Question ID 457cd6d8

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

ID: 457cd6d8

In a sample, 80% of the items are faulty. There are 88 faulty items in the sample. How many total items are in the sample?

ID: 457cd6d8 Answer

Correct Answer: 110

Rationale

The correct answer is 110. Let x represent the total number of items in the sample. It's given that 80% of the items are faulty and that there are 88 faulty items in the sample. Therefore, 80% of x is 88. Since 80% can be rewritten as $\frac{80}{100}$, it follows that $\frac{80}{100}x = 88$. Multiplying both sides of this equation by 100 yields $80x = 8{,}800$. Dividing both sides of this equation by 80 yields $x = 110$. Therefore, there are 110 total items in the sample.

Question Difficulty: Medium

Question ID d708c5e3

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

ID: d708c5e3

The population of City A increased by 7% from 2015 to 2016. If the 2016 population is k times the 2015 population, what is the value of k?

A. 0.07

B. 0.7

C. 1.07

D. 1.7

ID: d708c5e3 Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that the population of City A increased by 7% from 2015 to 2016. Therefore, the population of City A in 2016 includes 100% of the population of City A in 2015 plus an additional 7% of the population of City A in 2015. This means that the population of City A in 2016 is 107% of the population in 2015. Thus, the population of City A in 2016 is $\frac{107}{100}$, or 1.07, times the 2015 population. Therefore, the value of k is 1.07.

Choice A is incorrect. This would be the value of k if the population in 2016 was 7% of the population in 2015.

Choice B is incorrect. This would be the value of k if the population in 2016 was 70% of the population in 2015.

Choice D is incorrect. This would be the value of k if the population increased by 70%, not 7%, from 2015 to 2016.

Question Difficulty: Medium

Question ID dd880033

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

ID: dd880033

Which expression represents the result of increasing a positive quantity w by 43%?

A. $1.43w$

B. $0.57w$

C. $43w$

D. $0.43w$

ID: dd880033 Answer

Correct Answer: A

Rationale

Choice A is correct. The result of increasing a positive quantity w by $x\%$ can be represented by the expression $\left(1+\frac{x}{100}\right)w$. Therefore, the result of increasing a positive quantity w by 43% can be found by substituting 43 for x in the expression $\left(1+\frac{x}{100}\right)w$, which gives $\left(1+\frac{43}{100}\right)w$, or $1.43w$. Thus, the expression $1.43w$ represents the result of increasing a positive quantity w by 43%.

Choice B is incorrect. This is the result of decreasing a positive quantity w by 43%.

Choice C is incorrect. This is the result of increasing a positive quantity w by $4{,}200\%$.

Choice D is incorrect. This is the result of decreasing a positive quantity w by 57%.

Question Difficulty: Medium

Question ID c7c7d2e2

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

ID: c7c7d2e2

There are 450 tiles in a box. Of these tiles, 6% are black. How many black tiles are in the box?

ID: c7c7d2e2 Answer

Correct Answer: 27

Rationale

The correct answer is 27. It's given that 6% of the 450 tiles in a box are black. Therefore, the number of black tiles in the box can be calculated by multiplying the number of tiles in the box by $\frac{6}{100}$, which is equivalent to $450\left(\frac{6}{100}\right)$, or 27.

Question Difficulty: Medium

Question ID d5770b24

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

ID: d5770b24

432 is 96% of what number?

ID: d5770b24 Answer

Correct Answer: 450

Rationale

The correct answer is 450. Let x represent the number that 432 is 96% of. This can be written as $\left(\frac{96}{100}\right)x = 432$, or $0.96x = 432$. Dividing both sides of this equation by 0.96 yields $x = 450$. Therefore, 432 is 96% of 450.

Question Difficulty: Medium

Question ID 73f95aef

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

ID: 73f95aef

The population of Greenville increased by 7% from 2015 to 2016. If the 2016 population is k times the 2015 population, what is the value of k?

A. 0.07

B. 0.7

C. 1.07

D. 1.7

ID: 73f95aef Answer

Correct Answer: C

Rationale

Choice C is correct. Let x be the 2015 population of Greenville. It's given that the population increased by 7% from 2015 to 2016. The increase in population can be written as $(0.07)x$. The 2016 population of Greenville is given as the sum of the 2015 population of Greenville and the increase in population from 2015 to 2016. This can be rewritten as $x + (0.07)x$, or $1.07x$. Therefore, the value of k is 1.07.

