

safeMedicate Rounding Rules Guidelines

Using This Document





This document outlines the rounding requirements for each of the safeMedicate modules.

The following pages give examples of how these rules are applied to typical answers within the modules.

Each example presents the rounding rule, the calculated answer, the rounded answer and how the rounded answer is represented within the appropriate safeMedicate authentic technical measurement device / measurement vehicle. Rounding requirements throughout safeMedicate modules are expressed in both decimal place (d.p) and fraction nomenclature. This is included to support understanding of the relationship between decimal and fraction values, and the design of the "parts of a whole" calibration marks, used in a range of measurement devices/vehicles, e.g., volumetric syringes/scored tablets.

The safeMedicate module to which the requirement applies is also displayed via a colour key.

Module Key

-  **Essential Skills**
-  **Bodyweight & Body Surface Area (BSA) Based Calculations**
-  **Injectable Medicines Therapy**
-  **Word Problem Skills**

safeMedicate Rounding Rules Guidelines

Essential Skills

Capsule based doses must never be split. Equation answers will always be whole numbers. Whilst not recommended, it may be necessary to split scored tablets into two 0.5 (½) doses.

Liquid medicine and Injection dosages are rounded to the nearest 1 decimal place or 1 d.p. (tenth) if the amount exceeds 1 mL.

If the amount is less than 1 mL, the dosage is rounded to the nearest 2 decimal places (hundredths).

Accuracy when calculating I.V. infusion rates for crystalloid and colloid solutions, blood and blood products is critical to patient safety.

In this module all calculated millilitre per hour (mL/hour) infusion rates for adults are required to be rounded to the nearest whole number. All calculated millilitre per hour (mL/hour) infusion rates for children are required to be rounded to the nearest 1 decimal place or 1 d.p (tenths).

All calculated drops per minute infusion rates are required to be rounded to the nearest whole number.

Bodyweight & Body Surface Area Based Calculations

Liquid medicine and Injection dosages are rounded to the nearest 1 decimal place (tenths) if the amount exceeds 1 mL. If the amount is less than 1 mL, the dosage is rounded to the nearest 2 decimal places (hundredths).

Injectable Medicines Therapy

The infusion of medications directly into the venous system means that accuracy in the calculation and technical measurement of these medications is especially critical to patient safety.

In this module all calculated millilitre per hour (mL/hr) infusion rates using volumetric pumps are required to be rounded to the nearest 1 decimal place (tenths). All calculated millilitre per hour (mL/hr) infusion rates using syringe pumps are required to be rounded to the nearest 2 decimal places (hundredths).

Word Problem Skills

Rounding for Essential Skills

Liquid medicine and Injection dosages are rounded to the nearest 1 decimal place or 1 d.p. (tenth) if the amount exceeds 1 mL.

If the amount is less than 1 mL, the dosage is rounded to the nearest 2 decimal places (hundredths).

Intravenous infusion rates for crystalloid and colloid solutions, blood and blood products are expressed as guttae per minute or drops per minute, or millilitre per hour (mL/hr). These are always rounded to the nearest whole number for adults and rounded to the nearest 1 decimal place (tenths) for children.

Rounding for Bodyweight & BSA Based Calculations Word Based Problems

Liquid medicine and Injection dosages are rounded to the nearest 1 decimal place or 1 d.p. (tenth) if the amount exceeds 1 mL.

If the amount is less than 1 mL, the dosage is rounded to the nearest 2 decimal places (hundredths).

