

 My Answer Correct Answer[Explanation](#)[Exit Section](#)[Review](#)[Back](#)[Next](#)

Section 5 of 5 | Review Mode: Question 1 of 20

$$y \geq 0$$

Quantity A

$$(\sqrt{y+5} - \sqrt{y})(\sqrt{y+5} + \sqrt{y})$$

Quantity B

5

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 1 of 20

Explanation

You can simplify Quantity A as follows.

$$\text{Step 1: } (\sqrt{y+5} - \sqrt{y})(\sqrt{y+5} + \sqrt{y}) = (\sqrt{y+5})^2 - (\sqrt{y})^2$$

$$\text{Step 2: } (\sqrt{y+5})^2 - (\sqrt{y})^2 = y+5 - y = 5$$

The correct answer is **Choice 3**, that is, **The two quantities are equal**.

This explanation uses the following strategy.

Strategy 5: Simplify an Arithmetic or Algebraic Representation

Difficulty level: 4 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 2 of 20

In the xy -plane, the graph of the function $y = g(x)$ intersects the x -axis at 3 points.

Quantity A

The number of points at which the graph of the function $y = g(x - 5)$ intersects the x -axis

Quantity B

3

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 2 of 20

Explanation

Recall that for a positive number c , the graph of the function $y = f(x - c)$ in the xy -plane is the graph of $y = f(x)$ shifted to the right by c units.

You are given that the graph of $y = g(x)$ intersects the x -axis at 3 points, say $(r, 0)$, $(s, 0)$, and $(t, 0)$. Since the graph of $y = g(x - 5)$ is the graph of $y = g(x)$ shifted to the right by 5 units, it follows that the graph of $y = g(x - 5)$ intersects the x -axis at the 3 points $(r + 5, 0)$, $(s + 5, 0)$, and $(t + 5, 0)$. So Quantity A is equal to 3. Since Quantity B is 3, the correct answer is **Choice 3**, that is, **The two quantities are equal.**

This explanation uses the following strategy.

Strategy 8: Search for a Mathematical Relationship

Difficulty level: 4 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 3 of 20

k and n are positive integers.

n and $n+2$ are factors of k .

Quantity A

$$\frac{k}{n}$$

Quantity B

$$n+2$$

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

Select one answer choice.

 My Answer Correct Answer[Explanation](#)[Exit Section](#)[Review](#)[Back](#)[Next](#)

Section 5 of 5 | Review Mode: Question 3 of 20

Explanation

In this question you are asked to compare $\frac{k}{n}$ with $n + 2$, given that k and n are positive integers, and both n and $n + 2$ are factors of k . One way to approach this comparison is to try some suitable values of n and k to see what happens.

Note that if $n = 2$, then $n + 2 = 4$ and k can be any positive multiple of 4. So you can begin with cases where $n = 2$ and k is a positive multiple of 4.

Case 1: $n = 2$ and $k = 4$. In this case, $\frac{k}{n}$ is equal to $\frac{4}{2}$, or 2, and $n + 2$ is equal to 4, so Quantity B is greater.

Case 2: $n = 2$ and $k = 8$. In this case, $\frac{k}{n}$ is equal to $\frac{8}{2}$, or 4, and $n + 2$ is equal to 4, so Quantities A and B are equal.

Case 3: $n = 2$ and $k = 12$. In this case, $\frac{k}{n}$ is equal to $\frac{12}{2}$, or 6, and $n + 2$ is equal to 4, so Quantity A is greater.

Given these cases, you can see that the correct answer is **Choice 4**, that is, **The relationship cannot be determined from the information given**.

This explanation uses the following strategies.

Strategy 10: Trial and Error

Strategy 11: Divide into Cases

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 4 of 20

$$x > 7,999$$

Quantity AThe digit in the thousands place of x Quantity B

6

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 4 of 20

Explanation

In this question you are asked to compare the thousands place of x , where $x > 7,999$, with 6. Three possible values of x are 8,000, 10,000, and 16,000. The digits in the thousands place of these three numbers are 8, 0, and 6, respectively. From these examples, you can see that Quantity A can be any integer from 0 to 9.

