

## Chapter 2 Ratios and Percents

### MULTICHOICE

1. A medical unit has 24 patients and 4 nurses to provide care. What is the patient to nurse ratio in lowest terms?

- (A) 24:4
- (B) 6:1
- (C) 12:2
- (D) 18:3

**Answer :** (B)

2. Which percentage is the equivalent of a 1:1000 epinephrine solution?

- (A) 0.1%
- (B) 10%
- (C) 0.001%
- (D) 0.01%

**Answer :** (A)

3. Which intravenous solution has the lowest concentration?

- (A) 5% dextrose in 0.45% saline
- (B) 5% dextrose in water
- (C) 0.9% normal saline
- (D) 0.45% normal saline

**Answer :** (D)

4. Which of the following is the strongest solution?

- (A) 1:10
- (B) 1:50
- (C) 1:1
- (D) 1:25

**Answer :** (C)

5. What is 0.37% of 352?

(A) 0.1

(B) 5.9

(C) 9.5

(D) 1.3

**Answer :** (D)

## ESSAY

6. What is 45% of 150? Express your answer as a decimal rounded to the nearest tenth.

**Graders Info :**

67.5

$0.45 \times 150 = 67.5$

7. Express 24% as a fraction and reduce it to the lowest terms.

**Graders Info :**

$$\frac{24}{100} = \frac{6}{25}$$

8.

	Percent	Ratio
1.	45%	
2.		3:10

Complete row 1 in the table above.

**Graders Info :**

9:20

9.

	Percent	Ratio
1.	45%	
2.		3:10

Complete row 2 in the table above.

**Graders Info :**

30%

$$3:10 = \frac{3}{10} = \frac{30}{100} = 30\%$$

**10.** A class of students consists of 9 men and 51 women. Write a proper fraction to represent the part of the total class that is women. Reduce the fraction. Change the fraction to a percent.

Reduced fraction: \_\_\_\_\_

Percent: \_\_\_\_\_

**Graders Info :**

17/20; 85%

There are 51 women and 9 men for a total of 60 students in the class..

$$\frac{51}{60} = \frac{17}{20}; \quad \frac{17}{20} = \frac{85}{100} = 85\%$$

**11.** A student received a score of 48 points on a test that was worth 60 points. Write a fraction to represent the portion of the test the student answered correctly. Reduce the fraction. Change the fraction to a percent.

Reduced fraction: \_\_\_\_\_

Percent: \_\_\_\_\_

**Graders Info :**

4/5; 80%

$$\frac{48}{60} = \frac{4}{5}; \quad \frac{4}{5} = \frac{80}{100} = 80\%$$

**12.** To pass a chapter test, a student must answer 80% or more of the questions correctly. If a chapter test has 25 questions, what is the smallest number of questions that the student must answer correctly in order to pass the test?

**Graders Info :**

20

At least 80% of 25 questions must be answered correctly.

$$80\% \times 25 = 0.8 \times 25 = 20$$

The student must answer at least 20 questions correctly.

**13.** To pass a unit test, a student must answer 80% or more of the questions correctly. If a unit test has 75 questions, what is the largest number of questions that the student could answer incorrectly, but still pass the unit test?

**Graders Info :**

15

At least 80% of 75 questions must be answered correctly.

$$80\% \text{ of } 75 = 0.8 \times 75 = 60$$

At least 60 questions must be answered correctly

$$75 - 60 = 15$$

The largest number of questions that the student could answer incorrectly, but still pass the test, is 15 questions.

**14.** Convert the following. Reduce fractions and ratios to the lowest term. Round decimals and percents to three decimal places (thousandths).

Decimal	Fraction	Percent	Ratio
0.125			

**Graders Info :**

1/8; 12.5%; 1:8

$$\begin{aligned} 0.125 &= \frac{125}{1000} = \frac{1}{8} \\ 0.125 &= \frac{12.5}{100} = 12.5\% \\ 0.125 &= \frac{125}{1000} = \frac{1}{8} = 1:8 \end{aligned}$$

**15.** Convert the following. Reduce fractions and ratios to the lowest term. Round decimals and percents to three decimal places (thousandths).

Decimal	Fraction	Percent	Ratio
0.25%		0.25%	

**Graders Info :**

0.0025; 1/400; 1:400

$$0.25\% = \frac{0.25}{100} = \frac{25}{10000} = 0.0025$$

$$0.25\% = \frac{0.25}{100} = \frac{25}{10000} = \frac{1}{400}$$

$$0.25\% = \frac{0.25}{100} = \frac{25}{10000} = \frac{1}{400} = 1:400$$

**16.** Mr. Smith is on a 1500 mL/day fluid restriction. He consumed 65% of his total fluid allowance during breakfast and lunch. How much fluid does Mr. Smith have left to consume in this 24-hour period?

**Graders Info :**

525 mL

If 65% has already been consumed, then 35% is left to be consumed.

$$\frac{35}{100} \times 1500 = 525$$

**17.** A newborn baby weighed 3 kg at birth. Three days after the baby was born, she weighed 2.8 kg. What percentage of body weight has the baby lost? Express the answer as a whole number.

**Graders Info :**

7%

Difference in body weight is  $3 - 2.8 = 0.2$  kg lost

Ratio converted to fraction  $\frac{0.2}{3} = 0.066$

Decimal converted to percent = 6.6% which rounds to 7%

**18.** A patient is to be started on 50 mg of a medication daily and then titrated down by 5% of the original dose each day until the patient is receiving 35 mg daily. How many days will it take to get to the 35 mg dose? (HINT: include the first 50 mg dose and the first 35 mg dose.)

**Graders Info :**

7 days

5% of 50 =  $0.05 \times 50 = 2.5$  so dose will be reduced by 2.5 mg daily

1<sup>st</sup> day: 50 mg; 2<sup>nd</sup> day:  $50 - 2.5 = 47.5$  mg; 3<sup>rd</sup> day:  $47.5 - 2.5 = 45$  mg;

4<sup>th</sup> day:  $45 - 2.5 = 42.5$  mg; 5<sup>th</sup> day:  $42.5 - 2.5 = 40$  mg; 6<sup>th</sup> day:  $40 - 2.5 = 37.5$  mg;

7<sup>th</sup> day:  $37.5 - 2.5 = 35$  mg

**19.** Nursing students require 90% on their dosage calculations test in order to be successful in the nursing program. There are 20 questions on the test each worth one mark. How many questions do

the nursing students need to get correct in order to achieve the 90%?

**Graders Info :**

18 questions

$$90\% \text{ of } 20 = 0.9 \times 20 = 18$$

**20.** Mrs. Jones is on a 1000 mL fluid restriction per day. So far today, she has consumed 110 mL milk, 120 mL coffee, 125 mL soup, and 115 mL juice. What percentage of her fluid allowance has she already consumed for the day?

**Graders Info :**

47%

$$110 + 120 + 125 + 115 = 470 \text{ mL}$$

$$\frac{470 \text{ mL}}{1000 \text{ mL}} = 0.47 \text{ or } 47\%$$