Question ID d1dd92d8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: d1dd92d8

The number of zebras in a population in 2018 was 1.27 times the number of zebras in this population in 2014. If the number of zebras in this population in 2014 is $p\%$ of the number of zebras in this population in 2018, what is the value of p, to the nearest whole number?

ID: d1dd92d8 Answer

Correct Answer: 79

Rationale

The correct answer is 79. Let x represent the number of zebras in the population in 2014 and let y represent the number of zebras in the population in 2018. It's given that the number of zebras in this population in 2018 was 1.27 times the number of zebras in this population in 2014. It follows that the equation $y = 1.27x$ represents this situation. Dividing both sides of this equation by 1.27 yields $\frac{y}{1.27} = x$, or $\frac{1}{1.27}y = x$. Therefore, the number of zebras in this population in 2014 is $\frac{1}{1.27}$ times the number of zebras in this population in 2018. If the number of zebras in this population in 2014 is $p\%$ of the number of zebras in this population in 2018, then $x = \frac{p}{100}y$. It follows that $\frac{1}{1.27} = \frac{p}{100}$, or $\frac{100}{1.27} = p$, which means p is approximately equal to 78.74. Therefore, the value of p, to the nearest whole number, is 79.

Question Difficulty: Hard

Question ID 11059bb6

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 11059bb6

In 2008, Zinah earned 14% more than in 2007, and in 2009 Zinah earned 4% more than in 2008. If Zinah earned y times as much in 2009 as in 2007, what is the value of y?

A. 0.5600

B. 1.0056

C. 1.1800

D. 1.1856

ID: 11059bb6 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that in 2008 Zinah earned 14% more than in 2007. Let h represent the amount Zinah earned in 2007 and let j represent the amount that Zinah earned in 2008. This situation can be represented by the equation $j = 1 + \frac{14}{100}h$, or $j = 1.14h$. It's also given that in 2009 Zinah earned 4% more than in 2008. Let k represent the amount Zinah earned in 2009. This situation can be represented by the equation $k = 1 + \frac{4}{100}j$, or $k = 1.04j$. Substituting $1.14h$ for j in the equation $k = 1.04j$ yields $k = 1.041.14h$, or $k = 1.1856h$. If Zinah earned y times as much in 2009 as in 2007, then the value of y is 1.1856.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID b22cac33

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: b22cac33

The positive number a is 230% of the number b, and a is 60% of the number c. If c is $p\%$ of b, which of the following is closest to the value of p?

A. 138

B. 217

C. 283

D. 383

ID: b22cac33 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that a is 230% of b. It follows that $a = \frac{230}{100}b$. It's also given that a is 60% of c. It follows that $a = \frac{60}{100}c$. Since $a = \frac{230}{100}b$ and $a = \frac{60}{100}c$, it follows that $\frac{230}{100}b = \frac{60}{100}c$. Multiplying each side of this equation by $\frac{100}{60}$ yields $\frac{23}{6}b = c$. If c is $p\%$ of b, then $c = \frac{p}{100}b$. It follows that $\frac{23}{6} = \frac{p}{100}$. Multiplying each side of this equation by 100 yields $\frac{2{,}300}{6} = p$. It follows that the value of p is approximately 383.33. Therefore, of the given choices, 383 is closest to the value of p.

Choice A is incorrect. This is closest to the value of p if b is 230% of a, rather than if a is 230% of b, and if b is $p\%$ of c, rather than if c is $p\%$ of b.

Choice B is incorrect. This is closest to the value of p if a is 230% greater than b, rather than 230% of b.

Choice C is incorrect. This is closest to the value of p if c is $p\%$ greater than b, rather than $p\%$ of b.

Question Difficulty: Hard

Question ID f59a7e23

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: f59a7e23

140 is $p\%$ greater than 10. What is the value of p?