The correct answer is **Choice 4**, that is, **The relationship cannot be determined from the information given.**

This explanation uses the following strategies.

Strategy 10: Trial and Error

Strategy 13: Determine Whether a Conclusion Follows from the Information Given

Difficulty level: 4 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 5 of 20

n is a negative integer, and p is a positive integer.

Quantity A

The product of the integers from n to p

Quantity B

0

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 5 of 20

Explanation

The sequence of integers from any negative integer n to any positive integer p must include the integer 0, so Quantity A, the product of these integers, is equal to 0.

The correct answer is **Choice 3**, that is, **The two quantities are equal**.

This explanation uses the following strategy.

Strategy 8: Search for a Mathematical Relationship

Difficulty level: 4 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer[Explanation](#)[Exit Section](#)[Review](#)[Back](#)[Next](#)

Section 5 of 5 | Review Mode: Question 6 of 20

x percent of y is $\frac{3}{4}$ of z , where x , y , and z are positive.

Quantity A

$$\frac{xy}{z}$$

Quantity B

75

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 6 of 20

Explanation

Using the definition of percent, you can translate the given information into the equation

$\left(\frac{x}{100}\right)y = \left(\frac{3}{4}\right)z$. Multiplying both sides of the equation by 100 and dividing both sides of the

equation by z yields the equation $\frac{xy}{z} = \left(\frac{3}{4}\right)(100)$. Since Quantity A is $\frac{xy}{z}$ and $\left(\frac{3}{4}\right)(100) = 75$ and

Quantity B is 75, the correct answer is **Choice 3**, that is, **The two quantities are equal**.

This explanation uses the following strategies.

Strategy 1: Translate from Words to an Arithmetic or Algebraic Representation

Strategy 5: Simplify an Arithmetic or Algebraic Representation

Difficulty level: 4 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer[Explanation](#)[Exit Section](#)[Review](#)[Back](#)[Next](#)

Section 5 of 5 | Review Mode: Question 7 of 20

Test	Class Mean Score	Neva's Score	Neva's Percentile Rank
History	74	80	85
Biology	68	80	<i>n</i>

Quantity A*n*Quantity B

85

- Quantity A is greater.
- Quantity B is greater.
- The two quantities are equal.
- The relationship cannot be determined from the information given.

[Select one answer choice.](#)

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 7 of 20

Explanation



In this question you are asked to compare n , Neva's percentile rank on the biology test, with 85. Recall that Neva's percentile rank on a test is the percent of scores on the test that are less than or equal to Neva's score. So, according to the table with the question, for the history test, 85% of the class scores are less than or equal to Neva's score, 80.

For the scores on the biology test, you are given only the mean score, 68, and Neva's score, 80. You are not given any more information about the distribution of scores on the test. Neva's percentile rank could be the same as it is for the scores on the history test, 85, or it could be somewhat less or greater. For example, if Neva had the greatest score in the class on the biology test, then her percentile rank would be 100. So there is not enough information to determine whether Quantity A, her percentile rank n , is greater than, equal to, or less than 85.

The correct answer is **Choice 4**, that is, **The relationship cannot be determined from the information given.**

This explanation uses the following strategies.

Strategy 4: Translate from a Figure to an Arithmetic or Algebraic Representation

Strategy 13: Determine Whether a Conclusion Follows from the Information Given

Difficulty level: 5 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer

Explanation

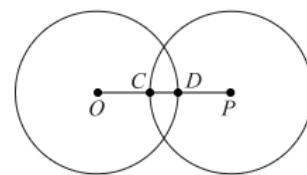
Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 8 of 20



In the figure shown, the circles centered at O and P have radii of equal length. If $OP = 9$ and $CD = 3$, what is the circumference of the circle centered at O ?

- 6π
- 9π
- 12π
- 18π
- 36π

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 8 of 20

Explanation

From the figure with the question, you see that $OP = OD + CP - CD$, where OD and CP are the radii of the two circles. Since the two radii have equal length, $OD = CP$. Thus OP can be rewritten as $OP = 2(OD) - CD$. Substituting $OP = 9$ and $CD = 3$ into the rewritten equation, you have $9 = 2(OD) - 3$, so that $OD = 6$. Hence each circle has radius 6, and the circumference of each circle is $(2\pi)(6)$, or 12π . The correct answer is **Choice 3**, that is, 12π .

