

# College Admission

*HESI-A2*

*Health Education Systems, Inc. Admission Assessment*



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## Question: 1

What is 6:30 AM in military time?

- a. 0630
- b. 0930
- c. 1230
- d. 1830

**Answer: A**

Explanation:

Military time is based off a 24-hour clock so if the 12-hour time is AM, the first two digits of the military time will be 00-11, and if it is PM, the first two digits of the military time will be 12-23. Since we are working with 6:00 AM, the first two digits of military time will be 06. The last two digits of military time comes from the minutes, so 6:30 AM in military time is 0630.

## Question: 2

Round to the nearest whole number: Bill got  $\frac{7}{9}$  of the answers right on his chemistry test. On a scale of 1 to 100, what numerical grade would he receive if the score is rounded to the nearest whole number?

**Answer: 78**

Explanation:

To solve this problem, you must know how to convert a fraction into a ratio. In this problem, you are being asked to convert the fraction into a value on a scale from 1 to 100, which is basically like being asked to convert it into a percentage. To do so, divide the numerator by the denominator. The answer will be a repeating seven: 0.777 Calculate to the thousandths place and move the decimal two places to the right in order to determine the value. Because the digit in the thousandths place is a 7, you will round up the digit to the left to establish the final answer, 78.

## Question: 3

Convert  $15\frac{2}{3}$  to an improper fraction.

- a.  $\frac{22}{3}$
- b.  $\frac{17}{3}$
- c.  $\frac{47}{3}$
- d.  $\frac{43}{3}$

**Answer: C**

Explanation:

Multiply 15 by 3 and add 2 to get the numerator, 47, over the original denominator, 3.

### Question: 4

Margery is planning a vacation, and she has added up the total potential cost. Her round-trip airfare will cost \$572. Her hotel cost is \$89 per night, and she will be staying at the hotel for five nights. She has allotted a total of \$150 for sightseeing during her trip, and she expects to spend about \$250 on meals. As she books the hotel, she is told that she will receive a discount of 10% off the price of \$89 for each additional night after the first night she stays there. Taking this discount into consideration, what is the amount that Margery expects to spend on her vacation?

\$ \_\_\_\_\_

**Answer: 1381.40**

Explanation:

Start by adding up the costs of the trip, excluding the hotel cost:  $\$572 + \$150 + \$250 = \$972$ . Then, calculate what Margery will spend on the hotel. The first of her five nights at the hotel will cost her \$89. For each of the other four nights, she will get a discount of 10% per night, or \$8.90. This discount of \$8.90 multiplied by the four nights is \$35.60. The total she would have spent on the five nights without the discount is \$445. With the discount, the amount goes down to \$409.40. Add this amount to the \$972 for a grand total of \$1,381.40.

### Question: 5

Change the fraction to a decimal and round to the hundredths place:  $4\frac{3}{7} =$

\_\_\_\_\_

**Answer: 4.43**

Explanation:

To solve this problem, you must know how to convert mixed numbers into decimals. Perhaps the easiest way to perform this operation is to convert the mixed number into an improper fraction and then divide the numerator by the denominator. Convert the mixed number into an improper fraction by multiplying the whole number by the denominator and adding the product to the numerator:  $4 \times 7 + 3 = 31$ , so the improper fraction is  $\frac{31}{7}$ . Next divide 31 by 7, according to the same procedure used in problems 7 and 8. Remember that when you have to add 0 to 31 in order to continue your calculations, you must put a decimal point directly above in the quotient. Also, since the problem asks you to round to the hundredths place, you must solve the problem to the nearest thousandth.

### Question: 6

Change the decimal to the simplest equivalent proper fraction:  $3.78 =$

- a.  $3\frac{3}{4}$
- b.  $3\frac{7}{8}$
- c.  $3\frac{39}{50}$
- d.  $3\frac{78}{100}$

**Answer: C**

Explanation:

This problem requires you to understand the conversion of decimals into mixed numbers. 3.78 has value into the hundredths place, so your fraction will have a denominator of 100. There are three whole units and seventy-eight hundredths, a mixed number that can be written as  $3\frac{78}{100}$ . Next, you must simplify this fraction. The only common factor of 78 and 100 is 2, so divide both numerator and denominator by 2:  $\frac{78 \div 2}{100 \div 2} = \frac{39}{50}$ . This fraction cannot be simplified any further, so the answer is  $3\frac{39}{50}$ .

### Question: 7

Change the decimal to the simplest equivalent proper fraction:  $0.07 =$

- a.  $\frac{7}{10}$
- b.  $\frac{10}{0.07}$
- c.  $\frac{10}{7}$
- d.  $\frac{100}{70}$

**Answer: C**

Explanation:

To solve this problem, you must know how to convert decimals into fractions. Remember that all of the numbers to the right of a decimal point represent values less than one. So, a decimal number such as this will not include any whole numbers when it is converted into a fraction. The 7 is in the hundredths place, so the number is properly expressed as  $\frac{7}{100}$ . The fraction cannot be simplified because 7 and 100 do not share any factors besides one.

### Question: 8

Solve for  $x$ :  $2x - 7 = 3$ .