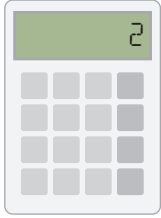

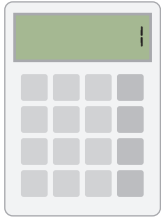
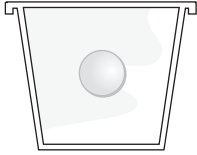
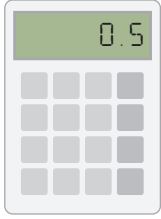

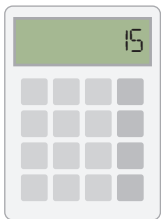
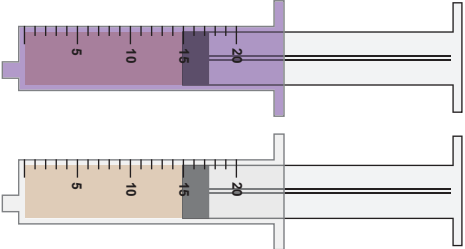
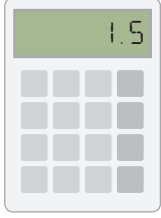
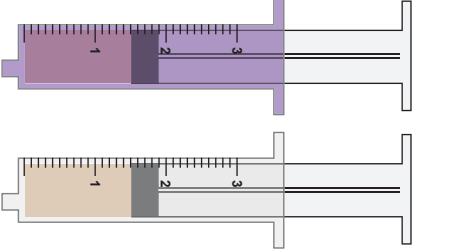
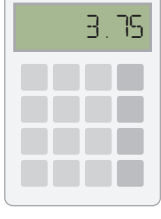
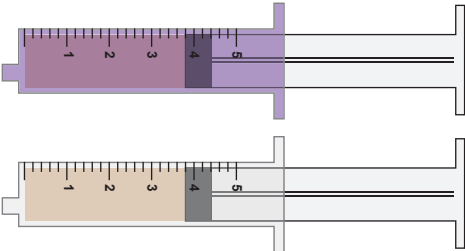
Intravenous infusion rates for crystalloid and colloid solutions, blood and blood products are expressed as millilitre per hour (mL/hr). These are rounded to the nearest 1 decimal place (tenths).

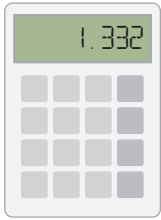
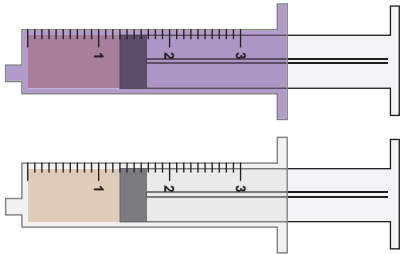
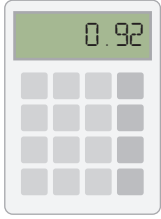
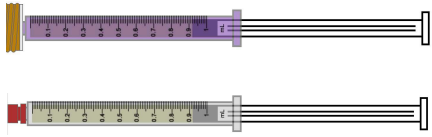
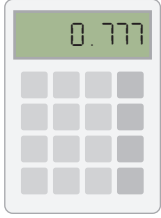
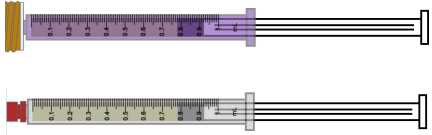
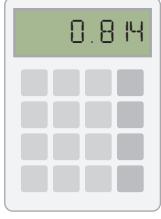
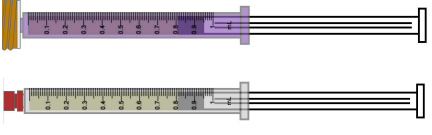
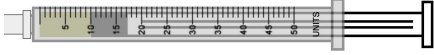
Rounding for Injectable Medicines Therapy Word Based Problems

