Question ID b99dedcc

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: b99dedcc

Triangle R has an area of 80 square centimeters (cm^2). Square S has side lengths of 4 cm. What is the total area of triangle R and square S, in cm^2?

A. 42

B. 44

C. 84

D. 96

ID: b99dedcc Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that triangle R has an area of 80 cm^2. The area of a square is l^2, where l is the side length of the square. It's given that square S has side lengths of 4 cm. It follows that the area, in cm^2, of square S is 4^2, or 16. Therefore, the total area, in cm^2, of triangle R and square S is $80 + 16$, or 96.

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 2936a402

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: 2936a402

A rectangle has a length of 3 units and a width of 39 units. Which expression gives the area, in square units, of this rectangle?

A. $2(3 + 39)$

B. $2(3 \cdot 39)$

C. $3 + 39$

D. $3 \cdot 39$

ID: 2936a402 Answer

Correct Answer: D

Rationale

Choice D is correct. The area of a rectangle is given by lw, where l is the length of the rectangle and w is the width of the rectangle. It's given that a rectangle has a length of 3 units and a width of 39 units. It follows that the area of the rectangle is $3 \cdot 39$ square units. Therefore, the expression that gives the area, in square units, of this rectangle, is $3 \cdot 39$.

Choice A is incorrect. This expression gives the perimeter, in units, of this rectangle.

Choice B is incorrect and may result from conceptual errors.

Choice C is incorrect and may result from conceptual errors.

Question Difficulty: Medium

Question ID 50267599

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: 50267599

Each side of a square has a length of 45. What is the perimeter of this square?

ID: 50267599 Answer

Correct Answer: 180

Rationale

The correct answer is 180. The perimeter of a polygon is equal to the sum of the lengths of the sides of the polygon. It's given that each side of the square has a length of 45. Since a square is a polygon with 4 sides, the perimeter of this square is $45 + 45 + 45 + 45$, or 180.

Question Difficulty: Medium

Question ID 257068e5

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: 257068e5

A rectangle has an area of 63 square meters and a length of 9 meters. What is the width, in meters, of the rectangle?

A. 7

B. 54

C. 81

D. 567

ID: 257068e5 Answer

Correct Answer: A

Rationale

Choice A is correct. The area A, in square meters, of a rectangle is the product of its length l, in meters, and its width w, in meters; thus, $A = lw$. It's given that a rectangle has an area of 63 square meters and a length of 9 meters. Substituting 63 for A and 9 for l in the equation $A = lw$ yields $63 = 9w$. Dividing both sides of this equation by 9 yields $7 = w$. Therefore, the width, in meters, of the rectangle is 7.

Choice B is incorrect. This is the difference between the area, in square meters, and the length, in meters, of the rectangle, not the width, in meters, of the rectangle.

Choice C is incorrect. This is the square of the length, in meters, not the width, in meters, of the rectangle.

Choice D is incorrect. This is the product of the area, in square meters, and the length, in meters, of the rectangle, not the width, in meters, of the rectangle.

Question Difficulty: Medium

Question ID f204dc90

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: f204dc90

A right rectangular prism has a length of 11 meters, a width of 8 meters, and a height of 10 meters. What is the volume, in cubic meters, of the prism?

ID: f204dc90 Answer

Correct Answer: 880

Rationale

The correct answer is 880. The volume, V, of a right rectangular prism is given by the formula $V = lwh$, where l is the length, w is the width, and h is the height of the prism. It's given that a right rectangular prism has a length of 11 meters, a width of 8 meters, and a height of 10 meters. Substituting 11 for l, 8 for w, and 10 for h in the formula $V = lwh$ yields $V = (11)(8)(10)$, or $V = 880$. Therefore, the volume, in cubic meters, of the prism is 880.

Question Difficulty: Medium

Question ID 1b2292a2

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: 1b2292a2

The side length of a square is 55 centimeters (cm). What is the area, in cm^2, of the square?

A. 110

B. 220

C. $3{,}025$

D. $12{,}100$

ID: 1b2292a2 Answer

Correct Answer: C

Rationale

Choice C is correct. The area A, in $\text{square centimeters}$ $\left(\text{cm}^2\right)$, of a square with side length s, in cm, is given by the formula $A = s^2$. It's given that the square has a side length of 55 cm. Substituting 55 for s in the formula $A = s^2$ yields $A = 55^2$, or $A = 3{,}025$. Therefore, the area, in cm^2, of the square is $3{,}025$.

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

Choice B is incorrect. This is the perimeter, in cm, of the square, not its area, in cm^2.

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

Question Difficulty: Medium

Question ID b6f369df

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: b6f369df

What is the area, in square centimeters, of a rectangle with a length of 36 centimeters and a width of 34 centimeters?