A. $1{,}400$

B. $1{,}300$

C. 140

D. 130

ID: f59a7e23 Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that 140 is $p\%$ greater than 10. It follows that $140 = 10 + \frac{p}{100}10$, which is equivalent to $140 = 10 + \frac{10}{100}p$, or $140 = 10 + 0.1p$. Subtracting 10 from each side of this equation yields $130 = 0.1p$. Dividing each side of this equation by 0.1 yields $1{,}300 = p$, or $p = 1{,}300$.

Choice A is incorrect. This would be the value of p if 140 were $p\%$ of 10, not $p\%$ greater than 10.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID 6baeb1d2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 6baeb1d2

37% of the items in a box are green. Of those, 37% are also rectangular. Of the green rectangular items, 42% are also metal. Which of the following is closest to the percentage of the items in the box that are not rectangular green metal items?

A. 1.16%

B. 57.50%

C. 94.25%

D. 98.84%

ID: 6baeb1d2 Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that 37% of the items in a box are green. Let x represent the total number of items in the box. It follows that $\frac{37}{100}x$, or $0.37x$, items in the box are green. It's also given that of those, 37% are also rectangular. Therefore, $\frac{37}{100}0.37x$, or $0.1369x$, items in the box are green rectangular items. It's also given that of the green rectangular items, 42% are also metal. Therefore, $\frac{42}{100}0.1369x$, or $0.057498x$, items in the box are rectangular green metal items. The number of the items in the box that are not rectangular green metal items is the total number of items in the box minus the number of rectangular green metal items in the box. Therefore, the number of items in the box that are not rectangular green metal items is x - $0.057498x$, or $0.942502x$. The percentage of items in the box that are not rectangular green metal items is the percentage that $0.942502x$ is of x. If $p\%$ represents this percentage, the value of p is $100\frac{0.942502x}{x}$, or 94.2502. Of the given choices, 94.25% is closest to the percentage of items in the box that are not rectangular green metal items.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID 7ffe93b2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 7ffe93b2

The number a is 70% less than the positive number b. The number c is 60% greater than a. The number c is how many times b?

ID: 7ffe93b2 Answer

Correct Answer: .48, 12/25

Rationale

The correct answer is .48 . It's given that the number a is 70% less than the positive number b. Therefore, $a = 1 - \frac{70}{100}b$, which is equivalent to $a = 1 - 0.70b$, or $a = 0.30b$. It's also given that the number c is 60% greater than a. Therefore, $c = 1 + \frac{60}{100}a$, which is equivalent to $c = 1 + 0.60a$, or $c = 1.60a$. Since $a = 0.30b$, substituting $0.30b$ for a in the equation $c = 1.60a$ yields $c = 1.600.30b$, or $c = 0.48b$. Thus, c is 0.48 times b. Note that .48 and 12/25 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID 6e1be879

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 6e1be879

A reseller buys certain books for a purchase price of 5.00 dollars each and then marks them each for sale at a consumer price that is 270% of the purchase price. After 4 months, any remaining books not yet sold are marked at a discounted price that is 70% off the consumer price. What is the discounted price of each of the remaining books, in dollars?

ID: 6e1be879 Answer

Correct Answer: 4.05, 81/20

Rationale

The correct answer is 4.05. It's given that the purchase price for certain books is 5.00 dollars each. It's also given that each book is marked for sale at a consumer price that is 270% of the purchase price. Since the consumer price is 270% of the purchase price of 5.00 dollars, it follows that the consumer price is $(2.7)(5.00)$, or 13.50, dollars. It's given that after 4 months, any remaining books are discounted at 70% off the consumer price. Thus, the discount amount is $(0.7)(13.50)$, or 9.45, dollars. Subtracting the discount amount from the consumer price gives the discounted price of each of the remaining books: $13.50 - 9.45 = 4.05$. Note that 4.05 and 81/20 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID 6ea5114f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 6ea5114f

The result of increasing the quantity x by $1{,}800\%$ is 684. What is the value of x?

