SIFT Math Practice Test (Sample)

Study Guide

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Questions

1. If 3,600 pounds of fuel is used at a rate of 450 lb/hr, how many gallons will it equate to if 1 gallon weighs 6 lbs?

A. 600 gallons

B. 500 gallons

C. 400 gallons

D. 300 gallons

2. What is the solution to the equation 3x + 9 = 0?

A. -3

B. 3

C. 0

D. 6

3. What is the diameter of a circle with a radius of 7 units?

A. 12 units

B. 14 units

C. 10 units

D. 18 units

4. What is 2/5 of 100?

A. 30

B. 40

C. 50

D. 25

5. If 91 items are evenly distributed into 7 boxes, how many items are there per box?

A. 13.0

B. 12.8

C. 12.5

D. 13.5

6. A pilot's allowance increases from $2,400 to $2,520. What is the percentage increase?

A. 4%

B. 5%

C. 6%

D. 3%

7. What is 60% of 290?

A. 171.34

B. 155.72

C. 174.0

D. 168.98

8. 84 items are evenly distributed into how many boxes if there are 7 boxes?

A. 10.3

B. 12.0

C. 11.5

D. 11.1

9. What is the area of a circle with radius 7? (Use π ≈ 3.14)

A. 152.0

B. 154.1

C. 150.5

D. 153.86

10. What is the area of a circle with radius 6? (Use π ≈ 3.14)

A. 113.6

B. 113.04

C. 116.58

D. 117.85

Answers

1. A
2. A
3. B
4. B
5. A
6. B
7. C
8. B
9. D
10. B

Explanations

1. If 3,600 pounds of fuel is used at a rate of 450 lb/hr, how many gallons will it equate to if 1 gallon weighs 6 lbs?

A. 600 gallons

B. 500 gallons

C. 400 gallons

D. 300 gallons

To determine how many gallons the 3,600 pounds of fuel equates to, you start by recognizing the weight of one gallon of fuel, which is given as 6 pounds. To find the total number of gallons, you divide the total weight of the fuel by the weight of a single gallon. You can calculate the number of gallons by using the formula: $$\text{Number of gallons} = \frac{\text{Total weight of fuel (in pounds)}}{\text{Weight of 1 gallon (in pounds)}}$$ Substituting the values from the problem: $$\text{Number of gallons} = \frac{3600 \text{ pounds}}{6 \text{ pounds per gallon}} = 600 \text{ gallons}$$ This calculation shows that 3,600 pounds of fuel corresponds to 600 gallons, confirming that the correct answer is indeed 600 gallons. This answer is derived directly from the relationship between weight and volume considering the density of the fuel provided.

2. What is the solution to the equation 3x + 9 = 0?

A. -3

B. 3

C. 0

D. 6

To find the solution to the equation $(3x + 9 = 0)$, you will isolate the variable (x). First, start by subtracting 9 from both sides of the equation: $$3x + 9 - 9 = 0 - 9$$ This simplifies to: $$3x = -9$$ Next, divide both sides by 3 to solve for (x): $$x = \frac{-9}{3}$$ This gives: $$x = -3$$ Therefore, the correct solution is (-3). It satisfies the original equation because if you substitute (-3) back into $(3x + 9)$: $$3(-3) + 9 = -9 + 9 = 0$$ Thus, it verifies that (-3) is indeed the solution. The other options do not satisfy the equation as shown through the isolating process or by substitution into the original equation.

3. What is the diameter of a circle with a radius of 7 units?

A. 12 units

B. 14 units

C. 10 units

D. 18 units

To determine the diameter of a circle, you can use the relationship between the radius and diameter. The diameter is always twice the length of the radius. This can be expressed with the formula: Diameter = 2 × Radius. In this case, the radius is given as 7 units. Using the formula, you would calculate: Diameter = 2 × 7 = 14 units. This confirms that the diameter of the circle with a radius of 7 units is indeed 14 units.

4. What is 2/5 of 100?

A. 30

B. 40

C. 50

D. 25

To determine what 2/5 of 100 is, you start by calculating 2/5 of the total amount, which in this case is 100. First, you can find 1/5 of 100 by dividing 100 by 5. This gives you 20, since 100 divided by 5 equals 20. Next, to find 2/5, you simply multiply that 1/5 value (20) by 2. When you do this calculation, you find that 2 multiplied by 20 equals 40. Hence, 2/5 of 100 is 40, making it the correct answer. This approach highlights the process of breaking down the fraction into simpler calculations to arrive at the final answer.