Choice A is incorrect. This is the percent, represented as a decimal, that the population increased from 2015 to 2016, not the value of k.

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

Choice D is incorrect. This is the value of k if the population increased by 70%, not 7%, from 2015 to 2016.

Question Difficulty: Medium

Question ID 8426d0ec

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

ID: 8426d0ec

Last year, Cedric had 35 plants in his garden. This year, the number of plants in Cedric's garden is 60% greater than the number of plants in his garden last year. How many plants does Cedric have in his garden this year?

ID: 8426d0ec Answer

Correct Answer: 56

Rationale

The correct answer is 56. It's given that Cedric had 35 plants in his garden last year and that the number of plants in Cedric's garden this year is 60% greater than the number of plants in his garden last year. It follows that the number of plants in Cedric's garden this year is 35 plus 60% of 35, which is equal to $35 + 35\left(\frac{60}{100}\right)$, or $35 + 35(0.6)$. This expression is equivalent to $35 + 21$, or 56. Therefore, Cedric has 56 plants in his garden this year.

Question Difficulty: Medium

Question ID 52f5fe7b

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

ID: 52f5fe7b

The table summarizes the number of objects in each group.

Group	Number of objects
A	375
B	54
C	690
D	81
Total	$1,200$

The number of objects in group C is $p\%$ of the number of objects in group A. What is the value of p?

ID: 52f5fe7b Answer

Correct Answer: 184

Rationale

The correct answer is 184. It's given in the table that there are 375 objects in group A and 690 objects in group C. It's also given that the number of objects in group C is $p\%$ of the number of objects in group A. Therefore, 690 is $p\%$ of 375, which can be represented by $690 = \left(\frac{p}{100}\right)(375)$, or $690 = 3.75p$. Dividing both sides of this equation by 3.75 yields $184 = p$. Therefore, the value of p is 184.

Question Difficulty: Medium

Question ID 22efbe91

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

ID: 22efbe91

In a group, 40% of the items are red. Of all the red items in the group, 30% also have stripes. What percentage of the items in the group are red with stripes?

A. 10%

B. 12%

C. 70%

D. 75%

ID: 22efbe91 Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that in a group, 40% of the items are red. It follows that the number of red items in the group can be represented by $0.4x$, where x represents the total number of items in the group. It's also given that of all the red items in the group, 30% also have stripes. It follows that the number of items in the group that are red and have stripes can be represented by $0.3(0.4x)$, or $0.12x$. The expression $0.12x$ represents 12% of x. Since x represents the total number of items in the group, it follows that 12% of the items in the group are red and have stripes.

Choice A is incorrect and may result from subtracting 30% from 40% rather than calculating 30% of 40%.

Choice C is incorrect and may result from adding 30% and 40% rather than calculating 30% of 40%.

Choice D is incorrect and may result from calculating the percentage that 30% is of 40% rather than calculating 30% of 40%.

Question Difficulty: Medium

Question ID 1a850131

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

ID: 1a850131

The number of coins in a collection increased from 9 to 90. What was the percent increase in the number of coins in this collection?

A. 10%

B. 81%

C. 90%

D. 900%

ID: 1a850131 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that the number of coins in the collection increased from 9 to 90. It follows that the number of coins in the collection increased by $90 - 9$, or 81. Let $x\%$ represent the percentage that 81 is of 9. The value of x can be found using the proportion $\frac{81}{9} = \frac{x}{100}$, or $9 = \frac{x}{100}$. Multiplying both sides of this equation by 100 yields $900 = x$. Thus, when the number of coins in the collection increased from 9 to 90, the percent increase was 900%.

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: Medium

Question ID e639a4f6

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

ID: e639a4f6

The value of z is 1.13 times 100. The value of z is what percent greater than 100?