A. $12{,}996$

B. $12{,}312$

C. 38

D. 36

ID: 6ea5114f Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that the result of increasing the quantity x by $1{,}800\%$ is 684. It follows that $x + \frac{1{,}800}{100}x = 684$, which is equivalent to $x + 18x = 684$, or $19x = 684$. Dividing each side of this equation by 19 yields $x = 36$. Therefore, the value of x is 36.

Choice A is incorrect. The result of increasing the quantity $12{,}996$ by $1{,}800\%$ is $246{,}924$, not 684.

Choice B is incorrect. The result of increasing the quantity $12{,}312$ by $1{,}800\%$ is $233{,}928$, not 684.

Choice C is incorrect. The result of increasing the quantity 38 by $1{,}800\%$ is 722, not 684.

Question Difficulty: Hard

Question ID d783308c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: d783308c

The number a is 70% less than the positive number b. The number c is 80% greater than a. The number c is how many times b?

ID: d783308c Answer

Correct Answer: .54, 27/50

Rationale

The correct answer is .54 . It's given that the number a is 70% less than the positive number b. Therefore, $a = 1 - \frac{70}{100}b$, which is equivalent to $a = 1 - 0.70b$, or $a = 0.30b$. It's also given that the number c is 80% greater than a. Therefore, $c = 1 + \frac{80}{100}a$, which is equivalent to $c = 1 + 0.80a$, or $c = 1.80a$. Since $a = 0.30b$, substituting $0.30b$ for a in the equation $c = 1.80a$ yields $c = 1.800.30b$, or $c = 0.54b$. Thus, c is 0.54 times b. Note that .54 and 27/50 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID d02d4d17

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: d02d4d17

210 is $p\%$ greater than 30. What is the value of p?

ID: d02d4d17 Answer

Correct Answer: 600

Rationale

The correct answer is 600. It's given that 210 is $p\%$ greater than 30. It follows that $210 = 1 + \frac{p}{100}30$. Dividing both sides of this equation by 30 yields $7 = 1 + \frac{p}{100}$. Subtracting 1 from both sides of this equation yields $6 = \frac{p}{100}$. Multiplying both sides of this equation by 100 yields $p = 600$. Therefore, the value of p is 600.

Question Difficulty: Hard

Question ID 134cf693

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 134cf693

The positive number a is $2{,}241\%$ of the sum of the positive numbers b and c, and b is 83% of c. What percent of b is a?

A. 23.24%

B. 49.41%

C. $2{,}324\%$

D. $4{,}941\%$

ID: 134cf693 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that a is $2{,}241\%$ of the sum of b and c. This can be represented by the equation $a = \frac{2{,}241}{100}b + c$, or $a = 22.41b + c$. It's also given that that b is 83% of c. This can be represented by the equation $b = \frac{83}{100}c$, or $b = 0.83c$. Dividing both sides of this equation by 0.83 yields $\frac{b}{0.83} = c$. Substituting $\frac{b}{0.83}$ for c in the equation $a = 22.41b + c$ yields $a = 22.41b + \frac{b}{0.83}$, or $a = 22.41\frac{1.83b}{0.83}$, which is equivalent to $a = \frac{41.0103b}{0.83}$, or $a = 49.41b$. This equation is equivalent to $a = \frac{4{,}941}{100}b$; therefore, a is $4{,}941\%$ of b.

Choice A is incorrect and may result from conceptual or calculation errors.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID f2fe78cb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: f2fe78cb

After 20% of the original number of marbles in a group were removed from the group, 360 marbles remained in the group. How many marbles were removed from the group?

A. 72

B. 90

C. 450

D. $1{,}800$

ID: f2fe78cb Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that 20% of the original number of marbles were removed from the group. Let x represent the original number of marbles in the group. It follows that $\frac{20}{100}x$, or $0.20x$, marbles were removed from the group. Therefore, x - $0.20x$ marbles remained in the group. It's also given that 360 marbles remained in the group. Thus, x - $0.20x = 360$, or $0.80x = 360$. Dividing both sides of this equation by 0.80 yields $x = 450$. Substituting 450 for x in the expression $0.20x$ yields $0.20\left(450\right)$, or 90. Therefore, 90 marbles were removed from the group.