This explanation uses the following strategies.

Strategy 1: Translate from Words to an Arithmetic or Algebraic Representation

Strategy 4: Translate from a Figure to an Arithmetic or Algebraic Representation

Strategy 5: Simplify an Arithmetic or Algebraic Representation

$CD = 3$,

Difficulty level: 4 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer[Explanation](#)[Exit Section](#)[Review](#)[Back](#)[Next](#)

Section 5 of 5 | Review Mode: Question 9 of 20

If n is an integer, what is the least value of n for which $4^{-n} < \frac{1}{512}$?

- 4
- 5
- 6
- 7
- 8

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 9 of 20

Explanation

By a rule of exponents, $4^{-n} = \frac{1}{4^n}$ for any number n . So the inequality $4^{-n} < \frac{1}{512}$ can be rewritten as $\frac{1}{4^n} < \frac{1}{512}$, or $4^n > 512$. To answer the question, you need to find the least integer n for which .

Note that and that for any negative integer n , the value of 4^n is less than 1. So the integer n you are looking for must be positive.

The first few positive integer powers of 4 are , , $4^3 = 64$, $4^4 = 256$, and .

Hence the least integer n for which $4^n > 512$ is 5. The correct answer is **Choice 2**, that is, 5.

This explanation uses the following strategies.

Strategy 5: Simplify an Arithmetic or Algebraic Representation

Strategy 9: Estimate

Strategy 10: Trial and Error

Difficulty level: 4 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 10 of 20

On the outside, a closed rectangular packing box, made out of cardboard, is 12 inches long, 18 inches wide, and 24 inches high. If the cardboard is $\frac{1}{4}$ inch thick, which of the following is closest to the volume inside the box, in cubic inches?

- 3,700
- 3,900
- 4,300
- 4,700
- 5,200

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 10 of 20

Explanationches wide,
me inside

The volume of the interior of a rectangular box is the product of the interior dimensions of length, width, and height. To obtain the interior dimensions, you subtract twice the width of the cardboard from each outside dimension, that is, you subtract $\frac{1}{2}$ inch, or 0.5 inch, from each outside dimension. Then the interior volume is equal to $(11.5)(17.5)(23.5)$, or 4,729.375. Of the answer choices, the closest is 4,700. The correct answer is **Choice 4**, that is, **4,700**.

This explanation uses the following strategies.

Strategy 1: Translate from Words to an Arithmetic or Algebraic Representation

Strategy 8: Search for a Mathematical Relationship

Strategy 9: Estimate

Difficulty level: 4 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer

Explanation

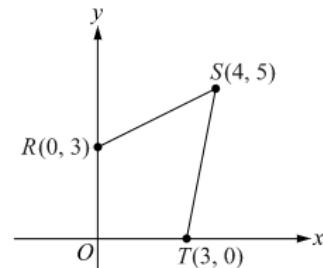
Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 11 of 20



In the xy -plane shown, what is the area of quadrilateral $RSTO$?

- 15 $13\frac{1}{2}$ $11\frac{1}{4}$ $10\frac{1}{2}$ 7

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

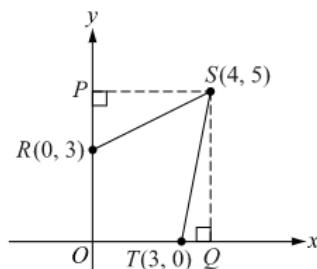
Back

Next

Section 5 of 5 | Review Mode: Question 11 of 20

Explanation

You can use vertex S of quadrilateral $RSTO$ to construct a rectangle, $PSQO$, as shown in the following figure.



From this figure you see that the area of quadrilateral $RSTO$ is equal to the area of rectangle $PSQO$ minus the areas of two right triangles, RPS and SQT .