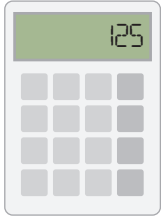
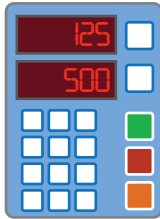
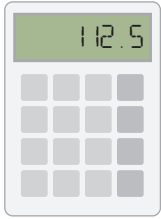
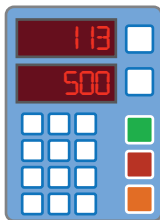
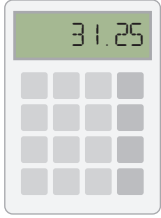
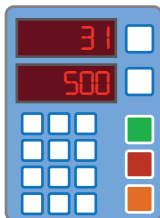
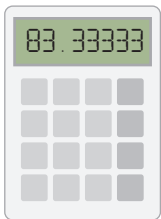
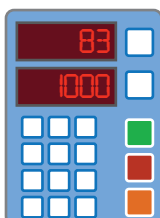
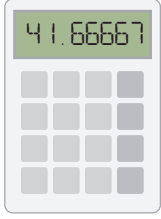
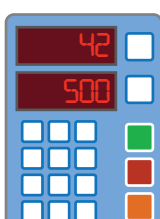
Millilitre per hour (mL/hr) I.V. Injectable medicines infusions administered via volumetric pumps should be rounded to the nearest 1 decimal place (tenth). Millilitre per hour (mL/hr) I.V. Injectable medicines infusions administered via syringe pumps should be rounded to the nearest 2 decimal places (hundredths)

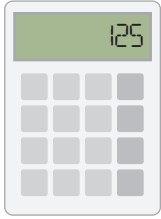
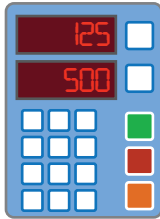
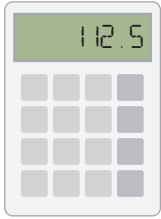
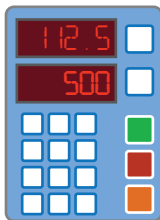
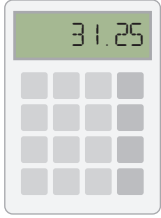
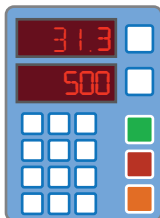
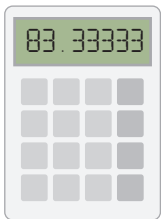
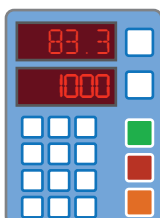
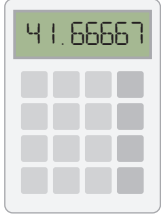

Trailing Zeros & Floating Decimal Points

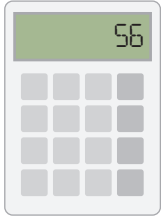
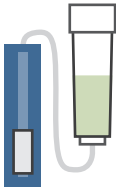
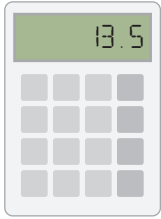
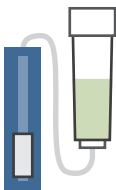
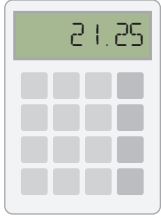
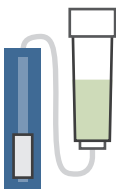
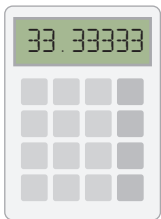
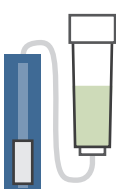
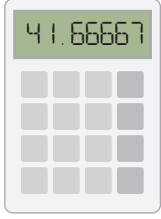
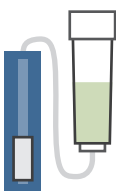
Note that for patient safety purposes, unnecessary use of decimal points and trailing zeros must be avoided. For example, a dose of 3 mg should **never** be written as 3.0 mg, and a volume of 5 mL should **never** be written as 5.0 mL. Floating decimal points must be avoided. For example, a volume of 0.5 mL should **never** be written as .5 mL.