5. If 91 items are evenly distributed into 7 boxes, how many items are there per box?

A. 13.0

B. 12.8

C. 12.5

D. 13.5

To determine the number of items per box when 91 items are evenly distributed into 7 boxes, you perform a division operation. You take the total number of items, which is 91, and divide it by the number of boxes, which is 7. Calculating this gives: 91 ÷ 7 = 13 This means that each box will contain 13 items when the total of 91 items is divided evenly among the 7 boxes. Since the division yields a whole number without any remainder, it confirms that the correct answer is indeed that there are 13 items per box. This division is straightforward and reflects an equal distribution, making this result significant in ensuring that all items are accounted for evenly across the boxes.

6. A pilot's allowance increases from $2,400 to $2,520. What is the percentage increase?

A. 4%

B. 5%

C. 6%

D. 3%

To determine the percentage increase, you'll first need to calculate the difference between the new allowance and the original allowance. In this case, the increase is $2,520 - $2,400, which equals $120. Next, to find the percentage increase, you take the increase ($120) and divide it by the original amount ($2,400). This division gives you: \[\frac{120}{2400} = 0.05 \] To convert this decimal into a percentage, you multiply by 100: \[0.05 \times 100 = 5\% \] Thus, the percentage increase in the pilot's allowance is 5%. This confirms that the answer is correct and properly represents the change in the allowance in terms of percentage.

7. What is 60% of 290?

A. 171.34

B. 155.72

C. 174.0

D. 168.98

To find 60% of 290, you can first convert the percentage into a decimal. Since 60% equals 0.60, the next step is to multiply this decimal by the total amount, which is 290. The calculation is as follows: \[0.60 \times 290 = 174 \] This gives us the value of 60% of 290, which is 174.0. This value matches one of the answer choices, confirming it is indeed the correct answer. Understanding the percentage calculation and having the ability to convert percentages into decimals is crucial for solving similar problems in the future.

8. 84 items are evenly distributed into how many boxes if there are 7 boxes?

A. 10.3

B. 12.0

C. 11.5

D. 11.1

To determine how many items are in each box when 84 items are evenly distributed into 7 boxes, you need to perform the division of the total number of items by the number of boxes. This means calculating \(84 \div 7\). When you carry out this division: 1. **Calculate: \(84 \div 7 = 12\). This means that each box will contain exactly 12 items. The process shows an even distribution where no items are left over, making it an accurate distribution. The answer of 12.0 aligns with the idea of whole items being divided equally. It is important in this type of problem to focus on whole units (items) being distributed without fractions or decimals that would imply leftover items since we cannot distribute part of an item in real-world counting. Therefore, the choice indicating 12.0 is the correct answer as it accurately represents the number of items per box after dividing 84 items into 7 evenly distributed boxes.**

9. What is the area of a circle with radius 7? (Use π ≈ 3.14)

A. 152.0

B. 154.1

C. 150.5

D. 153.86

To find the area of a circle, the formula to use is \(A = \pi r^2 \), where \(A \) is the area, \(\pi \) is a constant approximately equal to 3.14, and \(r \) is the radius of the circle. For this specific problem, the radius \(r \) is given as 7. Now, we can substitute the values into the formula: 1. Calculate \(r^2 \): \[7^2 = 49 \] 2. Multiply by \(\pi \): \[A = 3.14 \times 49 \] 3. Performing the multiplication gives: \[3.14 \times 49 = 153.86 \] Thus, the area of the circle is approximately 153.86 square units. This accurately aligns with the value provided as the correct answer. This demonstrates the application of the formula for the area of a circle and confirms that the calculations are performed accurately with the given approximation of \(\pi \).

10. What is the area of a circle with radius 6? (Use π ≈ 3.14)

A. 113.6

B. 113.04

C. 116.58

D. 117.85

To find the area of a circle, the formula used is A = πr², where A represents the area, π is a constant (approximately 3.14), and r is the radius of the circle. For a circle with a radius of 6, the calculation proceeds as follows: 1. **Calculate r²: Multiply the radius by itself: \(r² = 6 × 6 = 36 \). 2. **Multiply by π**: Now, insert the value of r² into the area formula: \(A = π × 36 \). Substituting the approximate value of π (3.14) into the equation gives: \(A ≈ 3.14 × 36 \). 3. **Perform the multiplication**: \(3.14 × 36 = 113.04 \). This result indicates that the area of the circle with a radius of 6 is approximately 113.04 square units. Thus, this calculation supports the conclusion that the correct answer is the option providing this area.**