



MEDMATHMINDSET PROVIDER MATH ATLAS

Paramedic math, one domain at a time.

A focused, printable reference built from MedMathMindset's current provider-specific quantitative blueprint.

BLUEPRINT SNAPSHOT

20 domains | 100% total instructional weight

Domains are ordered from highest to lowest MedMathMindset instructional weight. These are MedMathMindset training weights, not official credentialing-body exam percentages unless an official source explicitly states otherwise.

USE IT THREE WAYS

Teach | Review | Print

Use the worked examples as a quick class reference, learner review sheet, or printable teaching aid.

WHAT THE ATLAS ADDS

Example + reasoning + check

Each domain pairs one worked example with the setup, answer, and a reasonableness check.

DOMAINS IN THIS ATLAS

1. Dimensional Analysis

8%

3. Weight-Based Dosing

8%

5. IV Drip Rates

7%

7. Ratios / Proportions

6%

9. Oxygen Cylinder Duration

5%

11. Ventilator / Tidal Volume

5%

13. Alveolar Ventilation

4%

2. Titrated Infusions

8%

4. Infusion Rates

7%

6. Medication Dose Calculations

7%

8. Unit Conversions

6%

10. Oxygen Delivery

5%

12. ABG / Gas Compensation

4%

14. Cardiac Output / Hemodynamics

4%

IMPORTANT SCOPE NOTE

Educational examples only. This atlas does not replace local protocols, medication references, device instructions, scope-of-practice requirements, official credentialing test plans, or clinical judgment.

15. Hemodynamic Indices

2%

20. Lab Interpretation Math

2%



DOMAIN 1 OF 20

Dimensional Analysis

8%
MMM weight

Dimensional Analysis is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

Available: 10 mg in 2 mL. The ordered dose is 30 mg.
How many mL will deliver the ordered dose?

SETUP / REASONING

$$? \text{ mL} = \frac{2 \text{ mL}}{10 \text{ mg}} \times \frac{30 \text{ mg}}{1} = 6 \text{ mL}$$

ANSWER**6 mL****QUICK CHECK**

Unwanted units should cancel cleanly, leaving only the requested final unit.

DOMAIN 2 OF 20

Titrated Infusions

8%
MMM weight

Titrated Infusions is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

An infusion contains 400 mg in 250 mL. For a 80 kg patient receiving 5 mcg/kg/min, what pump rate delivers the dose? Round to the nearest tenth.

SETUP / REASONING

Concentration = 1600 mcg/mL; hourly dose = 24000 mcg/hr; rate = 15 mL/hr.

ANSWER**15 mL/hr****QUICK CHECK**

Track every unit conversion-especially mg<->mcg, minutes<->hours, and kg-before solving the pump rate.



DOMAIN 3 OF 20

Weight-Based Dosing

8%

MMM weight

Weight-Based Dosing is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

A 70 kg patient is ordered 0.1 mg/kg. What dose is ordered?

SETUP / REASONING

$$70 \times 0.1 = 7 \text{ mg.}$$

ANSWER**7 mg****QUICK CHECK**

Check that the weight unit matches the dose unit before multiplying.

DOMAIN 4 OF 20

Infusion Rates

7%

MMM weight

Infusion Rates is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

1000 mL is to infuse over 8 hours. What pump rate is needed?

SETUP / REASONING

$$1000 / 8 = 125 \text{ mL/hr.}$$

ANSWER**125 mL/hr****QUICK CHECK**

Volume divided by hours should produce mL/hr; confirm that the rate times time returns the original volume.



DOMAIN 5 OF 20

IV Drip Rates

7%
MMM weight

IV Drip Rates is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

Infuse 500 mL over 4 hours with tubing calibrated at 15 gtt/mL. What gravity rate is needed? Round to the nearest whole drop.

SETUP / REASONING

$500 \times 15 / 240 = 31.25$, which rounds to 31 gtt/min.

ANSWER**31 gtt/min****QUICK CHECK**

Hours must be converted to minutes before using a gtt/min relationship.

DOMAIN 6 OF 20

Medication Dose Calculations

7%
MMM weight

Medication Dose Calculations is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

Available: 10 mg in 2 mL. The ordered dose is 30 mg. How many mL will deliver the ordered dose?

SETUP / REASONING

$30 \times 2 / 10 = 6 \text{ mL}$.

ANSWER**6 mL****QUICK CHECK**

At a fixed concentration, a larger desired dose requires a proportionally larger volume.



DOMAIN 7 OF 20

Ratios / Proportions

6%

MMM weight

Ratios / Proportions is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

A 2:5 relationship is maintained. If the second quantity becomes 20, what is the first quantity?

SETUP / REASONING

$$2/5 = x/20; x = 8.$$

ANSWER**8****QUICK CHECK**

Cross-products should agree when the two ratios are truly equivalent.

DOMAIN 8 OF 20

Unit Conversions

6%

MMM weight

Unit Conversions is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

Convert 750 mg to g.

SETUP / REASONING

Use the 1000:1 metric relationship; the result is 0.75 g.

ANSWER**0.75 g****QUICK CHECK**

Confirm the direction of the conversion and that the final unit is exactly the requested unit.



DOMAIN 9 OF 20

5%
MMM weight

Oxygen Cylinder Duration

Oxygen Cylinder Duration is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

An E cylinder reads 1800 psi. Use a 200 psi reserve and a factor of 0.28. At 4 L/min, approximately how many minutes remain? Round to the nearest minute.

SETUP / REASONING

$(1800 - 200) \times 0.28 / 4 = 112$, about 112 min.

