Question ID 2c121b25

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	■□□

ID: 2c121b25 1.1

Valentina bought two containers of beads. In the first container 30% of the beads are red, and in the second container 70% of the beads are red. Together, the containers have at least 400 red beads. Which inequality shows this relationship, where x is the total number of beads in the first container and y is the total number of beads in the second container?

A. $0.3x + 0.7y \geq 400$

B. $0.7x + 0.3y \leq 400$

C. $\frac{x}{3} + \frac{y}{7} \leq 400$

D. $30x + 70y \geq 400$

ID: 2c121b25 Answer

Correct Answer: A

Rationale

Choice A is correct. It is given that x is the total number of beads in the first container and that 30% of those beads are red; therefore, the expression 0.3x represents the number of red beads in the first container. It is given that y is the total number of beads in the second container and that 70% of those beads are red; therefore, the expression 0.7y represents the number of red beads in the second container. It is also given that, together, the containers have at least 400 red beads, so the inequality that shows this relationship is $0.3x + 0.7y \geq 400$.

Choice B is incorrect because it represents the containers having a total of at most, rather than at least, 400 red beads. Choice C is incorrect and may be the result of misunderstanding how to represent a percentage of beads in each container. Also, the inequality shows the containers having a combined total of at most, rather than at least, 400 red beads. Choice D is incorrect because the percentages were not converted to decimals.

Question Difficulty: Easy

Question ID ee439cff

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	■□□

ID: ee439cff 1.2

On a car trip, Rhett and Jessica each drove for part of the trip, and the total distance they drove was under 220 miles. Rhett drove at an average speed of 35 miles per hour (mph), and Jessica drove at an average speed of 40 mph. Which of the following inequalities represents this situation, where r is the number of hours Rhett drove and j is the number of hours Jessica drove?

A. $35r + 40j > 220$

B. $35r + 40j < 220$

C. $40r + 35j > 220$

D. $40r + 35j < 220$

ID: ee439cff Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that Rhett drove at an average speed of 35 miles per hour and that he drove for r hours. Multiplying 35 miles per hour by r hours yields $35r$ miles, or the distance that Rhett drove. It's also given that Jessica drove at an average speed of 40 miles per hour and that she drove for j hours. Multiplying 40 miles per hour by j hours yields $40j$ miles, or the distance that Jessica drove. The total distance, in miles, that Rhett and Jessica drove can be represented by the expression $35r + 40j$. It's given that the total distance they drove was under 220 miles. Therefore, the inequality $35r + 40j < 220$ represents this situation.

Choice A is incorrect. This inequality represents a situation in which the total distance Rhett and Jessica drove was over, rather than under, 220 miles.

Choice C is incorrect. This inequality represents a situation in which Rhett drove at an average speed of 40, rather than 35, miles per hour, Jessica drove at an average speed of 35, rather than 40, miles per hour, and the total distance they drove was over, rather than under, 220 miles.

Choice D is incorrect. This inequality represents a situation in which Rhett drove at an average speed of 40, rather than 35, miles per hour, and Jessica drove at an average speed of 35, rather than 40, miles per hour.

Question Difficulty: Easy

Question ID 563407e5

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	■□□

ID: 563407e5 1.3

A bakery sells trays of cookies. Each tray contains at least 50 cookies but no more than 60. Which of the following could be the total number of cookies on 4 trays of cookies?

A. 165

B. 205

C. 245

D. 285

ID: 563407e5 Answer

Correct Answer: B

Rationale

Choice B is correct. If each tray contains the least number of cookies possible, 50 cookies, then the least number of cookies possible on 4 trays is 50 × 4 = 200 cookies. If each tray contains the greatest number of cookies possible, 60 cookies, then the greatest number of cookies possible on 4 trays is 60 × 4 = 240 cookies. If the least number of cookies on 4 trays is 200 and the greatest number of cookies is 240, then 205 could be the total number of cookies on these 4 trays of cookies because $200 \leq 205 \leq 240$.

Choices A, C, and D are incorrect. The least number of cookies on 4 trays is 200 cookies, and the greatest number of cookies on 4 trays is 240 cookies. The choices 165, 245, and 285 are each either less than 200 or greater than 240; therefore, they cannot represent the total number of cookies on 4 trays.

Question Difficulty: Easy

Question ID df32b09c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	■□□

ID: df32b09c 1.4

Tom scored 85, 78, and 98 on his first three exams in history class. Solving which inequality gives the score, *G*, on Tom's fourth exam that will result in a mean score on all four exams of at least 90 ?

