

Care Practice Book

Ratio Levels 1 & 2 ANSWERS

Question 1

A nursing home has 20 residents for every 3 staff members. What is the ratio of staff to residents? **3 : 20**

Question 2

A patient requires two staff members to lift him using a hoist. What is the patient to staff ratio? **1 : 2**

Question 3

A client is receiving a fluid infusion through a pump. The infusion is given as 40ml per hour. What is the ratio of fluid to time? **40 ml : 1 hour OR 40 ml : 60 mins**

Question 4

A nursing home has 20 residents for every 3 staff members. The number of residents doubles. How many staff members do they need now? **6 staff members**

If the residents double, the staff will also need to double $3 \times 2 = 6$

R : S

20 : 3

40 : 6

Question 5

a) A carer reads the instructions on a bottle of bleach. It says to mix 50ml per litre of water. The carer decides to use half the amount of bleach. How much water should they mix with it? **$\frac{1}{2}$ a litre or 0.5 litres or 500ml**

If the bleach halves, then the water should halve as well → half a litre. You could also choose to work with ml instead of litres → 500ml

b) The carer finds a stronger bottle of bleach. It says to mix 40ml bleach with 1500ml of water. The carer decides to triple the amounts. How much bleach and water will they use? **120ml bleach and 4500ml of water (or 4.5L of water)**

Each quantity needs to be multiplied by 3

$$40 \times 3 = 120\text{ml}$$

$$1500 \times 3 = 4500\text{ml or } 4.5 \text{ L (divide by 1000 to turn ml into litres)}$$

Question 6 – level 1

a) A carer reads the instructions on a bottle of bleach. They find that 50ml of bleach should be used per litre of water. They have a bucket with three litres of water. How much bleach should they use? **150ml**

Bleach : Water

50ml : 1 L

? : 3 L

You can see that the water has been multiplied by 3 to go from 1 L to 3 L. The bleach will also need to be multiplied by 3

$$50 \times 3 = 150$$

Bleach : Water

50ml : 1 L

150ml : 3 L

You could also convert the 1L to 1000ml and 3L to 3000ml if you wanted to.

Question 7 – level 2

A carer reads the instructions on a bottle of bleach. They find that 50ml of bleach should be used per litre of water. They want to use 40ml of bleach. How much water should they mix with it? **0.8L or 800ml**

Bleach : Water

50ml : 1 L

40ml : ?

We have to find the relationship/factor between 40 and 50. We can use division to do this. $40 \div 50 = 0.8$

(See over for working)

	Bleach	:	Water	
$\times 0.8$	50ml	:	1 L	$\times 0.8$
	40ml	:	?	

50 has been multiplied by 0.8 to get to 40, so 1 needs to be multiplied by 0.8 as well.

	Bleach	:	Water	
$\times 0.8$	50ml	:	1 L	$\times 0.8$
	40ml	:	0.8L	

OR do the division the other way around. $50 \div 40 = 1.25$

This time we note the bottom number is smaller so our numbers need to be divided by the factor rather than multiplying by it.

	Bleach	:	Water	
$\div 1.25$	50ml	:	1 L	$\div 1.25$
	40ml	:	?	

50 has been multiplied by 0.8 to get to 40, so 1 needs to be multiplied by 0.8 as well.

	Bleach	:	Water	
$\div 1.25$	50ml	:	1 L	$\div 1.25$
	40ml	:	0.8L	

Again, you could have turned 1L into 1000ml if you felt that it was easier to work with.

Question 8 – L1 & 2

a) A carer measures a client's pulse for 15 seconds. They use ratio to estimate the pulse per minute. Complete the working out to show the pulse per minute.

Pulse : Time

19 beats : 15 seconds

76 beats : 60 seconds

$\times 4$  19 beats : 15 seconds  $\times 4$

Divide 60 by 15 to get the relationship/factor of 4. This is then multiplied by the pulse.

b) The next day a different carer counts the client's pulse for a total of three minutes. The total is 222 beats. How many beats per minute if the beats stay in the same ratio?

Pulse : Time

$\div 3$  222 beats : 3 mins  $\div 3$

The time has gone from 3 mins to 1 min so it has got 3 times smaller. This means the pulse also gets 3 times smaller, which is the same as dividing by 3.

Question 9 – L1

A carer has a thickener for a patient who has difficulty swallowing following a stroke. It has to be mixed with water. Each scoop should be mixed with 80ml of water. If the dosage is 3 scoops, how much water should they use? **240ml**

The scoops are getting three times bigger, so the water must also get 3 times bigger.

$$80 \times 3 = 240$$

Question 10 – L2

A carer has a thickener for a patient who has difficulty swallowing following a stroke. It has to be mixed with water. Each scoop should be mixed with 80ml of water. If the dosage is 4.5 scoops, how much water should they use? **360ml**

The scoops are getting 4.5 times bigger, so the water must also get 4.5 times bigger.

$$80 \times 4.5 = 360$$

Question 11 L1 & L2

FUROSEMIDE 20 MG/5 ML ORAL SOLUTION (FUROSEMIDE) PL 20046/0037

We could write this as 20 mg : 5 ml

This means there are 20 mg of the active ingredient for every 5ml of liquid.

If someone needs 40mg of the active ingredient, how much liquid would they be having? **10ml**

The active ingredient has doubled from 20 to 40, so the liquid must also double.
 $5 \times 2 = 10$

Question 12 L2

Morphine Hydrochloride 0.458mg/5ml

We could write this as 0.458mg : 5ml

In one day, Celia's client has 90ml of the medicine. How much morphine hydrochloride would they be getting? (Give your answer in mg). **8.244mg**

$$\begin{array}{ccccc} \text{Morphine} & : & & \text{liquid} & \\ \text{x 18} & \curvearrowright & 0.458\text{mg} & : & 5\text{ml} & \curvearrowleft & \text{x 18} \\ & & ? & : & 90\text{ml} \end{array}$$

We must find the relationship by dividing 90 by 5 = 18. This means each part has got 18 times bigger. We must multiply the morphine by 18.

$$0.458 \times 18 = 8.244\text{mg}$$