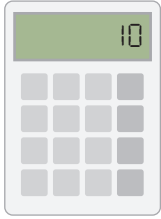
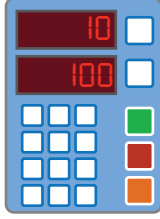
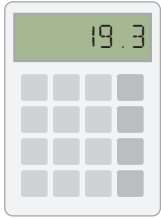
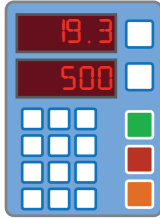
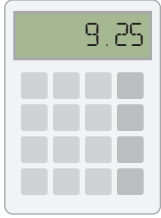
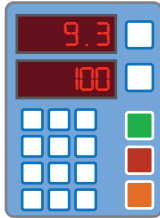
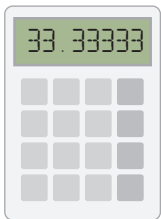
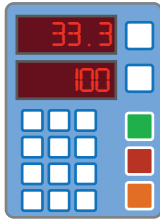
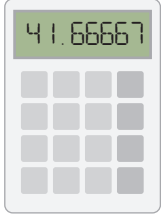
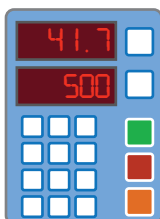
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e	b	i	w				
				Capsules Whole Number No rounding required		2 capsules	
				Tablets Whole Number No rounding required		1 tablet	
				Tablets 1 Decimal Place (d.p) (Tenths) No rounding required		0.5 tablets	
				Liquid Medicines & Injections Whole Number No rounding required		15 mL	
				Liquid Medicines & Injections 1 Decimal Place (d.p) (Tenths) More than 1mL No rounding required		1.5 mL	
				Liquid Medicines & Injections 2 Decimal Places (d.p) (Hundredths) More than 1mL Round to nearest 1 d.p (tenths)		3.8 mL	

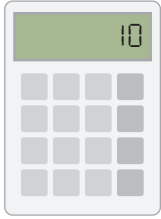

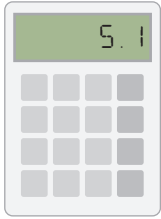

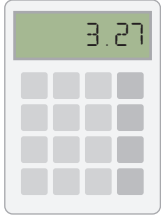

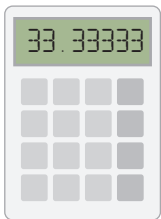

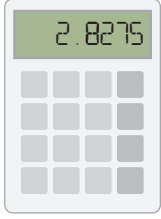
MODULES				RULE	CALCULATED ANSWER	ROUNDED ANSWER	TECHNICAL MEASUREMENT ANSWER
e	b	i	w				
				Liquid Medicines & Injections 3 Decimal Places (d.p) (Thousandths) More than 1mL Round to nearest 1 d.p (tenths)		1.3 mL	
				Liquid Medicines & Injections 2 Decimal Places (d.p) (Hundredths) Less than 1mL No rounding required		0.92 mL	
				Liquid Medicines & Injections 3 Decimal Places (d.p) (Thousandths) Less than 1mL Round to nearest 2 d.p (hundredths)		0.78 mL	
				Liquid Medicines & Injections 3 Decimal Places (d.p) (Thousandths) Less than 1mL Round to nearest 2 d.p (hundredths)		0.81 mL	
				Injections Insulin Whole Number No rounding required Answer is never rounded	N/A	N/A	

MODULES				RULE	CALCULATED ANSWER	ROUNDED ANSWER	TECHNICAL MEASUREMENT ANSWER
e	b	i	w				
				I.V. Infusions mL/hr Adult Whole Number No rounding required		125 mL/hr	
				I.V. Infusions mL/hr Adult 1 Decimal Place (d.p) (Tenths) Round to whole number		113 mL/hr	
				I.V. Infusions mL/hr Adult 2 Decimal Places (d.p) (Hundredths) Round to whole number		31 mL/hr	
				I.V. Infusions mL/hr Adult 3 Decimal Places (d.p) + (Thousandths +) Round to whole number		83 mL/hr	
				I.V. Infusions mL/hr Adult 3 Decimal Places (d.p) + (Thousandths +) Round to whole number		42 mL/hr	

