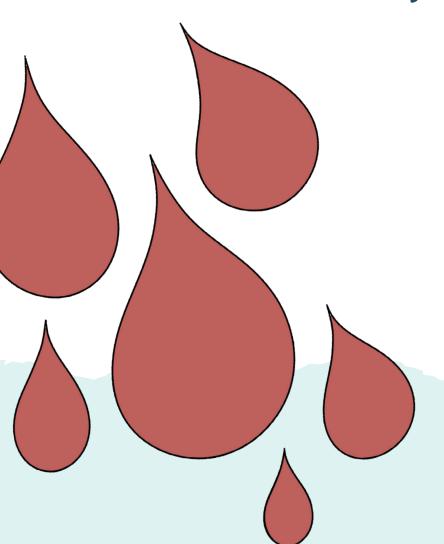


ABG PRACTICE QUESTIONS

for Nursing Students



ARTERIAL BLOOD GASES (ABGs)

Practice Questions



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Use the tic-tac-toe method for questions 1-6

				1			
9	рН	7.28		ACID	NORMAL	BASE	Is the pH in range? YES NO Is the (O ₂ in range? YES NO
	PaCO ₂	47					Is the H(O₃ in range? ○YES ○NO
	HCO ₃	24					UNCOMPENSATED PARTIALLY COMPENSATED
							FULLY COMPENSATED
	рН	7.28	OACI	IDIC OAL	KALOTIC (NORMAL	FINAL ANSWER:
	PaCO ₂	47	OACI	IDIC OAL	KALOTIC 🔾	NORMAL	FINAL ANSWER.
	HCO ₃	24	OACI	IDIC OAL	KALOTIC 🔾	NORMAL	
2	рН	7.3		ACID	NORMAL	BASE	Is the pH in range? YES NO
	PaCO ₂	48					Is the (O2 in range? YES NO Is the H(O3 in range? YES NO
	HCO ₃	29					UNCOMPENSATED PARTIALLY COMPENSATED
							FULLY COMPENSATED
	рН	7.3	OACI	DIC OALI	KALOTIC O	NORMAL	
	PaCO ₂	48	OACI	DIC OALI	KALOTIC O	NORMAL	FINAL ANSWER:
	HCO ₃	29	OACI	DIC OALI	KALOTIC O	NORMAL	
3	рН	7.49		ACID	NORMAL	BASE	Is the pH in range? YES NO Is the (O2 in range? YES NO
	PaCO ₂	33					Is the H(O₃ in range? ○YES ○NO
	HCO ₃	24					UNCOMPENSATED PARTIALLY COMPENSATED

OACIDIC OALKALOTIC ONORMAL

OACIDIC OALKALOTIC ONORMAL

OACIDIC OALKALOTIC ONORMAL

FINAL ANSWER:

pН

PaCO₂

HCO,

7.49

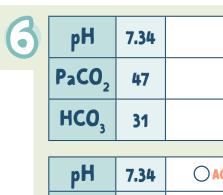
33

24



Use the tic-tac-toe method for questions 1-6

4	рН	7.48		ACID	NORMAL	BASE	Is the pH in range? YES NO Is the (O ₂ in range? YES NO
	PaCO ₂	31					Is the H(O ₃ in range? YES NO
	HCO ₃	20					UNCOMPENSATED PARTIALLY COMPENSATED
	рН	7.48	○ ACII	OIC OALK	ALOTIC OI	NORMAL	FULLY COMPENSATED
	PaCO ₂	31	OACII	OIC OALK	ALOTIC OI	NORMAL	FINAL ANSWER:
	HCO ₃	20	ACII	OIC OALK	ALOTIC OI	NORMAL	
5	рН	7.32		ACID	NORMAL	BASE	Is the pH in range? YES NO Is the (O ₂ in range? YES NO
	PaCO ₂	40					Is the H(O3 in range? OYES ONO
	HCO ₃	16					UNCOMPENSATED PARTIALLY COMPENSATED
	рН	7.32	OACID	OIC OALKA	LOTIC ON	IORMAL	FULLY COMPENSATED
	PaCO ₂	40	OACID	OIC OALKA	LOTIC ON	IORMAL	FINAL ANSWER:
	HCO ₃	16	OACIDIC OALKALOTIC ONORMAL				