A. 70

B. 140

C. $1{,}156$

D. $1{,}224$

ID: b6f369df Answer

Correct Answer: D

Rationale

Choice D is correct. The area A, in square centimeters, of a rectangle can be found using the formula $A = lw$, where l is the length, in centimeters, of the rectangle and w is its width, in centimeters. It's given that the rectangle has a length of 36 centimeters and a width of 34 centimeters. Substituting 36 for l and 34 for w in the formula $A = lw$ yields $A = 3634$, or $A = 1{,}224$. Therefore, the area, in square centimeters, of this rectangle is $1{,}224$.

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

Choice B is incorrect. This is the perimeter, in centimeters, not the area, in square centimeters, of the rectangle.

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

Question Difficulty: Medium

Question ID fbaaa67c

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: fbaaa67c

The area of a rectangle is 57 square inches. The length of the longest side of the rectangle is 19 inches. What is the length, in inches, of the shortest side of this rectangle?

ID: fbaaa67c Answer

Correct Answer: 3

Rationale

The correct answer is 3. The area of a rectangle can be calculated by multiplying the length of its longest side by the length of its shortest side. It's given that the area of the rectangle is 57 square inches and the length of the longest side of the rectangle is 19 inches. Let x represent the length, in inches, of the shortest side of this rectangle. It follows that $57 = 19x$. Dividing both sides of this equation by 19 yields $3 = x$. Therefore, the length, in inches, of the shortest side of the rectangle is 3.

Question Difficulty: Medium

Question ID ac26b8f6

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: ac26b8f6

What is the area, in square centimeters, of a rectangle with a length of $34\ \text{centimeters (cm)}$ and a width of $29\ \text{cm}$?

ID: ac26b8f6 Answer

Correct Answer: 986

Rationale

The correct answer is 986. The area, A, of a rectangle is given by $A = lw$, where l is the length of the rectangle and w is its width. It's given that the length of the rectangle is 34 centimeters (cm) and the width is 29 cm. Substituting 34 for l and 29 for w in the equation $A = lw$ yields $A = 3429$, or $A = 986$. Therefore, the area, in square centimeters, of this rectangle is 986.

Question Difficulty: Medium

Question ID c35d99e6

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: c35d99e6

A triangle has a base length of 40 centimeters and a height of 90 centimeters. What is the area, in square centimeters, of the triangle?

ID: c35d99e6 Answer

Correct Answer: 1800

Rationale

The correct answer is $1{,}800$. The area, A, of a triangle can be found using the formula $A = \frac{1}{2}bh$, where b is the base length of the triangle and h is the height of the triangle. It's given that the triangle has a base length of 40 centimeters and a height of 90 centimeters. Substituting 40 for b and 90 for h in the formula $A = \frac{1}{2}bh$ yields $A = \frac{1}{2}4090$, or $A = 1{,}800$. Therefore, the area, in square centimeters, of the triangle is $1{,}800$.

Question Difficulty: Medium

Question ID 6f7e61cc

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: 6f7e61cc

The perimeter of triangle ABC is 17 inches, the length of side AB is 4 inches, and the length of side AC is 7 inches. What is the length, in inches, of side BC?

A. 4

B. 6

C. 7

D. 11

ID: 6f7e61cc Answer

Correct Answer: B

Rationale

Choice B is correct. The perimeter of a triangle is the sum of the lengths of all three sides of the triangle. It's given that the lengths of side AB and side AC are 4 inches and 7 inches, respectively. Let x represent the length, in inches, of side BC. The sum of the lengths, in inches, of all three sides of triangle ABC can be represented by the expression $4 + 7 + x$. Since it's given that the perimeter of triangle ABC is 17 inches, it follows that $17 = 4 + 7 + x$, or $17 = 11 + x$. Subtracting 11 from both sides of this equation yields $6 = x$. Therefore, the length, in inches, of side BC is 6.

Choice A is incorrect. This is the length, in inches, of side AB.

Choice C is incorrect. This is the length, in inches, of side AC.

Choice D is incorrect. This is the sum of the lengths, in inches, of sides AB and AC.

Question Difficulty: Medium

Question ID 2e4644b1

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: 2e4644b1

A rectangle has a length of 64 inches and a width of 32 inches. What is the area, in square inches, of the rectangle?

ID: 2e4644b1 Answer

Correct Answer: 2048

Rationale

The correct answer is $2{,}048$. The area A, in square inches, of a rectangle is equal to the product of its length l, in inches, and its width w, in inches, or $A = lw$. It's given that the rectangle has a length of 64 inches and a width of 32 inches. Substituting 64 for l and 32 for w in the equation $A = lw$ yields $A = 6432$, or $A = 2{,}048$. Therefore, the area, in square inches, of the rectangle is $2{,}048$.