Choice A is incorrect. This is 20% of the remaining number of marbles.

Choice C is incorrect. This is the original number of marbles, not the number of marbles that were removed.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID 220d0de5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 220d0de5

The number a is 190% greater than the number b. The number b is 80% less than 24. What is the value of a?

A. 9.12

B. 13.92

C. 26.40

D. 36.48

ID: 220d0de5 Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that the number b is 80% less than 24. It follows that b is equal to 24 minus 80% of 24, which can be written as $b = 24 - \frac{80}{100}24$. This is equivalent to $b = 24 - 0.824$, or $b = 4.8$. It's also given that the number a is 190% greater than the number b. It follows that a is equal to b plus 190% of b. Since $b = 4.8$, this can be written as $a = 4.8 + \frac{190}{100}4.8$. This is equivalent to $a = 4.8 + 1.94.8$, or $a = 13.92$.

Choice A is incorrect. This would be the value of a if a were 190% of b, not 190% greater than b.

Choice C is incorrect. This is 190 - 80% of 24.

Choice D is incorrect. This would be the value of a if b were 80% of 24, not 80% less than 24, and a were 190% of b, not 190% greater than b.

Question Difficulty: Hard

Question ID 991f9871

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 991f9871

The number a is 60% greater than the positive number b. The number c is 45% less than a. The number c is how many times b?

ID: 991f9871 Answer

Correct Answer: .88, 22/25

Rationale

The correct answer is .88 . It's given that the number a is 60% greater than the positive number b. Therefore, $a = 1 + \frac{60}{100}b$, which is equivalent to $a = 1 + 0.60b$, or $a = 1.60b$. It's also given that the number c is 45% less than a. Therefore, $c = 1 - \frac{45}{100}a$, which is equivalent to $c = 1 - 0.45a$, or $c = 0.55a$. Since $a = 1.60b$, substituting $1.60b$ for a in the equation $c = 0.55a$ yields $c = 0.551.60b$, or $c = 0.88b$. Thus, the number c is 0.88 times the number b. Note that .88 and 22/25 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID 6801d39d

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 6801d39d

The result of increasing the quantity x by 400% is 60. What is the value of x?

A. 12

B. 15

C. 240

D. 340

ID: 6801d39d Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that the result of increasing the quantity x by 400% is 60. This can be written as $x + \frac{400}{100}x = 60$, which is equivalent to $x + 4x = 60$, or $5x = 60$. Dividing each side of this equation by 5 yields $x = 12$. Therefore, the value of x is 12.

Choice B is incorrect. The result of increasing the quantity 15 by 400% is 75, not 60.

Choice C is incorrect. The result of increasing the quantity 240 by 400% is $1{,}200$, not 60.

Choice D is incorrect. The result of increasing the quantity 340 by 400% is $1{,}700$, not 60.

Question Difficulty: Hard

Question ID 443794ac

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 443794ac

The expression $0.35x$ represents the result of decreasing a positive quantity x by what percent?

A. 3.5%

B. 35%

C. 6.5%

D. 65%

ID: 443794ac Answer

Correct Answer: D

Rationale

Choice D is correct. Let $n\%$ represent the percent by which the positive quantity x is decreased to result in $0.35x$. The value of n can be found by solving the equation $x - \frac{n}{100}x = 0.35x$. Since x is a common factor of each of the terms on the left-hand side of this equation, the equation can be rewritten as $x1 - \frac{n}{100} = 0.35x$. Dividing each side of this equation by x yields $1 - \frac{n}{100} = 0.35$. Multiplying each side of this equation by 100 yields $100 - n = 35$. Subtracting 100 from each side of this equation yields $-n = -65$. Dividing each side of this equation by -1 yields $n = 65$. Therefore, the expression $0.35x$ represents the result of decreasing the positive quantity x by 65%.

Choice A is incorrect. Decreasing the quantity x by 3.5% yields $x - 0.035x$, or $0.965x$, not $0.35x$.