A. $90-(85+78+98)\leq 4G$

B. $4G+85+78+98\geq 360$

C. $\frac{(G+85+78+98)}{4}\geq 90$

D. $\frac{(85+78+98)}{4}\geq 90-4G$

ID: df32b09c Answer

Correct Answer: C

Rationale

Choice C is correct. The mean of the four scores (G, 85, 78, and 98) can be expressed as $\frac{G+85+78+98}{4}$. The inequality that expresses the condition that the mean score is at least 90 can therefore be written as $\frac{G+85+78+98}{4}\geq 90$.

Choice A is incorrect. The sum of the scores (G, 85, 78, and 98) isn't divided by 4 to express the mean. Choice B is incorrect and may be the result of an algebraic error when multiplying both sides of the inequality by 4. Choice D is incorrect because it doesn't include G in the mean with the other three scores.

Question Difficulty: Easy

Question ID 915463e0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	■□□

ID: 915463e0

1.5

Normal body temperature for an adult is between $97.8°F$ and $99°F$, inclusive. If Kevin, an adult male, has a body temperature that is considered to be normal, which of the following could be his body temperature?

A. $96.7°F$

B. $97.6°F$

C. $97.9°F$

D. $99.7°F$

ID: 915463e0 Answer

Correct Answer: C

Rationale

Choice C is correct. Normal body temperature must be greater than or equal to 97.8°F but less than or equal to 99°F. Of the given choices, 97.9°F is the only temperature that fits these restrictions.

Choices A and B are incorrect. These temperatures are less than 97.8°F, so they don't fit the given restrictions. Choice D is incorrect. This temperature is greater than 99°F, so it doesn't fit the given restrictions.

Question Difficulty: Easy

Question ID 89541f9b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	■□□

ID: 89541f9b 1.6

Which of the following ordered pairs (x, y) satisfies the inequality $5x - 3y < 4$?

1. $(1, 1)$
2. $(2, 5)$
3. $(3, 2)$

A. I only

B. II only

C. I and II only

D. I and III only

ID: 89541f9b Answer

Correct Answer: C

Rationale

Choice C is correct. Substituting $(1,1)$ into the inequality gives $5(1) - 3(1) < 4$, or $2 < 4$, which is a true statement. Substituting $(2,5)$ into the inequality gives $5(2) - 3(5) < 4$, or $-5 < 4$, which is a true statement. Substituting $(3,2)$ into the inequality gives $5(3) - 3(2) < 4$, or $9 < 4$, which is not a true statement. Therefore, $(1,1)$ and $(2,5)$ are the only ordered pairs shown that satisfy the given inequality.

Choice A is incorrect because the ordered pair $(2,5)$ also satisfies the inequality. Choice B is incorrect because the ordered pair $(1,1)$ also satisfies the inequality. Choice D is incorrect because the ordered pair $(3,2)$ does not satisfy the inequality.

Question Difficulty: Easy

Question ID 84d0d07e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	■□□

ID: 84d0d07e 1.7

A clothing store is having a sale on shirts and pants. During the sale, the cost of each shirt is $15 and the cost of each pair of pants is $25. Geoff can spend at most $120 at the store. If Geoff buys *s* shirts and *p* pairs of pants, which of the following must be true?

A. $15s + 25p \leq 120$

B. $15s + 25p \geq 120$

C. $25s + 15p \leq 120$

D. $25s + 15p \geq 120$

ID: 84d0d07e Answer

Correct Answer: A

Rationale

Choice A is correct. Since the cost of each shirt is $15 and Geoff buys s shirts, the expression $15s$ represents the amount Geoff spends on shirts. Since the cost of each pair of pants is $25 and Geoff buys p pairs of pants, the expression $25p$ represents the amount Geoff spends on pants. Therefore, the sum $15s + 25p$ represents the total amount Geoff spends at the store. Since Geoff can spend at most $120 at the store, the total amount he spends must be less than or equal to 120. Thus, $15s + 25p \leq 120$.

Choice B is incorrect. This represents the situation in which Geoff spends at least, rather than at most, $120 at the store. Choice C is incorrect and may result from reversing the cost of a shirt and that of a pair of paints. Choice D is incorrect and may result from both reversing the cost of a shirt and that of a pair of pants and from representing a situation in which Geoff spends at least, rather than at most, $120 at the store.

Question Difficulty: Easy

Question ID e744499e

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	■□□

ID: e744499e 1.8

An elementary school teacher is ordering x workbooks and y sets of flash cards for a math class. The teacher must order at least 20 items, but the total cost of the order must not be over $80. If the workbooks cost $3 each and the flash cards cost $4 per set, which of the following systems of inequalities models this situation?

