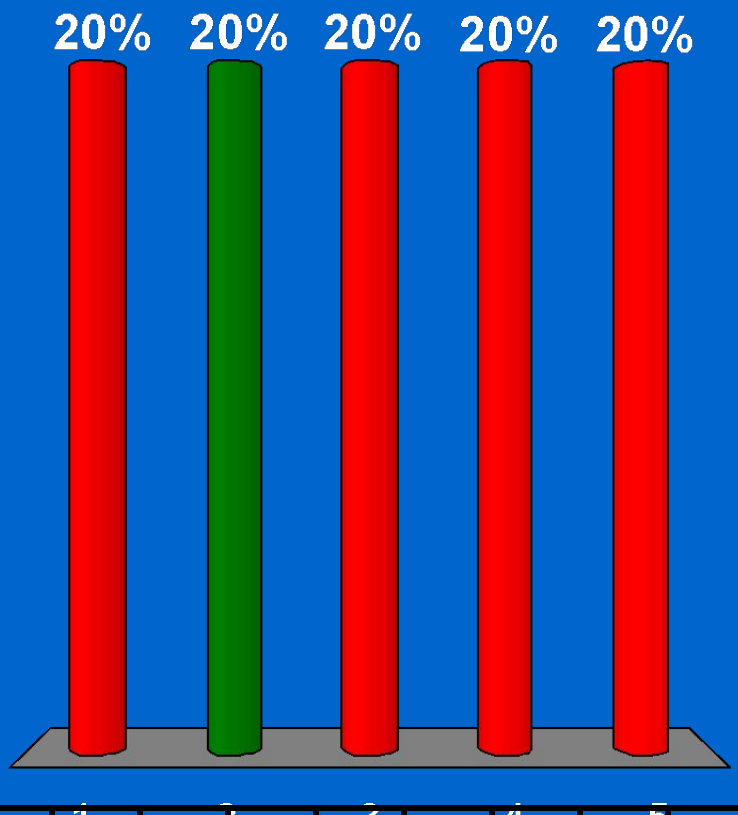


1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

Balance the following net ionic equation. What is the sum of the coefficients?

$MnO_4^- + Se^{2-} \longrightarrow MnO_2 + Se$ (basic solution)

1. 20
2. 22
3. 24
4. 26
5. 28



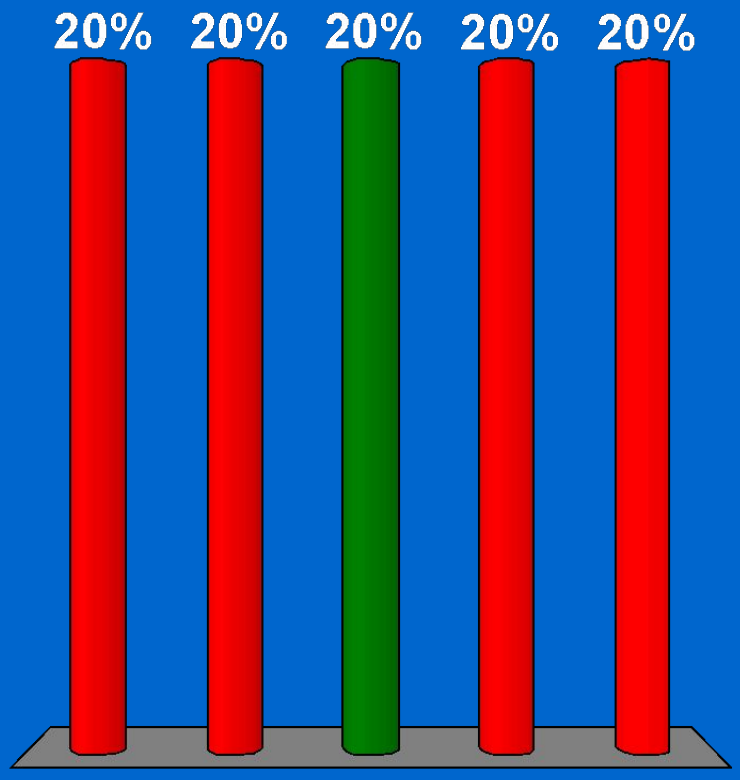
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

An impure 0.500-gram sample of $FeSO_4$ reacts with 20.0 mL of 0.0200 *M* $KMnO_4$.

Assuming that the impurities do not react with $KMnO_4$, what is the percentage of $FeSO_4$ in the sample?

$$MnO_4^- + 8H^+ + 5Fe^{2+} \longrightarrow Mn^{2+} + 5Fe^{3+} + 4H_2O$$

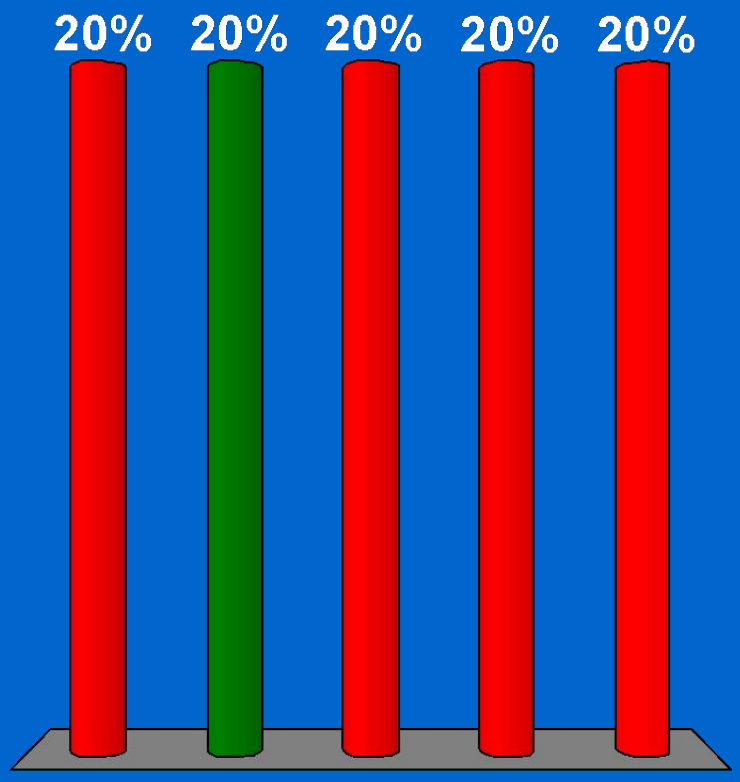
1. 52.3%
2. 56.6%
3. 60.8%
4. 64.5%
5. 69.2%



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										

A solution of $Fe(NH_4)_2(SO_4)_2 \cdot 6H_2O$ containing 2.10 grams of the compound is titrated with acidic $Na_2Cr_2O_7$ solution. If 41.6 mL of the $Na_2Cr_2O_7$ solution is required, what is the molarity of the $Na_2Cr_2O_7$ solution? The reaction products include Cr^{3+} and Fe^{3+}.

1. 0.129 *M*
2. 0.0215 *M*
3. 0.0644 *M*
4. 0.0387 *M*
5. 0.0744 *M*



1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50										