Choice B is incorrect. Decreasing the quantity x by 35% yields $x - 0.35x$, or $0.65x$, not $0.35x$.

Choice C is incorrect. Decreasing the quantity x by 6.5% yields $x - 0.065x$, or $0.935x$, not $0.35x$.

Question Difficulty: Hard

Question ID d2da7c69

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: d2da7c69

The number a is 110% greater than the number b. The number b is 90% less than 47. What is the value of a?

ID: d2da7c69 Answer

Correct Answer: 9.87, 987/100

Rationale

The correct answer is 9.87. It's given that the number a is 110% greater than the number b. It follows that $a = 1 + \frac{110}{100}b$, or $a = 2.1b$. It's also given that the number b is 90% less than 47. It follows that $b = 1 - \frac{90}{100}47$, or $b = 0.147$, which yields $b = 4.7$. Substituting 4.7 for b in the equation $a = 2.1b$ yields $a = 2.14.7$, which is equivalent to $a = 9.87$. Therefore, the value of a is 9.87.

Question Difficulty: Hard

Question ID 3f215d34

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 3f215d34

The value of a collectible comic book increased by 167% from the end of 2011 to the end of 2012 and then decreased by 16% from the end of 2012 to the end of 2013. What was the net percentage increase in the value of the collectible comic book from the end of 2011 to the end of 2013?

A. 124.28%

B. 140.28%

C. 151.00%

D. 209.72%

ID: 3f215d34 Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that the value of the comic book increased by 167% from the end of 2011 to the end of 2012. Therefore, if the value of the comic book at the end of 2011 was x dollars, then the value, in dollars, of the comic book at the end of 2012 was $x + \frac{167}{100}x$, which can be rewritten as $1x + 1.67x$, or $2.67x$. It's also given that the value of the comic book decreased by 16% from the end of 2012 to the end of 2013. Therefore, the value, in dollars, of the comic book at the end of 2013 was $2.67x$ - $2.67x\frac{16}{100}$, which can be rewritten as $2.67x$ - $2.67x0.16$, or $2.2428x$. Thus, if the value of the comic book at the end of 2011 was x dollars, and the value of the comic book at the end of 2013 was $2.2428x$ dollars, then from the end of 2011 to the end of 2013, the value of the comic book increased by $2.2428x$ - $1x$, or $1.2428x$, dollars. Therefore, the increase in the value of the comic book from the end of 2011 to the end of 2013 is equal to 1.2428 times the value of the comic book at the end of 2011. It follows that from the end of 2011 to the end of 2013, the net percentage increase in the value of the comic book was 1.2428100%, or 124.28%.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect. This is the difference between the net percentage increase in the value of the comic book from the end of 2011 to the end of 2012 and the net percentage decrease in the value of the comic book from the end of 2012 to the end of 2013, not the net percentage increase in the value of the comic book from the end of 2011 to the end of 2013.

Choice D is incorrect. This is the net percentage increase in the value of the comic book from the end of 2011 to the end of 2013, if the value of the comic book increased by 167% from the end of 2011 to the end of 2012 and then increased, not decreased, by 16% from the end of 2012 to the end of 2013.

Question Difficulty: Hard

Question ID b869812a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: b869812a

The regular price of a shirt at a store is $\$11.70$. The sale price of the shirt is 80% less than the regular price, and the sale price is 30% greater than the store's cost for the shirt. What was the store's cost, in dollars, for the shirt? (Disregard the $\$$ sign when entering your answer. For example, if your answer is $\$4.97$, enter 4.97)

ID: b869812a Answer

Correct Answer: 1.8, 9/5

Rationale

The correct answer is 1.8. It's given that the regular price of a shirt at a store is $\$ 11.70$, and the sale price of the shirt is 80% less than the regular price. It follows that the sale price of the shirt is $\$ 11.701 - \frac{80}{100}$, or $\$ 11.701 - 0.8$, which is equivalent to $\$ 2.34$. It's also given that the sale price of the shirt is 30% greater than the store's cost for the shirt. Let x represent the store's cost for the shirt. It follows that $2.34 = 1 + \frac{30}{100}x$, or $2.34 = 1.3x$. Dividing both sides of this equation by 1.3 yields $x = 1.80$. Therefore, the store's cost, in dollars, for the shirt is 1.80. Note that 1.8 and 9/5 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID 3ea17fb0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 3ea17fb0