A. $\begin{aligned} x+y &\geq 20 \\ 3x+4y &\leq 80 \end{aligned}$

B. $\begin{aligned} x+y &\geq 20 \\ 3x+4y &\geq 80 \end{aligned}$

C. $\begin{aligned} 3x+4y &\leq 20 \\ x+y &\geq 80 \end{aligned}$

D. $\begin{aligned} x+y &\leq 20 \\ 3x+4y &\geq 80 \end{aligned}$

ID: e744499e Answer

Correct Answer: A

Rationale

Choice A is correct. The total number of workbooks and sets of flash cards ordered is represented by x + y. Since the teacher must order at least 20 items, it must be true that x + y ≥ 20. Each workbook costs $3; therefore, 3x represents the cost, in dollars, of x workbooks. Each set of flashcards costs $4; therefore, 4y represents the cost, in dollars, of y sets of flashcards. It follows that the total cost for x workbooks and y sets of flashcards is 3x + 4y. Since the total cost of the order must not be over $80, it must also be true that 3x + 4y ≤ 80. Of the choices given, these inequalities are shown only in choice A.

Choice B is incorrect. The second inequality says that the total cost must be greater, not less than or equal to $80. Choice C incorrectly limits the cost by the minimum number of items and the number of items with the maximum cost. Choice D is incorrect. The first inequality incorrectly says that at most 20 items must be ordered, and the second inequality says that the total cost of the order must be at least, not at most, $80.

Question Difficulty: Easy

Question ID b75f7812

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	■□□

ID: b75f7812

1.9

Maria plans to rent a boat. The boat rental costs $60 per hour, and she will also have to pay for a water safety course that costs $10. Maria wants to spend no more than $280 for the rental and the course. If the boat rental is available only for a whole number of hours, what is the maximum number of hours for which Maria can rent the boat?

ID: b75f7812 Answer

Rationale

The correct answer is 4. The equation $60h + 10 \leq 280$, where h is the number of hours the boat has been rented, can be written to represent the situation. Subtracting 10 from both sides and then dividing by 60 yields $h \leq 4.5$. Since the boat can be rented only for whole numbers of hours, the maximum number of hours for which Maria can rent the boat is 4.

Question Difficulty: Easy

Question ID 72a5fd28

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	■□□

ID: 72a5fd28

1.10

For a party, 50 dinner rolls are needed. Dinner rolls are sold in packages of 12. What is the minimum number of packages that should be bought for the party?

ID: 72a5fd28 Answer

Correct Answer: 5

Rationale

The correct answer is 5. Let p represent the number of packages of dinner rolls that should be bought for the party. It's given that dinner rolls are sold in packages of 12. Therefore, $12p$ represents the number of dinner rolls that should be bought for the party. It's also given that 50 dinner rolls are needed; therefore, $12p \geq 50$. Dividing both sides of this inequality by 12 yields $p \geq \frac{50}{12}$, or approximately $p \geq 4.17$. Since the number of packages of dinner rolls must be a whole number, the minimum number of packages that should be bought for the party is 5.

Question Difficulty: Easy

Question ID 86f7483f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Algebra	Linear inequalities in one or two variables	■□□

ID: 86f7483f

1.11

During spring migration, a dragonfly traveled a minimum of $1{,}510$ miles and a maximum of $4{,}130$ miles between stopover locations. Which inequality represents this situation, where d is a possible distance, in miles, this dragonfly traveled between stopover locations during spring migration?

A. $d \leq 1{,}510$

B. $1{,}510 \leq d \leq 4{,}130$

C. $d \geq 4{,}130$

D. $4{,}130 \leq d \leq 5{,}640$

ID: 86f7483f Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that during spring migration, a dragonfly traveled a minimum of $1{,}510$ miles and a maximum of $4{,}130$ miles between stopover locations. It's also given that d represents a possible distance, in miles, this dragonfly traveled between stopover locations. It follows that the inequality $1{,}510 \leq d \leq 4{,}130$ represents this situation.

Choice A is incorrect. This inequality represents a situation in which a dragonfly traveled a maximum of $1{,}510$ miles between stopover locations.

Choice C is incorrect. This inequality represents a situation in which a dragonfly traveled a minimum of $4{,}130$ miles between stopover locations.

Choice D is incorrect. This inequality represents a situation in which a dragonfly traveled a minimum of $4{,}310$ miles and a maximum of $5{,}640$ miles between stopover locations.

Question Difficulty: Easy