In rectangle $PSQO$, note that vertex S has coordinates $(4, 5)$; also note that vertex P is on the y -axis directly to the left of vertex S and that vertex Q is on the x -axis directly below vertex S . From this you can conclude that the length of side OQ is 4 and that the length of side OP is 5. So, the area of rectangle $PSQO$ is $(4)(5)$, or 20.

In right triangle RPS , note that vertex P is on the y -axis and directly to the left of vertex S . Therefore vertex P has coordinates $(0, 5)$. Since vertex R has coordinates $(0, 3)$, it follows that the length of base PR is $5 - 3$, or 2, and the length of the corresponding height PS is 4. Thus the area of right triangle RPS is $\frac{1}{2}(2)(4)$, or 4.

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 11 of 20

Explanation

From this you can conclude that the length of side PS is 4 and that the length of side ST is 5. So, the area of rectangle $PSQT$ is $(4)(5)$, or 20.

In right triangle RPS , note that vertex P is on the y -axis and directly to the left of vertex S . Therefore vertex P has coordinates $(0, 5)$. Since vertex R has coordinates $(0, 3)$, it follows that the length of base PR is $5 - 3$, or 2, and the length of the corresponding height PS is 4. Thus the area of right triangle RPS is $\frac{(2)(4)}{2}$, or 4.

Similarly, in right triangle SQT , note that vertex Q is on the x -axis and directly below vertex S . Therefore vertex Q has coordinates $(4, 0)$. Since vertex T has coordinates $(3, 0)$, it follows that the length of base TQ is $4 - 3$, or 1, and the length of the corresponding height SQ is 5. Thus the area of right triangle SQT is $\frac{(1)(5)}{2}$, or $2\frac{1}{2}$.

Therefore the area of quadrilateral $RSTO$ is $20 - \left(4 + 2\frac{1}{2}\right) = 13\frac{1}{2}$. The correct answer is **Choice 2**, that is, $13\frac{1}{2}$.

This explanation uses the following strategies.

Strategy 4: Translate from a Figure to an Arithmetic or Algebraic Representation

Strategy 6: Add to a Geometric Figure

Difficulty level: 4 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 12 of 20

The average (arithmetic mean) age of the people in group G is 41 years, and the average age of the people in group H is 36 years. The average age of the people in the two groups combined is 38 years. If no person is in both groups, what fraction of the people in the two groups combined are in group H ?

- $\frac{2}{5}$ $\frac{1}{2}$ $\frac{3}{5}$ $\frac{2}{3}$ $\frac{3}{4}$

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 12 of 20

Explanation

Let x be the number of people in group G and let y be the number of people in group H . You are given that no person is in both groups, the average age of the people in group G is 41 years, and the average age of the people in group H is 36 years, so you can conclude that the average age of the people in the two groups combined is $\frac{41x + 36y}{x + y}$. Since you are also given that the average age of the people in the two groups combined is 38, it follows that

$$\frac{41x + 36y}{x + y} = 38.$$

From this equation, you can find the relationship between x and y as follows.

Step 1: $41x + 36y = 38(x + y)$

Step 2: $41x + 36y = 38x + 38y$

Step 3: $3x = 2y$

Step 4: $x = \left(\frac{2}{3}\right)y$

The fraction of the people in the two groups combined that are in group H is $\frac{y}{x + y}$. You can substitute $\left(\frac{2}{3}\right)y$ for x in this fraction, and then simplify it as follows.

the people
If no
?

Select one answer choice.

 My Answer Correct Answer[Explanation](#)[Exit Section](#)[Review](#)[Back](#)[Next](#)

Section 5 of 5 | Review Mode: Question 12 of 20

Explanation

Step 3: $3x = 2y$

Step 4: $x = \left(\frac{2}{3}\right)y$

The fraction of the people in the two groups combined that are in group H is $\frac{y}{x+y}$. You can substitute $\left(\frac{2}{3}\right)y$ for x in this fraction, and then simplify it as follows.

$$\frac{y}{x+y} = \frac{y}{\left(\frac{2}{3}\right)y+y} = \frac{y}{\left(\frac{5}{3}\right)y} = \frac{3}{5}$$

The correct answer is **Choice 3**, that is, $\frac{3}{5}$.

the people
If no
?