MODULES				RULE	CALCULATED ANSWER	ROUNDED ANSWER	TECHNICAL MEASUREMENT ANSWER
e	b	i	w				
				I.V. Infusions mL/hr Child Whole Number No rounding required		125 mL/hr	
				I.V. Infusions mL/hr Child 1 Decimal Place (d.p) (Tenths) No rounding required		112.5 mL/hr	
				I.V. Infusions mL/hr Child 2 Decimal Places (d.p) (Hundredths) Round to nearest 1 d.p (tenths)		31.3 mL/hr	
				I.V. Infusions mL/hr Child 3 Decimal Places (d.p) + (Thousandths +) Round to nearest 1 d.p (tenths)		83.3 mL/hr	
				I.V. Infusions mL/hr Child 3 Decimal Places (d.p) + (Thousandths +) Round to nearest 1 d.p (tenths)		41.7 mL/hr	

MODULES				RULE	CALCULATED ANSWER	ROUNDED ANSWER	TECHNICAL MEASUREMENT ANSWER
e	b	i	w				
				I.V. Infusions drops/min Whole Number No rounding required		56 drops/min	 56 drops/min
				I.V. Infusions drops/min 1 Decimal Place (d.p) (Tenths) Round to whole number		14 drops/min	 14 drops/min
				I.V. Infusions drops/min 2 Decimal Places (d.p) (Hundredths) Round to whole number		21 drops/min	 21 drops/min
				I.V. Infusions drops/min 3 Decimal Places (d.p) + (Thousandths +) Round to whole number		33 drops/min	 33 drops/min
				I.V. Infusions drops/min 3 Decimal Places (d.p) + (Thousandths +) Round to whole number		42 drops/min	 42 drops/min

MODULES				RULE	CALCULATED ANSWER	ROUNDED ANSWER	TECHNICAL MEASUREMENT ANSWER
e	b	i	w				
				I.V. Injectable Medicines Infusions mL/hr Volumetric Pump Whole Number No rounding required		10 mL/hr	
				I.V. Injectable Medicines Infusions mL/hr - Volumetric Pump 1 Decimal Place (d.p) (Tenths) No rounding required		19.3 mL/hr	
				I.V. Injectable Medicines Infusions mL/hr - Volumetric Pump 2 Decimal Places (d.p) (Hundredths) Round to nearest 1 d.p (tenths)		9.3 mL/hr	
				I.V. Injectable Medicines Infusions mL/hr - Volumetric Pump 3 Decimal Places (d.p) + (Thousandths +) Round to nearest 1 d.p (tenths)		33.3 mL/hr	
				I.V. Injectable Medicines Infusions mL/hr - Volumetric Pump 3 Decimal Places (d.p) + (Thousandths +) Round to nearest 1 d.p (tenths)		41.7 mL/hr	

MODULES				RULE	CALCULATED ANSWER	ROUNDED ANSWER	TECHNICAL MEASUREMENT ANSWER
e	b	i	w				
				I.V. Injectable Medicines Infusions mL/hr - Syringe Pump Whole Number No rounding required		10 mL/hr	
				I.V. Injectable Medicines Infusions mL/hr - Syringe Pump 1 Decimal Place (d.p) (Tenths) No rounding required		5.1 mL/hr	
				I.V. Injectable Medicines Infusions mL/hr - Syringe Pump 2 Decimal Places (d.p) (Hundredths) No rounding required		3.27 mL/hr	
				I.V. Injectable Medicines Infusions mL/hr - Syringe Pump 3 Decimal Places (d.p) + (Thousandths +) Round to nearest 2 d.p (hundredths)		33.33 mL/hr	
				I.V. Injectable Medicines Infusions mL/hr - Syringe Pump 3 Decimal Places (d.p) + (Thousandths +) Round to nearest 2 d.p (hundredths)		2.83 mL/hr	