ANSWER**112 min****QUICK CHECK**

Subtract the intended reserve before applying the cylinder factor and flow rate.

DOMAIN 10 OF 20

5%
MMM weight

Oxygen Delivery

Oxygen Delivery is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

Using the common nasal-cannula estimate of about 24% at 1 L/min plus about 4 percentage points per additional L/min, estimate FiO₂ at 3 L/min.

SETUP / REASONING

$24\% + 2 \times 4\% \approx 32\%$. This is an approximation, not a measured FiO₂.

ANSWER**32 %****QUICK CHECK**

Make sure the oxygen quantity and flow use compatible units before dividing.



DOMAIN 11 OF 20

Ventilator / Tidal Volume

5%
MMM weight

Ventilator / Tidal Volume is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

A target tidal volume is 6 mL/kg for a 70 kg patient. What tidal volume does that equal?

SETUP / REASONING

$$6 \times 70 = 420 \text{ mL}$$

ANSWER**420 mL****QUICK CHECK**

Confirm whether the requested value is per breath, per kilogram, or per minute before calculating.

DOMAIN 12 OF 20

ABG / Gas Compensation

4%
MMM weight

ABG / Gas Compensation is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

Using Winter's formula, expected PaCO_2 ? $1.5 \times \text{HCO}_3 + 8$. If HCO_3 is 16 mEq/L, what is the center of the expected PaCO_2 range?

SETUP / REASONING

$$1.5 \times 16 + 8 = 32 \text{ mmHg (the usual 2 range is considered separately)}$$

ANSWER**32 mmHg****QUICK CHECK**

Use the stated compensation relationship exactly and interpret the result as an expected comparison value, not a diagnosis by itself.



DOMAIN 13 OF 20

Alveolar Ventilation

4%
MMM weight

Alveolar Ventilation is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

Use alveolar ventilation = (tidal volume - dead space) x respiratory rate. If VT=500 mL, dead space=150 mL, and RR=12/min, what is alveolar ventilation?

SETUP / REASONING

$(500 - 150) \times 12 = 4200 \text{ mL/min} = 4.2 \text{ L/min}$.

ANSWER

4.2 L/min

QUICK CHECK

Keep respiratory rate, tidal volume, and dead-space units consistent; the result should represent effective ventilation.

DOMAIN 14 OF 20

Cardiac Output / Hemodynamics

4%
MMM weight

Cardiac Output / Hemodynamics is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

Heart rate is 70/min and stroke volume is 70 mL. What is cardiac output in L/min?

SETUP / REASONING

$70 \times 70 = 4900 \text{ mL/min} = 4.9 \text{ L/min}$.

ANSWER

4.9 L/min

QUICK CHECK

Heart rate x stroke volume yields mL/min first; convert to L/min only after multiplying.



DOMAIN 15 OF 20

Percentages

4%
MMM weight

Percentages is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

What is 25% of 80?

SETUP / REASONING

$25\% \times 80 = 20$.

ANSWER

20

QUICK CHECK

The result should be the stated fraction of the whole; compare its magnitude with 0% and 100%.

DOMAIN 16 OF 20

BSA / Burns

3%
MMM weight

BSA / Burns is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

Using $4 \text{ mL} \times \text{kg} \times \% \text{TBSA}$, what is the 24-hour fluid estimate for a 70 kg patient with 20% TBSA?

SETUP / REASONING

$4 \times 70 \times 20 = 5600 \text{ mL}$.

ANSWER

5600 mL

QUICK CHECK

Verify that the formula, body weight, and %TBSA are the intended inputs before interpreting the estimate.



DOMAIN 17 OF 20

Whole Number Operations

3%
MMM weight

Whole Number Operations is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

A supply area starts with 24 counted items, adds 18, then uses 11. How many remain?

SETUP / REASONING

$$24 + 18 - 11 = 31.$$

ANSWER**31 items****QUICK CHECK**

Reconcile the starting quantity, additions, and use; the ending count should fit the story.

DOMAIN 18 OF 20

Fractions / Decimals

2%
MMM weight

Fractions / Decimals is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

Write $\frac{3}{4}$ as a decimal.

SETUP / REASONING

$$3 / 4 = 0.75.$$

ANSWER**0.75****QUICK CHECK**

For a proper fraction, the decimal should fall between 0 and 1.



DOMAIN 19 OF 20

Hemodynamic Indices

2%
MMM weight

Hemodynamic Indices is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

Estimate MAP using $(\text{SBP} + 2 \times \text{DBP}) / 3$ for a blood pressure of 120/80.

SETUP / REASONING

$(120 + 2 \times 80) / 3 = 93.3 \text{ mmHg}$.

ANSWER

93.333 mmHg

QUICK CHECK

For estimated MAP, DBP is weighted twice; the result should fall between systolic and diastolic pressures.

DOMAIN 20 OF 20

Lab Interpretation Math

2%
MMM weight

Lab Interpretation Math is included because it matches expected quantitative work for this provider level. Paramedic scope supports medication, infusion, airway/ventilation, oxygen, cardiac, and operational calculations expected in advanced EMS practice.

EXAMPLE

A measured value is 6 and the comparison/reference value is 4. By what percentage is the measured value higher?

SETUP / REASONING

$(6 - 4) / 4 \times 100 = 50\%$.

ANSWER

50 %

QUICK CHECK

Use the correct reference value in the denominator when computing percentage change.

REFRESH PRINTED COPIES PERIODICALLY

Provider scope and MedMathMindset instructional weighting may change as the canonical provider-domain layer is updated.