Question ID 707db2d3

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

ID: 707db2d3

For the finale of a TV show, viewers could use either social media or a text message to vote for their favorite of two contestants. The contestant receiving more than 50% of the vote won. An estimated 10% of the viewers voted, and 30% of the votes were cast on social media. Contestant 2 earned 70% of the votes cast using social media and 40% of the votes cast using a text message. Based on this information, which of the following is an accurate conclusion?

A. If all viewers had voted, Contestant 2 would have won.

B. Viewers voting by social media were likely to be younger than viewers voting by text message.

C. If all viewers who voted had voted by social media instead of by text message, Contestant 2 would have won.

D. Viewers voting by social media were more likely to prefer Contestant 2 than were viewers voting by text message.

ID: 707db2d3 Answer

Correct Answer: D

Rationale

Choice D is correct. It is given that Contestant 2 earned 70% of the votes cast using social media and 40% of the votes cast using a text message. Based on this information, viewers voting by social media were more likely to prefer Contestant 2 than were viewers voting by text message.

Choices A, B, and C are incorrect. There is not enough information about the viewers to reach these conclusions.

Question Difficulty: Medium

Question ID 63573fea

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

ID: 63573fea

During the first month of sales, a company sold 1,300,000 units of a certain type of smartphone. During the same month, 15% of the units sold were returned. If sales and the return rate remain the same for each of the next 5 months, about how many units of this smartphone will be returned to the company during this 6-month period?

A. 195,000

B. 975,000

C. 1,170,000

D. 6,630,000

ID: 63573fea Answer

Correct Answer: C

Rationale

Choice C is correct. Of the 1,300,000 units sold during the first month, 15% were returned, so $(1{,}300{,}000)(0.15) = 195{,}000$ units were returned during the first month. If the units were sold and returned at the same rate for the next 5 months, then a total of $(195{,}000)(6) = 1{,}170{,}000$ smartphone units were returned during the 6-month period.

Choice A is incorrect. This is the number of units that were returned in 1 month. Choice B is incorrect. This is the number of units that were returned in 5 months. Choice D is incorrect. This is the number of units sold and not returned during the first 6 months.

Question Difficulty: Medium

Question ID 8a714fa1

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

ID: 8a714fa1

Which of the following represents the result of increasing the quantity *x* by 9%, where $x > 0$?

A. $1.09x$

B. $0.09x$

C. $x + 9$

D. $x + 0.09$

ID: 8a714fa1 Answer

Correct Answer: A

Rationale

Choice A is correct. Increasing the positive quantity x by 9% is the result of adding 9% of x to x. 9% of x can be represented algebraically as $\frac{9}{100}x$, or $0.09x$. Adding this expression to x yields $x + 0.09x$, or $1.09x$.

Choice B is incorrect. This represents 9% of x. Choice C is incorrect. This represents increasing x by 9, not by 9%. Choice D is incorrect. This represents increasing x by 0.09, not by 9%.

Question Difficulty: Medium

Question ID 8e2e424e

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

ID: 8e2e424e

The number k is 36% greater than 50. If k is the product of 50 and r, what is the value of r ?

A. 36

B. 3.6

C. 1.36

D. 0.36

ID: 8e2e424e Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that the number k is 36% greater than 50. Therefore, the value of k is the number 50 plus 36% of 50. This can be rewritten as $k = 50 + \left(\frac{36}{100}\right)(50)$. Multiplying the terms $\left(\frac{36}{100}\right)(50)$ yields 18, so $k = 50 + 18$, or $k = 68$. It's also given that k is the product of 50 and r, which can be rewritten as $k = 50r$. Substituting 68 for k yields $68 = 50r$. Dividing both sides of this equation by 50 yields $r = 1.36$.

Choice A is incorrect. This is the percentage that k is greater than 50. Choice B is incorrect and may result from a calculation error. Choice D is incorrect. This would be the value of r if k were 36% of 50, instead of 36% greater than 50.

Question Difficulty: Medium

Question ID 709e04de

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

ID: 709e04de

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: 709e04de 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 8cbf1415

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

ID: 8cbf1415

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: 8cbf1415 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 96a45430

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

ID: 96a45430

A number n is increased 6%. If the result is 318, what is the value of n ?

A. 199

B. 299

C. 300

D. 337

ID: 96a45430 Answer

Correct Answer: C

Rationale

Choice C is correct. The decimal equivalent of 6% is 0.06. Since increasing the number n by 6% yields the number 318, this situation can be represented by the equation $n(1+0.06)=318$, or $n(1.06)=318$. Dividing both sides of this equation by 1.06 yields $n=300$.

Choice A is incorrect. This is the result when n is increased by 60%, not by 6%. Choice B is incorrect. This is the approximate result of decreasing 318 by 6%. Choice D is incorrect. This is the approximate result of increasing 318 by 6%.

Question Difficulty: Medium

Question ID b2f6f17d

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

ID: b2f6f17d

A customer's monthly water bill was $75.74. Due to a rate increase, her monthly bill is now $79.86. To the nearest tenth of a percent, by what percent did the amount of the customer's water bill increase?

A. 4.1%

B. 5.1%

C. 5.2%

D. 5.4%

ID: b2f6f17d Answer

Correct Answer: D

Rationale

Choice D is correct. To find the percent increase of the customer's water bill, the absolute increase of the bill, in dollars, is divided by the original amount of the bill, and the result is multiplied by 100%, as follows: $\frac{79.86-75.74}{75.74}\approx 0.054$; $0.054\times 100\% = 5.4\%$.

Choice A is incorrect. This choice is the difference $79.86-75.74$ rounded to the nearest tenth, which is the (absolute) increase of the bill's amount, not its percent increase. Choice B is incorrect and may be the result of some calculation errors. Choice C is incorrect and is the result of dividing the difference between the two bill amounts by the new bill amount instead of the original bill amount.

Question Difficulty: Medium

Question ID 94c65646

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

ID: 94c65646

432 is 96% of what number?

ID: 94c65646 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 7b731fc3

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

ID: 7b731fc3

What number is 40% greater than 115?

ID: 7b731fc3 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 566759ef

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

ID: 566759ef

Thomas installed a new stove in his restaurant. At the time of installation, the stove had a value of $800. Thomas estimates that each year the value of the stove will depreciate by 20% of the previous year's estimated value. What is the estimated value of the stove exactly 2 years after Thomas installed it?

A. $480

B. $512

C. $556

D. $640

ID: 566759ef Answer

Rationale

Choice B is correct. If the stove's value depreciates by 20% of the previous year's estimated value, then each year it retains 100% – 20% = 80%, or 0.80, of the previous year's estimated value. Since the stove's value was $800 when Thomas installed it, the estimated value after two years would be (0.80)(0.80)($800) = $512.

Choice A is incorrect. This is the value of the stove if each year it had depreciated by 20% of the original value rather than by 20% of the previous year's estimated value. Choice C is incorrect and may be the result of a computational error. Choice D is incorrect. This is the estimated value of the stove 1 year after Thomas installed it, not 2 years.

Question Difficulty: Medium