ACID	NORMAL	BASE
	1	ı

рН	7.34	OACIDIC OALKALOTIC ONORMAL
PaCO ₂	47	OACIDIC OALKALOTIC ONORMAL
HCO ₃	31	OACIDIC OALKALOTIC ONORMAL

ı	s the pH in range?	OYES	O NO					
- 1	s the (O2 in range?	OYES	\bigcirc NO					
- 1	s the H(O ₃ in range?	OYES	\bigcirc NO					
	UNCOMPENSATED							
	PARTIALLY COMPENSATED							
FULLY COMPENSATED								

FINAL ANSWER:





9

рН	7.28	1
PaCO ₂	47	1
HCO ₃	24	NORMAL

ACID		NORMAL	BASE
p	Н	HCO ₃	
Pa	.O ₂		

	Н	7.28	ACIDIC OALKALOTIC ONORMAL
Pa	CO ₂	47	ACIDIC OALKALOTIC ONORMAL
H	CO ₃	24	OACIDIC OALKALOTIC ONORMAL

Is the pH in range? YES NO
Is the (O₂ in range? YES NO
Is the H(O₃ in range? YES NO

UNCOMPENSATED

PARTIALLY COMPENSATED

FULLY COMPENSATED

FINAL ANSWER:

UNCOMPENSATED RESPIRATORY ACIDOSIS

pH out of range, but H(O3 in range means uncompensated

2

рН	7.3	1
PaCO ₂	48	1
HCO ₃	29	1

ACID	NORMAL	BASE
рΗ		HCO ₃
PaCO ₂		

рН	7.3	ACIDIC OALKALOTIC ONORMAL
PaCO ₂	48	ACIDIC OALKALOTIC ONORMAL
HCO ₃	29	OACIDIC OALKALOTIC ONORMAL

Is the pH in range? \bigcirc YES \bigcirc NO Is the $(O_2$ in range? \bigcirc YES \bigcirc NO Is the H(O₃ in range? \bigcirc YES \bigcirc NO

UNCOMPENSATED

PARTIALLY COMPENSATED

FULLY COMPENSATED

FINAL ANSWER:

PARTIALLY COMPENSATED RESPIRATORY ACIDOSIS

All three (pH, Pa(O₂ & H(O₃) out of range means partially compensated

3

рН	7.49	1
PaCO ₂	33	1
HCO ₃	24	NORMAL

ACID	NORMAL	BASE
	HCO ₃	рН
		PaCO ₂

рΗ	7.49	OACIDIC OALKALOTIC ONORMAL
PaCO ₂	33	OACIDIC OALKALOTIC ONORMAL
HCO ₃	24	OACIDIC OALKALOTIC ONORMAL

Is the pH in range? YES NO
Is the CO₂ in range? YES NO
Is the HCO₃ in range? YES NO

UNCOMPENSATED

PARTIALLY COMPENSATED

FULLY COMPENSATED

FINAL ANSWER:

UNCOMPENSATED RESPIRATORY ALKALOSIS

pH out of range but HCO₃ in range means uncompensated





рН	7.48	1
PaCO ₂	31	1
HCO ₃	20	1

	ACID	NORMAL	BA	SE
	HCO ₃		pl	H
•			PaC	.O ₂

рН	7.48	OACIDIC VALKALOTIC ONORMAL
PaCO ₂	31	OACIDIC VALKALOTIC ONORMAL
HCO ₃	20	ACIDIC OALKALOTIC ONORMAL

Is the pH in range? \bigcirc YES \bigcirc NO Is the $(O_2$ in range? \bigcirc YES \bigcirc NO Is the H(O₃ in range? \bigcirc YES \bigcirc NO

UNCOMPENSATED

PARTIALLY COMPENSATED

FULLY COMPENSATED

FINAL ANSWER:

PARTIALLY COMPENSATED RESPIRATORY ALKALOSIS

All three (pH, Pa(O₂ & H(O₃) out of range means partially compensated

5

рН	7.32	1
PaCO ₂	40	NORMAL
HCO ₃	16	1

ACID	NORMAL	BASE
рΗ	PaCO ₂	
HCO ₃		

рН	7.32	ACIDIC OALKALOTIC ONORMAL
PaCO ₂	40	OACIDIC OALKALOTIC ONORMAL
HCO,	16	ACIDIC OALKALOTIC ONORMAL

Is the pH in range? YES NO
Is the CO₂ in range? YES NO
Is the HCO₃ in range? YES NO