- a.  $x = 4$
- b.  $x = 3$
- c.  $x = -2$
- d.  $x = 5$

**Answer: D**

Explanation:

Use inverse operations to solve the two-step equation for  $x$ .

$$\begin{aligned}2x - 7 &= 3 \\2x - 7 + 7 &= 3 + 7 \\2x &= 10 \\ \frac{2x}{2} &= \frac{10}{2} \\x &= 5\end{aligned}$$

### Question: 9

Sarah and Elizabeth take a test in their calculus class at school. They are competing for valedictorian, so they want to compare how they did on their tests. Sarah got  $\frac{4}{9}$  questions correct, and Elizabeth, who chose to answer 2 bonus questions, got  $\frac{5}{11}$  questions correct. Who did better on the calculus test and how did the girls figure it out?

- a. Elizabeth because  $\frac{4}{9} > \frac{5}{11}$ .
- b. Sarah because  $\frac{5}{11} < \frac{4}{9}$ .
- c. Elizabeth because  $\frac{4}{9} < \frac{5}{11}$ .
- d. Sarah because  $\frac{4}{9} < \frac{5}{11}$ .

**Answer: C**

Explanation:

To determine who did better on the test, compare the two fractions:  $\frac{4}{9}$  and  $\frac{5}{11}$ . The two fractions can be compared by using cross multiplication. When cross multiplying, multiply the numerator of the first fraction by the denominator of the second fraction:  $4 \times 11 = 44$ . This number corresponds to the first fraction. Then, multiply the denominator of the first fraction by the numerator of the second fraction:  $9 \times 5 = 45$ . This number corresponds to the second fraction. From here, compare the two numbers:  $44 < 45$ . This means that the first fraction ( $\frac{4}{9}$ ) is less than the second fraction ( $\frac{5}{11}$ ):  $\frac{4}{9} < \frac{5}{11}$ . Since Elizabeth got  $\frac{5}{11}$  questions correct on her test, she did better than Sarah.

### Question: 10

Two-thirds of the students in Mr. Garcia's class are boys. If there are 27 students in the class, how many of them are girls?

\_\_\_\_\_ girls

**Answer: 9**

Explanation:

This problem requires you to understand how to approach word problems involving fractions and ratios. You are given the total number of students in the class and the fraction of students who are boys. With this information, you can determine the number of boys by multiplying  $\frac{2}{3}$  by 27. You will find that there are 18 boys in the class. You can then find the number of girls by subtracting the number of boys from the total number of students:  $27 - 18 = 9$ . There are nine girls in the class.

### Question: 11

A bag holds 17 green marbles, 10 blue marbles, and 9 red marbles. Express the ratio of red marbles to total marbles in simplest form.

- a. 4:36
- b. 3:12
- c. 9:36
- d. 1:4

**Answer: D**

Explanation:

There are 9 red marbles and 36 total marbles. This can be expressed as the ratio 9 : 36. This can be simplified by dividing both 9 and 36 by their greatest common factor (9). The ratio 9 : 36 becomes 1 : 4.

### Question: 12

Solve for  $x$ :

$$7:42 :: 4:x$$

- a. 12
- b. 48
- c. 24
- d. 16

**Answer: C**

Explanation:

Set up the proportion as a pair of equivalent fractions:  $\frac{7}{42} = \frac{4}{x}$ . Then solve for  $x$ . To do this, you must cross-multiply (producing  $7x = 168$ ), and then divide both sides by 7. Your calculations should determine that  $x = 24$ .

### Question: 13

Change the decimal to a percent:  $0.64 =$

- a. 0.64%
- b. 64%
- c. 6.4%
- d. 0.064%

**Answer: B**

Explanation:

To solve this problem, you must know how to convert a decimal into a percent. A percentage is a number expressed in terms of hundredths. When we say, for instance, that a candidate received 55% of the vote, we mean that she received 55 out of every 100 votes cast. When we say that the sales tax is 6%, we mean that for every 100 cents in the price another 6 cents are added to the final cost. To convert a decimal into a percentage, multiply it by 100 or just shift the decimal point two places to the right. In this case, by moving the decimal point two places to the right you can calculate the correct answer, 64%.

### Question: 14

Solve the following equation:  $x + 16 = 3x + 32$ .

- a.  $-16 = 2x$
- b.  $x = -8$
- c.  $x = -16$
- d.  $x = -32$

**Answer: B**

Explanation:

To solve the equation, isolate the variable on one side.

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Subtract  $x$  from each side:

$$16 = 2x + 32$$

Subtract 32 from each side.

$$-16 = 2x$$

Divide both sides by 2:

$$x = -8$$

### Question: 15

Susan decided to celebrate getting her first nursing job by purchasing a new outfit. She bought a dress for \$69.99 and a pair of shoes for \$39.99. She also bought accessories for \$34.67. What was the total cost of Susan's outfit, including accessories?

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**Answer: 144.65**

Explanation:

To determine the total cost of Susan's outfit, add the costs of all her purchases.

$$\$69.99 + \$39.99 + \$34.67 = \$144.65$$

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