A. 11.3

B. 13

C. 130

D. 213

ID: e639a4f6 Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that the value of z is 1.13 times 100. This can be written as $z = (1.13)(100)$, which is equivalent to $z = (1 + 0.13)(100)$, or $z = \left(1 + \frac{13}{100}\right)(100)$. It follows that the value of z is 100% of 100 plus 13% of 100. Therefore, the value of z is 13% greater than 100.

Choice A is incorrect. This gives a value of z that is 1.113, not 1.13, times 100.

Choice C is incorrect. This gives a value of z that is 2.30, not 1.13, times 100.

Choice D is incorrect. This gives a value of z that is 3.13, not 1.13, times 100.

Question Difficulty: Medium

Question ID e8e05313

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

ID: e8e05313

In March, the price of a collectible card was $\$15.50$. In April, the price of the collectible card was $\$17.36$. The price of the collectible card in April was $p\%$ of the price of the collectible card in March. What is the value of p?

A. 12

B. 88

C. 112

D. 188

ID: e8e05313 Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that the price of the collectible card was $\$15.50$ in March and $\$17.36$ in April. It's also given that the price of the collectible card in April was $p\%$ of the price in March. It follows that $\$17.36$ is $p\%$ of $\$15.50$. Therefore, the value of p can be calculated by solving the equation $17.36 = \left(\frac{p}{100}\right)(15.50)$, or $17.36 = \frac{15.50p}{100}$. Multiplying each side of this equation by 100 yields $1{,}736 = 15.50p$. Dividing each side of this equation by 15.50 yields $112 = p$. Therefore, the value of p is 112.

Choice A is incorrect. 12% is the percent increase in the price of the collectible card from March to April.

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: Medium

Question ID d9dc059a

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

ID: d9dc059a

13 is $p\%$ of 25. What is the value of p?

ID: d9dc059a Answer

Correct Answer: 52

Rationale

The correct answer is 52. It's given that 13 is $p\%$ of 25. It follows that $\frac{13}{25} = \frac{p}{100}$. Multiplying both sides of this equation by 100 gives $52 = p$. Therefore, the value of p is 52.

Question Difficulty: Medium

Question ID d320f4c4

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

ID: d320f4c4

An insurance company offers a series of three information sessions. $1,250$ people attended the first information session. 72% of the people who attended the first information session attended the second information session, and 36% of the people who attended the first and second information sessions attended the third information session. How many people attended all three information sessions?

ID: d320f4c4 Answer

Correct Answer: 324

Rationale

The correct answer is 324. It's given that $1,250$ people attended the first information session, and that 72% of the people who attended the first information session attended the second information session. Therefore, the number of people who attended the first and second information sessions can be found by calculating 72% of $1,250$, which is equal to $1,250\left(\frac{72}{100}\right)$, or 900. It's also given that 36% of the people who attended the first and second information sessions attended the third information session. Since 900 people attended the first and second information sessions, the number of people who attended the first, second, and third information sessions can be found by calculating 36% of 900, which is equal to $900\left(\frac{36}{100}\right)$, or 324. Therefore, 324 people attended all three information sessions.

Question Difficulty: Medium

Question ID fdf7a80a

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

ID: fdf7a80a

What number is 40% greater than 115?

ID: fdf7a80a Answer

Correct Answer: 161

Rationale

The correct answer is 161. For a number to be 40% greater than 115, it follows that the number is $(100\% \text{ of } 115) + (40\% \text{ of } 115)$, which can be written as $\frac{100}{100}(115) + \frac{40}{100}(115)$. This expression is equivalent to $1(115) + 0.4(115)$, or $1.4(115)$, which is equal to 161. Therefore, 161 is 40% greater than 115.

Question Difficulty: Medium

Question ID a1c05998

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

ID: a1c05998

The amount of Hanna's bill for a food order was $\$50$. Hanna gave a tip of 20% of the amount of the bill. What is the amount, in dollars, of the tip Hanna gave?

ID: a1c05998 Answer

Correct Answer: 10

Rationale

The correct answer is 10. It's given that the amount of Hanna's food order was $\$50$ and that Hanna gave a tip of 20% of the amount of the bill. 20% of 50 can be calculated as $\left(\frac{20}{100}\right)(50)$, which yields $\frac{1000}{100}$, or 10. Therefore, the amount, in dollars, of the tip Hanna gave is 10.

Question Difficulty: Medium