Question Difficulty: Medium

Question ID a704d66e

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: a704d66e

The area of a rectangle is 630 square inches. The length of the rectangle is 70 inches. What is the width, in inches, of this rectangle?

A. 9

B. 70

C. 315

D. 560

ID: a704d66e Answer

Correct Answer: A

Rationale

Choice A is correct. The area A, in square inches, of a rectangle is the product of its length l, in inches, and its width w, in inches; thus, $A = lw$. It's given that the area of a rectangle is 630 square inches and the length of the rectangle is 70 inches. Substituting 630 for A and 70 for l in the equation $A = lw$ yields $630 = 70w$. Dividing both sides of this equation by 70 yields $9 = w$. Therefore, the width, in inches, of this rectangle is 9.

Choice B is incorrect. This is the length, not the width, in inches, of the rectangle.

Choice C is incorrect. This is half the area, in square inches, not the width, in inches, of the rectangle.

Choice D is incorrect. This is the difference between the area, in square inches, and the length, in inches, of the rectangle, not the width, in inches, of the rectangle.

Question Difficulty: Medium

Question ID f3e3b599

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: f3e3b599

The width of a rectangle is 7 centimeters. The length of the rectangle is 40 centimeters longer than the width. What is the area, in square centimeters, of this rectangle?

A. 7

B. 14

C. 54

D. 329

ID: f3e3b599 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that the width of this rectangle is 7 centimeters and that the length of this rectangle is 40 centimeters longer than the width. Therefore, the length of this rectangle is $7 + 40$, or 47, centimeters. The area of a rectangle can be found by multiplying its length and its width. Therefore the area, in square centimeters, of this rectangle is 747, or 329.

Choice A is incorrect. This is the width, in centimeters, not the area, in square centimeters, of this rectangle.

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 8b4b3556

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: 8b4b3556

What is the perimeter, in inches, of a rectangle with a length of 4 inches and a width of 9 inches?

A. 13

B. 17

C. 22

D. 26

ID: 8b4b3556 Answer

Correct Answer: D

Rationale

Choice D is correct. The perimeter of a figure is equal to the sum of the measurements of the sides of the figure. It's given that the rectangle has a length of 4 inches and a width of 9 inches. Since a rectangle has 4 sides, of which opposite sides are parallel and equal, it follows that the rectangle has two sides with a length of 4 inches and two sides with a width of 9 inches. Therefore, the perimeter of this rectangle is $4 + 4 + 9 + 9$, or 26 inches.

Choice A is incorrect. This is the sum, in inches, of the length and the width of the rectangle.

Choice B is incorrect. This is the sum, in inches, of the two lengths and the width of the rectangle.

Choice C is incorrect. This is the sum, in inches, of the length and the two widths of the rectangle.

Question Difficulty: Medium

Question ID 9a1db7a4

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: 9a1db7a4

Each base of a right rectangular prism has a length of 19 inches and a width of 8 inches. The prism has a volume of $2{,}736$ cubic inches. What is the height, in inches, of the prism?

A. 18

B. 27

C. 144

D. 152

ID: 9a1db7a4 Answer

Correct Answer: A

Rationale

Choice A is correct. The volume, V, of a rectangular prism is given by the formula $V = lwh$, where l is the length of the base, w is the width of the base, and h is the height of the prism. It's given that each base of a right rectangular prism has a length of 19 inches and a width of 8 inches, and that the prism has a volume of $2{,}736$ cubic inches. Substituting 19 for l, 8 for w, and $2{,}736$ for V in the formula $V = lwh$ gives $2{,}736 = (19)(8)(h)$, or $2{,}736 = 152h$. Dividing each side of this equation by 152 yields $18 = h$. Therefore, the height, in inches, of the prism is 18.

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

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

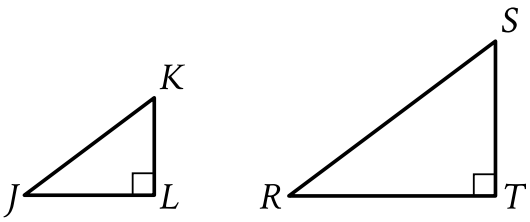
Choice D is incorrect. This is the area, in square inches, of the base of the prism, not the height, in inches, of the prism.

Question Difficulty: Medium

Question ID 43536b08

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: 43536b08



Note: Figure not drawn to scale.