This explanation uses the following strategies.

Strategy 1: Translate from Words to an Arithmetic or Algebraic Representation

Strategy 5: Simplify an Arithmetic or Algebraic Representation

Strategy 8: Search for a Mathematical Relationship

Difficulty level: 4 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 13 of 20

Which of the following inequalities specify values of x that satisfy the inequality $x(x + 3)(x - 5) > 0$?

Indicate all such inequalities.

- $x < -3$
- $-3 < x < 0$
- $0 < x < 5$
- $x > 5$

Select one or more answer choices.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 13 of 20

Explanation

You are asked to determine which of the answer choices specify values of x for which the expression $x(x + 3)(x - 5)$ is positive. Note that the expression is the product of three factors.

Recall that the product of three numbers is positive in two cases.

Case 1: All three of the numbers are positive.

Case 2: One of the numbers is positive and the other two numbers are negative.

So you can determine whether an answer choice specifies values of x for which the expression $x(x + 3)(x - 5)$ is positive by considering the signs of the values of the three factors, x , $x + 3$, and $x - 5$, for the specified values of x .

For Choice 1, $x < -3$. For these values of x , the factor x is negative, the factor $x + 3$ is negative, and the factor $x - 5$ is negative. Since all of the factors are negative, the product is negative.

For Choice 2, $-3 < x < 0$. For these values of x , the factor x is negative, the factor $x + 3$ is positive, and the factor $x - 5$ is negative. Since one of the factors is positive and two of the factors are negative, the product is positive.

For Choice 3, $0 < x < 5$. For these values of x , the factor x is positive, the factor $x + 3$ is positive, and the factor $x - 5$ is negative. Since two of the factors are positive and one of the factors is negative, the product is negative.

For Choice 4, $x > 5$. For these values of x , all three factors are positive, so the product is positive.

The correct answer consists of **Choices 2 and 4**, that is, $-3 < x < 0$ and $x > 5$.

5) > 0 ?

Select one or more answer choices.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 14 of 20

Questions 14 to 16 are based on the following data.

**Cost of Selected Home Remodeling Projects
and Return on the Project When Home Is Sold
in City X in 1999**

Project	Average Cost	Average Return
Attic bedroom addition	\$32,700	\$28,000
Bathroom remodeling	\$10,400	\$10,200
Deck addition	\$9,100	\$4,400
Family room addition	\$35,300	\$24,400
Home office addition	\$9,500	\$6,100
Major kitchen remodeling	\$35,400	\$35,300
Minor kitchen remodeling	\$10,000	\$7,100
Window replacement	\$8,600	\$2,200

Note 1: The return on a home remodeling project is the increase in the selling price of the house.

Note 2: The average cost and average return are arithmetic means of the costs and returns, respectively, for all applicable remodeling projects in City X in 1999.

What is the range of the average costs for the eight home remodeling projects listed?

- \$24,100
- \$24,700
- \$25,400
- \$26,100
- \$26,800

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 14 of 20

Explanation

the eight home remodeling

The range of the average costs is the difference between the greatest cost and the least cost. From the table, you know that the greatest cost is \$35,400 and the least cost is \$8,600. Therefore the range is \$35,400 – \$8,600, or \$26,800. The correct answer is **Choice 5**, that is, **\$26,800**.

This explanation uses the following strategy.

Strategy 4: Translate from a Figure to an Arithmetic or Algebraic Representation

Difficulty level: 1 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 15 of 20

Questions 14 to 16 are based on the following data.

**Cost of Selected Home Remodeling Projects
and Return on the Project When Home Is Sold
in City X in 1999**

Project	Average Cost	Average Return
Attic bedroom addition	\$32,700	\$28,000
Bathroom remodeling	\$10,400	\$10,200
Deck addition	\$9,100	\$4,400
Family room addition	\$35,300	\$24,400
Home office addition	\$9,500	\$6,100
Major kitchen remodeling	\$35,400	\$35,300
Minor kitchen remodeling	\$10,000	\$7,100
Window replacement	\$8,600	\$2,200

Note 1: The return on a home remodeling project is the increase in the selling price of the house.