UNCOMPENSATED

PARTIALLY COMPENSATED

FULLY COMPENSATED

FINAL ANSWER:

UNCOMPENSATED METABOLIC ACIDOSIS

pH out of range but Pa(O₂ in range means uncompensated



рН	7.34	→
PaCO ₂	47	1
HCO ₃	31	1

ACID		NORMAL	BASE
pŀ	-		HCO ₃
PaC	0,		

рΗ	7.34	ACIDIC OALKALOTIC ONORMAL
PaCO ₂	47	ACIDIC OALKALOTIC ONORMAL
HCO ₃	31	OACIDIC OALKALOTIC ONORMAL

Is the pH in range? YES NO
Is the CO₂ in range? YES NO
Is the HCO₃ in range? YES NO

UNCOMPENSATED

PARTIALLY COMPENSATED

FULLY COMPENSATED

FINAL ANSWER:

PARTIALLY COMPENSATED RESPIRATORY ACIDOSIS

All three (pH, Pa(O₂ & H(O₃) out of range means partially compensated



Use the rome method for questions 7-12

U

рН	7.35	
PaCO ₂	46	
HCO ₃	30	

Respiratory	рН↑	(0₂ ↓	Alkalosis
O pposite	рН↓	(O ₂ ↑	Acidosis
M etabolic	рН↑	H(O₃ ↑	Alkalosis

pH ↓ H(O₃ ↓ Acidosis

рН	7.35	OACIDIC OALKALOTIC ONORMAL
PaCO ₂	46	OACIDIC OALKALOTIC ONORMAL
HCO ₃	30	OACIDIC OALKALOTIC ONORMAL

Equal

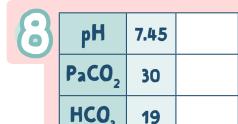
Is the pH in range?	OYES	ONO
Is the (O2 in range?	OYES	\bigcircNO
Is the H(O ₃ in range?	OYES	\bigcirc NO

()	LINCOMPENSATED
	UNCOMPENSATED

	DARTIALIN	COMPENSATED
)	PAKIIALLY	CUMPENSALEL

			NSATED
()	EIII IV	COMDE	NICATED
()	PULLI	COMPE	NOMIEU

FINAL ANSWER:



pH ↑ (O₂ ↓ Alkalosis Respiratory Opposite pH ↓ (O₂ ↑ Acidosis pH ↑ H(O₃ ↑ Alkalosis Metabolic pH ↓ H(O₃ ↓ Acidosis Equal

рН	7.45	OACIDIC OALKALOTIC ONORMAL
PaCO ₂	30	OACIDIC OALKALOTIC ONORMAL
HCO ₃	19	OACIDIC OALKALOTIC ONORMAL

Is the pH in range? **OYES ONO** Is the $(0_2$ in range? \bigcirc YES \bigcirc NO Is the H(O₃ in range? ○YES ○NO

()	IINCOMPENSATE
	UNCOMPENSATE

	FIIIIY	COMPE	VSATED
١.	/ FULLI	COPIFEI	13MI ED

FINAL ANSWER:



pН 7.31 PaCO, 30 HCO, 18

pH↑ (O, ↓ Alkalosis Respiratory **O**pposite pH ↓ (O₂ ↑ Acidosis **M**etabolic pH ↑ HCO₃ ↑ Alkalosis pH ↓ H(O₃ ↓ Acidosis Equal

pН OACIDIC OALKALOTIC ONORMAL 7.31 PaCO, OACIDIC OALKALOTIC ONORMAL 30 HCO, OACIDIC OALKALOTIC ONORMAL 18

Is the pH in range? **OYES ONO** Is the $(0_2$ in range? \bigcirc YES \bigcirc NO Is the H(O₃ in range? ○YES ○ NO

