



MEDMATHMINDSET PROVIDER MATH ATLAS

Sonography math, one domain at a time.

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

BLUEPRINT SNAPSHOT

10 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. Sonography Math 30%

3. Unit Conversions 12%

5. Clinical Index / Score Interpretation 8%

7. Percentages 8%

9. Whole Number Operations 4%

2. Cardiac Output / Hemodynamics 12%

4. Ratios / Proportions 10%

6. Dimensional Analysis 8%

8. Provider Operations Math 6%

10. Fractions / Decimals 2%

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.



DOMAIN 1 OF 10

Sonography Math

30%
MMM weight

Sonography Math is included because it matches expected quantitative work for this provider level. Sonography scope emphasizes ultrasound physics, Doppler/hemodynamic relationships, measurement, ratios, and image-protocol calculations-not medication/IV domains.

EXAMPLE

Fractional shortening = (end-diastolic diameter - end-systolic diameter) / end-diastolic diameter x 100. If the diameters are 5 cm and 3 cm, what is fractional shortening?

SETUP / REASONING

$$(5 - 3) / 5 \times 100 = 40\%$$

ANSWER**40 %****QUICK CHECK**

For a percentage relationship, confirm the numerator is the intended change and the denominator is the intended reference measurement.

DOMAIN 2 OF 10

Cardiac Output / Hemodynamics

12%
MMM weight

Cardiac Output / Hemodynamics is included because it matches expected quantitative work for this provider level. Sonography scope emphasizes ultrasound physics, Doppler/hemodynamic relationships, measurement, ratios, and image-protocol calculations-not medication/IV domains.

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 3 OF 10

Unit Conversions

12%
MMM weight

Unit Conversions is included because it matches expected quantitative work for this provider level. Sonography scope emphasizes ultrasound physics, Doppler/hemodynamic relationships, measurement, ratios, and image-protocol calculations-not medication/IV domains.

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 4 OF 10

Ratios / Proportions

10%
MMM weight

Ratios / Proportions is included because it matches expected quantitative work for this provider level. Sonography scope emphasizes ultrasound physics, Doppler/hemodynamic relationships, measurement, ratios, and image-protocol calculations-not medication/IV domains.

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 5 OF 10

Clinical Index / Score Interpretation

8%
MMM weight

Clinical Index / Score Interpretation is included because it matches expected quantitative work for this provider level. Sonography scope emphasizes ultrasound physics, Doppler/hemodynamic relationships, measurement, ratios, and image-protocol calculations-not medication/IV domains.

EXAMPLE

24 events occur during 6 hours. What is the event index per hour?

SETUP / REASONING

$24 / 6 = 4$ events/hr.

ANSWER

4 events/hr

QUICK CHECK

An index is a rate: confirm both the numerator and the time/exposure denominator.

DOMAIN 6 OF 10

Dimensional Analysis

8%
MMM weight

Dimensional Analysis is included because it matches expected quantitative work for this provider level. Sonography scope emphasizes ultrasound physics, Doppler/hemodynamic relationships, measurement, ratios, and image-protocol calculations-not medication/IV domains.

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 7 OF 10

Percentages

8%

MMM weight

Percentages is included because it matches expected quantitative work for this provider level. Sonography scope emphasizes ultrasound physics, Doppler/hemodynamic relationships, measurement, ratios, and image-protocol calculations-not medication/IV domains.

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 8 OF 10

Provider Operations Math

6%

MMM weight

Provider Operations Math is included because it matches expected quantitative work for this provider level. Sonography scope emphasizes ultrasound physics, Doppler/hemodynamic relationships, measurement, ratios, and image-protocol calculations-not medication/IV domains.

EXAMPLE

A device has 600 usable units and consumes 10 units each minute. Ignoring reserve, how many minutes will it run?

SETUP / REASONING

$600 / 10 = 60$ minutes.

ANSWER

60 min

QUICK CHECK

A quantity divided by a consumption rate should produce a time or capacity that fits the operating context.



DOMAIN 9 OF 10

Whole Number Operations

4%
MMM weight

Whole Number Operations is included because it matches expected quantitative work for this provider level. Sonography scope emphasizes ultrasound physics, Doppler/hemodynamic relationships, measurement, ratios, and image-protocol calculations-not medication/IV domains.

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 10 OF 10

Fractions / Decimals

2%
MMM weight

Fractions / Decimals is included because it matches expected quantitative work for this provider level. Sonography scope emphasizes ultrasound physics, Doppler/hemodynamic relationships, measurement, ratios, and image-protocol calculations-not medication/IV domains.

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.

REFRESH PRINTED COPIES PERIODICALLY

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