Note 2: The average cost and average return are arithmetic means of the costs and returns, respectively, for all applicable remodeling projects in City X in 1999.

In City X, the percent increase from 1997 to 1999 in the average cost of a deck addition was 45 percent, and the percent increase from 1994 to 1997 in the average cost of a deck addition was 26 percent. Which of the following expressions represents the average cost, in dollars, of a deck addition in City X in 1994?

$(1.45)(1.26)(9,100)$

$(0.45)(0.26)(9,100)$

$\frac{(1.26)(9,100)}{1.45}$

$\frac{9,100}{(1.45)(1.26)}$

$\frac{9,100}{(0.45)(0.26)}$

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 15 of 20

Explanation

7 to 1999 in the average
d the percent increase
a deck addition was
ssions represents the
in City X in 1994 ?

9,100)

9,100)

Let y be the average cost, in dollars, of a deck addition in City X in 1994.

You know that the average cost of a deck addition increased by 26% from 1994 to 1997, so the cost of a deck addition, in dollars, in 1997 was 126% of y , or $1.26y$. Similarly, the average cost of a deck addition increased by 45% from 1997 to 1999, so that the average cost of a deck addition, in dollars, in 1999 was 145% of $1.26y$, or $(1.45)(1.26)y$.

From the table, you know that the average cost of a deck addition in 1999 was \$9,100. Hence $(1.45)(1.26)y = 9,100$, and, by solving this equation for y , you can conclude that the average cost, in dollars, of a deck addition in 1994 was $\frac{9,100}{(1.45)(1.26)}$. The correct answer is **Choice 4**, that is,

$$\frac{9,100}{(1.45)(1.26)}.$$

This explanation uses the following strategies.

Strategy 1: Translate from Words to an Arithmetic or Algebraic Representation

Strategy 4: Translate from a Figure to an Arithmetic or Algebraic Representation

Strategy 8: Search for a Mathematical Relationship

Difficulty level: 4 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 16 of 20

Questions 14 to 16 are based on the following data.

Cost of Selected Home Remodeling Projects and Return on the Project When Home Is Sold in City X in 1999

Project	Average Cost	Average Return
Attic bedroom addition	\$32,700	\$28,000
Bathroom remodeling	\$10,400	\$10,200
Deck addition	\$9,100	\$4,400
Family room addition	\$35,300	\$24,400
Home office addition	\$9,500	\$6,100
Major kitchen remodeling	\$35,400	\$35,300
Minor kitchen remodeling	\$10,000	\$7,100
Window replacement	\$8,600	\$2,200

Note 1: The return on a home remodeling project is the increase in the selling price of the house.

Note 2: The average cost and average return are arithmetic means of the costs and returns, respectively, for all applicable remodeling projects in City X in 1999.

For how many of the remodeling projects listed is the average return on the project when the home is sold less than 75 percent of the average cost of the project?

- Three
- Four
- Five
- Six
- Seven

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 16 of 20

Explanation

If the average return on a project is less than 75% of the cost of the project, then the average return is less than 0.75 times the average cost. Inspecting the data in the table, you see that this was the case for five of the projects: deck addition, family room addition, home office addition, minor kitchen remodeling, and window replacement. The correct answer is **Choice 3**, that is, **Five**.

This explanation uses the following strategies.

Strategy 1: Translate from Words to an Arithmetic or Algebraic Representation

Strategy 4: Translate from a Figure to an Arithmetic or Algebraic Representation

Strategy 9: Estimate

Difficulty level: 1 (1 = easy, 5 = hard)

listed is the average return
than 75 percent of the

Select one answer choice.

 My Answer Correct Answer[Explanation](#)[Exit Section](#)[Review](#)[Back](#)[Next](#)

Section 5 of 5 | Review Mode: Question 17 of 20

A grocery store had 105 pieces of fruit for sale consisting of apples, mangoes, and peaches.

Which of the following statements individually provide sufficient additional information to determine the number of apples for sale at the grocery store?

Indicate all such statements.