In the figure shown, triangle JKL is similar to triangle RST, where J corresponds to R and K corresponds to S. The length of $\overline{JK}$ is 15, and the perimeter of triangle JKL is 36. The length of $\overline{RS}$ is 135. What is the perimeter of triangle RST?

A. 324

B. 540

C. $2{,}916$

D. $8{,}100$

ID: 43536b08 Answer

Correct Answer: A

Rationale

Choice A is correct. It's given that triangle JKL is similar to triangle RST, where J corresponds to R and K corresponds to S. It follows that $\bar{JK}$ corresponds to $\bar{RS}$. If two triangles are similar, then the scale factor between their perimeters is equal to the scale factor between the lengths of their corresponding sides. It's given that the length of $\bar{JK}$ is 15 and the length of $\bar{RS}$ is 135. Therefore, the scale factor from the length of $\bar{JK}$ to the length of $\bar{RS}$ is $\frac{135}{15}$, or 9. It's given that the perimeter of triangle JKL is 36. Let p represent the perimeter of triangle RST. It follows that $\frac{p}{36} = 9$. Multiplying each side of this equation by 36 yields $p = 324$. Therefore, the perimeter of triangle RST is 324.

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

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

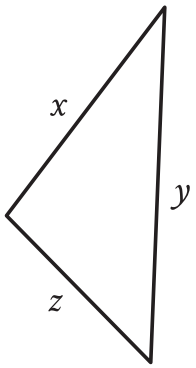
Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Medium

Question ID 2522ce1e

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: 2522ce1e



Note: Figure not drawn to scale.

The triangle shown has a perimeter of 22 units. If $x = 9$ units and $y = 7$ units, what is the value of z, in units?

A. 6

B. 7

C. 9

D. 16

ID: 2522ce1e Answer

Correct Answer: A

Rationale

Choice A is correct. The perimeter of a triangle is the sum of the lengths of its three sides. The triangle shown has side lengths x, y, and z. It's given that the triangle has a perimeter of 22 units. Therefore, $x + y + z = 22$. If $x = 9$ units and $y = 7$ units, the value of z, in units, can be found by substituting 9 for x and 7 for y in the equation $x + y + z = 22$, which yields $9 + 7 + z = 22$, or $16 + z = 22$. Subtracting 16 from both sides of this equation yields $z = 6$. Therefore, if $x = 9$ units and $y = 7$ units, the value of z, in units, is 6.

Choice B is incorrect. This is the value of y, in units, not the value of z, in units.

Choice C is incorrect. This is the value of x, in units, not the value of z, in units.

Choice D is incorrect. This is the value of $x + y$, in units, not the value of z, in units.

Question Difficulty: Medium

Question ID 6857a477

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: 6857a477

Rectangle P has an area of 72 square inches. If a rectangle with an area of 20 square inches is removed from rectangle P, what is the area, in square inches, of the resulting figure?

A. 92

B. 84

C. 80

D. 52

ID: 6857a477 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that rectangle P has an area of 72 square inches. If a rectangle with an area of 20 square inches is removed from rectangle P, the area, in square inches, of the resulting figure is $72 - 20$, or 52.

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 4282d1db

Assessment	Test	Domain	Skill	Difficulty
PSAT 8/9	Math	Geometry and Trigonometry	Area and volume	

ID: 4282d1db

The table gives the perimeters of similar triangles TUV and XYZ, where $\overline{TU}$ corresponds to $\overline{XY}$. The length of $\overline{TU}$ is 6.

	Perimeter
Triangle TUV	50
Triangle XYZ	150

What is the length of $\overline{XY}$?

A. 2

B. 6

C. 18

D. 56

ID: 4282d1db Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that triangle TUV is similar to triangle XYZ, and $\bar{TU}$ corresponds to $\bar{XY}$. If two triangles are similar, then the ratio of their perimeters is equal to the ratio of their corresponding sides. It's given that the perimeter of triangle TUV is 50, the perimeter of triangle XYZ is 150, and the length of $\bar{TU}$ is 6. Let n represent the length of $\bar{XY}$. It follows that $\frac{50}{150} = \frac{6}{n}$, or $\frac{1}{3} = \frac{6}{n}$. Multiplying each side of this equation by n yields $\frac{n}{3} = 6$. Multiplying each side of this equation by 3 yields $n = 18$. Therefore, the length of $\bar{XY}$ is 18.

Choice A is incorrect. This is the solution to $\frac{3}{1} = \frac{6}{n}$, not $\frac{1}{3} = \frac{6}{n}$.

Choice B is incorrect. This is the length of $\bar{TU}$, not $\bar{XY}$.

Choice D is incorrect. This is the sum of the length of $\bar{TU}$ and the perimeter of triangle TUV, not the length of $\bar{XY}$.

Question Difficulty: Medium