A gift shop buys souvenirs at a wholesale price of 7.00 dollars each and resells them each at a retail price that is 290% of the wholesale price. At the end of the season, any remaining souvenirs are marked at a discounted price that is 80% off the retail price. What is the discounted price of each remaining souvenir, in dollars?

ID: 3ea17fb0 Answer

Correct Answer: 203/50, 4.06

Rationale

The correct answer is 4.06. It's given that the retail price is 290% of the wholesale price of $\$ 7.00$. Thus, the retail price is $\$ 7.00\frac{290}{100}$, which is equivalent to $\$ 7.002.9$, or $\$ 20.30$. It's also given that the discounted price is 80% off the retail price. Thus, the discounted price is $\$ 20.301 - \frac{80}{100}$, which is equivalent to $\$ 20.300.20$, or $\$ 4.06$.

Question Difficulty: Hard

Question ID d184e28c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: d184e28c

A scientist studying the life cycle of dragonflies counted the number of dragonflies in a certain habitat each day for 46 days. On February 15, there were 99 dragonflies in the habitat. The percent increase in the number of dragonflies in the habitat from January 1 to February 15 was 12.50%. How many dragonflies were in the habitat on January 1?

A. 88

B. 87

C. 12

D. 8

ID: d184e28c Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that a scientist studying the life cycle of dragonflies counted the number of dragonflies in a certain habitat each day for 46 days. It's also given that on February 15, there were 99 dragonflies in the habitat and that the percent increase in the number of dragonflies in the habitat from January 1 to February 15 was 12.50%. This can be represented by the equation $99 = 1 + \frac{12.50}{100}x$, where x represents the number of dragonflies in the habitat on January 1. This equation can be rewritten as $99 = 1.125x$. Dividing both sides of this equation by 1.125 yields $88 = x$. Therefore, there were 88 dragonflies in the habitat on January 1.

Choice B is incorrect and may result from conceptual or calculation errors.

Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Hard

Question ID d683c482

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: d683c482

The number w is 110% greater than the number z. The number z is 55% less than 50. What is the value of w?

ID: d683c482 Answer

Correct Answer: 189/4, 47.25

Rationale

The correct answer is 47.25. It's given that the number w is 110% greater than the number z. It follows that $w = 1 + \frac{110}{100}z$, or $w = 2.1z$. It's also given that the number z is 55% less than 50. It follows that $z = 1 - \frac{55}{100}50$, or $z = 0.4550$, which yields $z = 22.5$. Substituting 22.5 for z in the equation $w = 2.1z$ yields $w = 2.122.5$, which is equivalent to $w = 47.25$. Therefore, the value of w is 47.25. Note that 47.25 and 189/4 are examples of ways to enter a correct answer.

Question Difficulty: Hard

Question ID 7dfb73de

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Problem-Solving and Data Analysis	Percentages	Hard

ID: 7dfb73de

According to a set of standards, a certain type of substance can contain a maximum of 0.001% phosphorus by mass. If a sample of this substance has a mass of 140 grams, what is the maximum mass, in grams, of phosphorus the sample can contain to meet these standards?

ID: 7dfb73de Answer

Correct Answer: .0014

Rationale

The correct answer is $.0014$. It's given that a certain type of substance can contain a maximum of 0.001% phosphorus by mass to meet a set of standards. If a sample of the substance has a mass of 140 grams, it follows that the maximum mass, in grams, of phosphorus the sample can contain to meet the standards is 0.001% of 140, or $\frac{0.001}{100}140$, which is equivalent to 0.00001140, or 0.0014. Note that .0014 and 0.001 are examples of ways to enter a correct answer.

Question Difficulty: Hard