- The total number of apples and peaches was 62.
- The ratio of the number of apples to the total number of mangoes and peaches was 1 to 6.
- The ratio of the number of mangoes to the number of peaches was 43 to 47.

Select one or more answer choices.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 17 of 20

Explanation

You are given that there were 105 pieces of fruit for sale consisting of apples, mangoes, and peaches. You need to consider each of the three statements by itself to see whether it provides sufficient additional information to determine the number of apples for sale.

Choice 1, The total number of apples and peaches was 62. From the given information and the additional information provided in this statement, you can determine that there were $105 - 62$, or 43, mangoes, but you cannot determine the number of apples. For example, there may be 30 apples and 32 peaches, or 31 apples and 31 peaches.

Choice 2, The ratio of the number of apples to the total number of mangoes and peaches was 1 to 6. Let p be the number of apples. Then the given information tells you that the total number of mangoes and peaches was $105 - p$, and the ratio of the number of apples to the total number of mangoes and peaches was $\frac{p}{105 - p}$. So the given information together with the additional

information in this statement tells you that $\frac{p}{105 - p} = \frac{1}{6}$. Solving this equation for p , you obtain $6p = 105 - p$, or $p = 15$; that is, the number of apples is 15. So this statement provides sufficient additional information to determine the number of apples.

Choice 3, The ratio of the number of mangoes to the number of peaches was 43 to 47. Note that since 43 and 47 do not have any common positive factors other than 1, this ratio is in lowest terms. Therefore the number of mangoes and the number of peaches is $43c$ and $47c$, respectively, where c is a positive integer. Thus the total number of fruit is at least $43c + 47c$, or $90c$. Since you know that the total number of fruit is 105, it follows that $90c < 105$. The only positive integer c that satisfies this inequality is 1. So the number of mangoes and the number of peaches are 43 and 47, respectively. Since you are given that the total number of mangoes, peaches, and apples is 105, it

Select one or more answer choices.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 17 of 20

Explanation

information tells you that $\frac{p}{105-p} = \frac{1}{6}$. Solving this equation for p , you obtain $6p = 105 - p$, or $p = 15$; that is, the number of apples is 15. So this statement provides sufficient additional information to determine the number of apples.

Choice 3, The ratio of the number of mangoes to the number of peaches was 43 to 47. Note that since 43 and 47 do not have any common positive factors other than 1, this ratio is in lowest terms. Therefore the number of mangoes and the number of peaches is $43c$ and $47c$, respectively, where c is a positive integer. Thus the total number of fruit is at least $43c + 47c$, or $90c$. Since you know that the total number of fruit is 105, it follows that $90c < 105$. The only positive integer c that satisfies this inequality is 1. So the number of mangoes and the number of peaches are 43 and 47, respectively. Since you are given that the total number of mangoes, peaches, and apples is 105, it follows that the number of apples is $105 - (43 + 47)$, or 15. So this statement provides sufficient additional information to determine the number of apples.

The correct answer consists of **Choices 2 and 3**.

This explanation uses the following strategies.

Strategy 1: Translate from Words to an Arithmetic or Algebraic Representation

Strategy 5: Simplify an Arithmetic or Algebraic Representation

Strategy 14: Determine What Additional Information is Sufficient to Solve a Problem

Difficulty level: 4 (1 = easy, 5 = hard)

Select one or more answer choices.

 My Answer Correct Answer[Explanation](#)[Exit Section](#)[Review](#)[Back](#)[Next](#)

Section 5 of 5 | Review Mode: Question 18 of 20

Of the 36 students in a certain class, 10 are in the chess club and 13 are in the bridge club. If 20 of the students are not in either club, how many of the students are in only one of the two clubs?

- 7
- 9
- 14
- 16
- 23

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 18 of 20

Explanation

There are 36 students in the class, 20 of whom are not in either club. Therefore 16 of the students in the class are in one, or both, of the clubs.

Since you are given that there are 10 students in the chess club and 13 in the bridge club, you can conclude that $16 = 10 + 13 - x$, where x represents the number of students in both clubs. Solving this equation for x tells you that $x = 7$. Thus, of the 16 students who are in one, or both, of the clubs, 7 are in both clubs. Hence $16 - 7$, or 9 of the students, are in only one of the two clubs. The correct answer is **Choice 2**, that is, **9**.