UNCOMPENSATED

PARTIALLY COMPENSATED

FULLY COMPENSATED

FINAL ANSWER: -



FINAL ANSWER: -

Use the rome method for questions 7-12

10	рН	7.35		Respiratory pH↑ (O ₂ ↓ Alkalosis	Is the pH in range? OYES ONO Is the (O2 in range? OYES ONO
	PaCO ₂	30		Opposite pH ↓ (O ₂ ↑ Acidosis Metabolic pH ↑ HCO ₃ ↑ Alkalosis	Is the H(O₃ in range? ○YES ○ NO
	HCO ₃	20		Equal pH ↓ HCO ₃ ↓ Acidosis	UNCOMPENSATED PARTIALLY COMPENSATED
					FULLY COMPENSATED
	рН	7.35	ACIE	OIC OALKALOTIC ONORMAL	FINAL ANGWER
	PaCO ₂	30	OACIE	OIC OALKALOTIC ONORMAL	FINAL ANSWER:
	HCO ₃	20	ACIE	OIC OALKALOTIC ONORMAL	
W	рН	7.44		Respiratory pH↑ (O ₂ ↓ Alkalosis	Is the pH in range? YES NO Is the (O ₂ in range? YES NO
	PaCO ₂	49		Opposite pH ↓ (O ₂ ↑ Acidosis Metabolic pH ↑ HCO ₃ ↑ Alkalosis	Is the H(O ₃ in range? • YES • NO
	нсо	20			UNCOMPENSATED
	HCO ₃	28		Equal pH ↓ HCO ₃ ↓ Acidosis	PARTIALLY COMPENSATED
	рН	7.44	OACII	DIC OALKALOTIC ONORMAL	FULLY COMPENSATED
	•				FINAL ANSWER:
	PaCO ₂	49	OACIE	OIC OALKALOTIC ONORMAL	
	HCO ₃	28	OACIE	OIC OALKALOTIC ONORMAL	
12	рН	7.5		Respiratory pH ↑ (O ₂ ↓ Alkalosis	Is the pH in range? OYES ONO
	PaCO,	50		O pposite pH \downarrow (O ₂ \uparrow Acidosis	Is the (O₂ in range? ○YES ○ NO Is the H(O₃ in range? ○YES ○ NO
	1 2 0 2	30		Metabolic pH ↑ HCO ₃ ↑ Alkalosis	UNCOMPENSATED
	HCO ₃	28		E qual pH ↓ HCO ₃ ↓ Acidosis	PARTIALLY COMPENSATED
					FULLY COMPENSATED
	рH	7.5	ACID	IC OALKALOTIC ONORMAL	

OACIDIC OALKALOTIC ONORMAL

OACIDIC OALKALOTIC ONORMAL

PaCO,

HCO,

50

28





рН	7.35	NORMAL
PaCO ₂	46	1
HCO ₃	30	1

pH is normal, but at the acidic end of the range!

Kespiratory	рнт	(O ₂ ↓	Alkalosis
O pposite	рН↓	(O ₂ ↑	Acidosis
Metabolic	рН↑	H(O₃ ↑	Alkalosis
Equal	рН↓	H(O, ↓	Acidosis

Is the pH in range?		
Is the (O2 in range?	OYES	⊘ NO
Is the HCO3 in range?	YES	⊘ NO

UNCOMPENSATED

PARTIALLY COMPENSATED **FULLY COMPENSATED**

рН	7.35	OACIDIC OALKALOTIC ONORMAL
PaCO ₂	46	ACIDIC OALKALOTIC ONORMAL
HCO ₃	30	OACIDIC OALKALOTIC ONORMAL

FINAL ANSWER:

FULLY COMPENSATED RESPIRATORY ACIDOSIS

pH 7.45 **NORMAL** PaCO, 30

HCO,

			pH is norm alkalotic e	al, but at the nd of the range!
Respiratory	рН↑	(0₂ ↓	Alkalosis	Is the pH
O pposite	рН↓	(O ₂ ↑	Acidosis	Is the (0 Is the H(
M etabolic	рН↑	HCO₃ ↑	Alkalosis	is the no
E qual	рН↓	H(O ₃ ↓	Acidosis	

рН	7.45	OACIDIC OALKALOTIC ONORMAL
PaCO ₂	30	OACIDIC VALKALOTIC ONORMAL
HCO ₃	19	VACIDIC OALKALOTIC ONORMAL

上

丁

Is the pH in range? **YES** ONO Is the (O₂ in range? **YES NO** Is the H(O₃ in range? ○YES **♥NO**

\bigcup	UNCOMPENSALED
	PARTIALLY COMPENSATED
	FULLY COMPENSATED

	7.45	ACIDIC OALKALOTIC ONORMAL
0,	30	ACIDIC ALKALOTIC ONORMAL
),	19	ACIDIC OALKALOTIC ONORMAL

FINAL ANSWER:

FULLY COMPENSATED RESPIRATORY ALKALOSIS

рН	7.31	→
PaCO ₂	30	1
HCO ₃	18	1

19

Respiratory	рН↑	(0₂ ↓	Alkalosis
O pposite	рН↓	(O ₂ ↑	Acidosis
M etabolic	рН↑	H(O₃ ↑	Alkalosis
Equal	рН↓	H(O³ ↑	Acidosis

рН	7.31	ACIDIC OALKALOTIC ONORMAL
PaCO ₂	30	OACIDIC OALKALOTIC ONORMAL
HCO ₃	18	ACIDIC OALKALOTIC ONORMAL

Is the pH in range? **YES NO** Is the (O₂ in range? **YES NO** Is the H(O₃ in range? ○YES ♥NO **UNCOMPENSATED**

PARTIALLY COMPENSATED FULLY COMPENSATED

FINAL ANSWER:

PARTIALLY COMPENSATED **METABOLIC ACIDOSIS**

> All three (pH, Pa(O₂ & H(O₃) out of range means partially compensated





10

рН	7.35	NORMAL
PaCO ₂	30	1
HCO ₃	20	1

pH is normal, but at the acidic end of the range!

Respiratory pH \uparrow $(O_2 \downarrow$ Alkalosis

Opposite pH \downarrow $(O_2 \uparrow$ Acidosis

Metabolic pH \uparrow $HCO_3 \uparrow$ Alkalosis

Equal pH ↓ H(O₃ ↓ Acidosis

рН	7.35	OACIDIC OALKALOTIC ONORMAL
PaCO	30	OACIDIC OALKALOTIC ONORMAL
НСО	3 20	ACIDIC OALKALOTIC ONORMAL

Respiratory

Is the pH in range? YES NO
Is the (O₂ in range? YES NO
Is the H(O₃ in range? YES NO

) UNCOMPENSATED

PARTIALLY COMPENSATED

FULLY COMPENSATED

FINAL ANSWER:

FULLY COMPENSATED METABOLIC ACIDOSIS

H

рΗ	7.44	NORMAL
PaCO ₂	49	1
HCO ₃	28	1

◆ pH is normal, but at the alkalotic end of the range!

pH ↑ (O₂ ↓ Alkalosis

Opposite pH ↓ (O, ↑ Acidosis

Metabolic pH ↑ HCO₃ ↑ Alkalosis

Equal pH ↓ H(O₃ ↓ Acidosis

рН	7.44	OACIDIC OALKALOTIC ONORMAL
PaCO ₂	49	ACIDIC OALKALOTIC ONORMAL
HCO,	28	OACIDIC OALKALOTIC ONORMAL

Is the pH in range? YES NO
Is the (O₂ in range? YES NO

Is the H(O₃ in range? OYES NO

UNCOMPENSATED

PARTIALLY COMPENSATED

FULLY COMPENSATED

FINAL ANSWER:

FULLY COMPENSATED METABOLIC ALKALOSIS

12

рН	7.5	1
PaCO ₂	50	1
HCO ₃	28	1

Respiratory pH \uparrow $\mathrm{CO_2} \downarrow$ Alkalosis

Opposite $pH \downarrow (O_2 \uparrow Acidosis)$

Metabolic pH↑ HCO3↑ Alkalosis

Equal pH ↓ H(O₃ ↓ Acidosis

PaCO₂ 50 ACIDIC ALKALOTIC NORMAL

HCO₃ 28 ACIDIC ALKALOTIC NORMAL

Is the pH in range? \bigcirc YES \bigcirc NO Is the HCO3 in range? \bigcirc YES \bigcirc NO

UNCOMPENSATED

PARTIALLY COMPENSATED

FULLY COMPENSATED

FINAL ANSWER:

PARTIALLY COMPENSATED METABOLIC ALKALOSIS

All three (pH, Pa(O₂ & H(O₃) out of range means partially compensated



Dear future nurse,

You may be stressed, you may feel tired, and you may want to give up. Nursing school is hard, there's no doubt about it. Everyone cries, everyone has meltdowns, and there will be moments you don't feel qualified for the task at hand. But take heart, the challenge only makes you stronger. Put in the work, show up on time, and find an amazing study group. You got this!

- Kristine Tuttle, BSN, RN





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