Calc Air to Oxygen Tation (A:O)

To obtain an air to oxygen ration (A:O) you must use the MAGIC BOX.

Use 21 <= 35%

Use 20 > 35%

Example: A patient is on 35% venti mask. What is his air to oxygen ratio?

Magic Box

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21 **X**

35

100 **X**

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When you find the difference across you get...

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21 **65**

35

100 **14**

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Your air to oxygen ration is **65 : 14 or 5:1**

What is this patient's TOTAL FLOW if he is on 35% FiO2 at 3 lpm oxygen?

Use the ratio you obtained from the magic box 5:1

Add the ration together (5 + 1 = 6)

Multiply this 6 parts with your lpm (3). So... **6 X 3 = 18 lpm**

Total Flow IS 18 lpm

To Calculate Total Flow...

1. Use the magic box to get your ratio
2. Add your ratio together
3. Multiply the sum of your ratio with the lpm of oxygen.
4. This is your total flow.

Calculate FIO2

To figure out what Fio2 to place your patient on if you have an ABG...

You record their current PaO2 from the ABG

You record their current FiO2 from the device they are using for oxygen (if on RA use 21%)

Then you cross multiply to solve for **X**

Your desired PaO2 depends on if their current PaO2 is high or low. If it is low choose 80 (low range for normal) and if it is high use 100 (high range for normal).

Example:

Patient's PaO2 from their ABG is 70 mmHg. They are on a 2 lpm nasal cannula.

We know that a 2 lpm NC supplies approximately 29% FiO2 (RA + 4%+4%)

So...

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Current PaO2 Desired PaO2

X

Current FiO2 **X**

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70 80

X

.29 **X**

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So...

70 (X) = 80 (.29)

70X = 23

X = 23 / 70

X = .328

X = 33% FiO2

You need to place your patient on approximately 33% FiO2 to bring his PaO2 up to a normal value of 80 mmHg.

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