20 of the

This explanation uses the following strategies.

Strategy 5: Simplify an Arithmetic or Algebraic Representation

Strategy 8: Search for a Mathematical Relationship

Difficulty level: 4 (1 = easy, 5 = hard)

Select one answer choice.

 My Answer Correct Answer[Explanation](#)[Exit Section](#)[Review](#)[Back](#)[Next](#)

Section 5 of 5 | Review Mode: Question 19 of 20

How many integers n between 100 and 299 are there such that the hundreds digit of n is less than the tens digit of n and the tens digit of n is less than the units digit of n ?

- 48
- 49
- 50
- 51
- 52

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 19 of 20

Explanation

You need to determine how many integers n between 100 and 299 satisfy the conditions that the hundreds digit of n is less than the tens digit of n , and the tens digit of n is less than the units digit of n . Note that since the units digit of n cannot be greater than 9, the tens digit cannot be greater than 8.

You can begin by considering the integers n between 100 and 199, that is, the 3-digit integers with hundreds digit 1, that satisfy the given conditions.

Case 1: The tens digit of n is 2. In this case, the units digit of n can be any digit from 3 to 9. There are 7 such integers: 123, 124, 125, 126, 127, 128, and 129.

Case 2: The tens digit of n is 3. In this case, the units digit can be any digit from 4 to 9. There are 6 such integers: 134, 135, 136, 137, 138, and 139.

Case 3: The tens digit of n is 4. In this case, the units digit can be any digit from 5 to 9. There are 5 such integers: 145, 146, 147, 148, and 149.

Similarly, you can see that if the tens digit of n is 5, 6, 7, or 8, respectively, then there are 4, 3, 2, or 1 integers, respectively, that satisfy the given conditions.

Thus the total number of integers between 100 and 199 that satisfy the given conditions is $7 + 6 + 5 + 4 + 3 + 2 + 1$, or 28.

Now consider the integers between 200 and 299, that is, the 3-digit integers with hundreds digit 2, that satisfy the given conditions.

Case 1: The tens digit of n is 3. In this case, the units digit can be any digit from 4 to 9. There are 6 such integers: 234, 235, 236, 237, 238, and 239.

Select one answer choice.

 My Answer Correct Answer

Explanation

Exit Section

Review

Back

Next

Section 5 of 5 | Review Mode: Question 19 of 20

Explanation

Now consider the integers between 200 and 299, that is, the 3-digit integers with hundreds digit 2, that satisfy the given conditions.

Case 1: The tens digit of n is 3. In this case, the units digit can be any digit from 4 to 9. There are 6 such integers: 234, 235, 236, 237, 238, and 239.

Case 2: The tens digit of n is 4. In this case, the units digit can be any digit from 5 to 9. There are 5 such integers: 245, 246, 247, 248, and 249.

Similarly, you can see that if the tens digit of n is 5, 6, 7, or 8, respectively, then there are 4, 3, 2, or 1 integers, respectively, that satisfy the given conditions.

Thus the total number of integers between 200 and 299 that satisfy the given conditions is $6 + 5 + 4 + 3 + 2 + 1$, or 21.

Hence the total number of integers between 100 and 299 that satisfy the given conditions is $28 + 21$, or 49. The correct answer is **Choice 2**, that is, **49**.

This explanation uses the following strategies.

Strategy 1: Translate from Words to an Arithmetic or Algebraic Representation

Strategy 7: Find a Pattern

Strategy 11: Divide into Cases

Difficulty level: 5 (1 = easy, 5 = hard)

than the tens

Select one answer choice.

 My Answer Correct Answer[Explanation](#)[Exit Section](#)[Review](#)[Back](#)[Next](#)

Section 5 of 5 | Review Mode: Question 20 of 20

How many different numbers x satisfy the equation $|x^2 - 5x| = 1$?

Enter your answer as an integer or a decimal in the answer box. Backspace to erase.