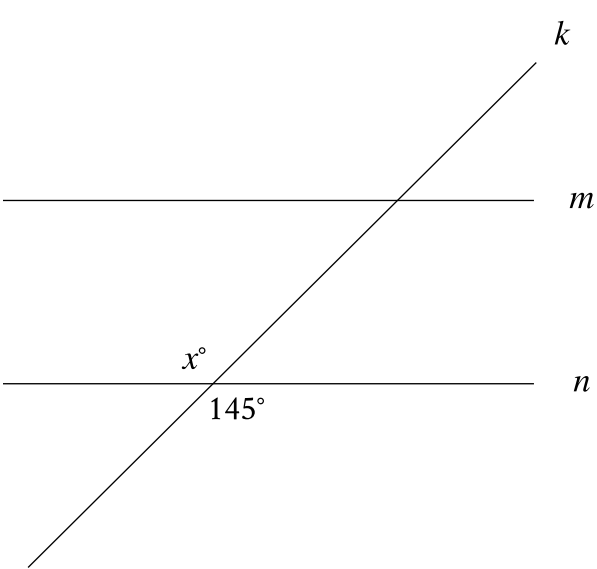


Question ID 4ee3fb4a

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 4ee3fb4a



Note: Figure not drawn to scale.

In the figure, line *m* is parallel to line *n*, and line *k* intersects both lines. Which of the following statements is true?

- A. The value of *x* is less than 145.
- B. The value of *x* is greater than 145.
- C. The value of *x* is equal to 145.
- D. The value of *x* cannot be determined.

ID: 4ee3fb4a Answer

Correct Answer: C

Rationale

Choice C is correct. Vertical angles, or angles that are opposite each other when two lines intersect, are congruent. It’s given that line *k* intersects line *n*. Based on the figure, the angle with measure *x*° and the angle with measure 145° are vertical angles. Therefore, the value of *x* is equal to 145.

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

Question ID 6e95d2bc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 6e95d2bc

In $\triangle RST$, the measure of $\angle R$ is 63° . Which of the following could be the measure, in degrees, of $\angle S$?

- A. 116
- B. 118
- C. 126
- D. 180

ID: 6e95d2bc Answer

Correct Answer: A

Rationale

Choice A is correct. The sum of the measures of the angles of a triangle is 180° . Therefore, the sum of the measures of $\angle R$, $\angle S$, and $\angle T$ is 180° . It's given that the measure of $\angle R$ is 63° . It follows that the sum of the measures of $\angle S$ and $\angle T$ is $180 - 63^\circ$, or 117° . Therefore, the measure of $\angle S$, in degrees, must be less than 117. Of the given choices, only 116 is less than 117. Thus, the measure, in degrees, of $\angle S$ could be 116.

Choice B is incorrect. If the measure of $\angle S$ is 118° , then the sum of the measures of the angles of the triangle is greater than, not equal to, 180° .

Choice C is incorrect. If the measure of $\angle S$ is 126° , then the sum of the measures of the angles of the triangle is greater than, not equal to, 180° .

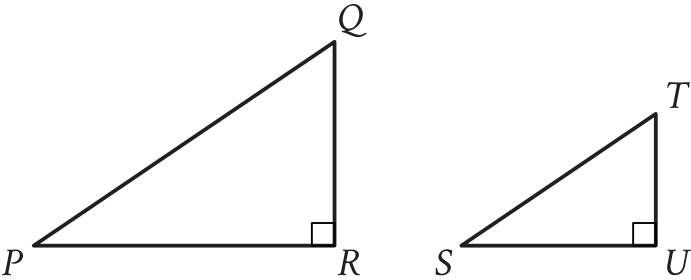
Choice D is incorrect. This is the sum of the measures of the angles of a triangle, in degrees.

Question Difficulty: Easy

Question ID f963d751

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: f963d751



Note: Figures not drawn to scale.

Right triangles PQR and STU are similar, where P corresponds to S . If the measure of angle Q is 18° , what is the measure of angle S ?

- A. 18°
- B. 72°
- C. 82°
- D. 162°

ID: f963d751 Answer

Correct Answer: B

Rationale

Choice B is correct. In similar triangles, corresponding angles are congruent. It's given that right triangles PQR and STU are similar, where angle P corresponds to angle S . It follows that angle P is congruent to angle S . In the triangles shown, angle R and angle U are both marked as right angles, so angle R and angle U are corresponding angles. It follows that angle Q and angle T are corresponding angles, and thus, angle Q is congruent to angle T . It's given that the measure of angle Q is 18° , so the measure of angle T is also 18° . Angle U is a right angle, so the measure of angle U is 90° . The sum of the measures of the interior angles of a triangle is 180° . Thus, the sum of the measures of the interior angles of triangle STU is 180 degrees. Let s represent the measure, in degrees, of angle S . It follows that $s + 18 + 90 = 180$, or $s + 108 = 180$. Subtracting 108 from both sides of this equation yields $s = 72$. Therefore, if the measure of angle Q is 18 degrees, then the measure of angle S is 72 degrees.

Choice A is incorrect. This is the measure of angle T .

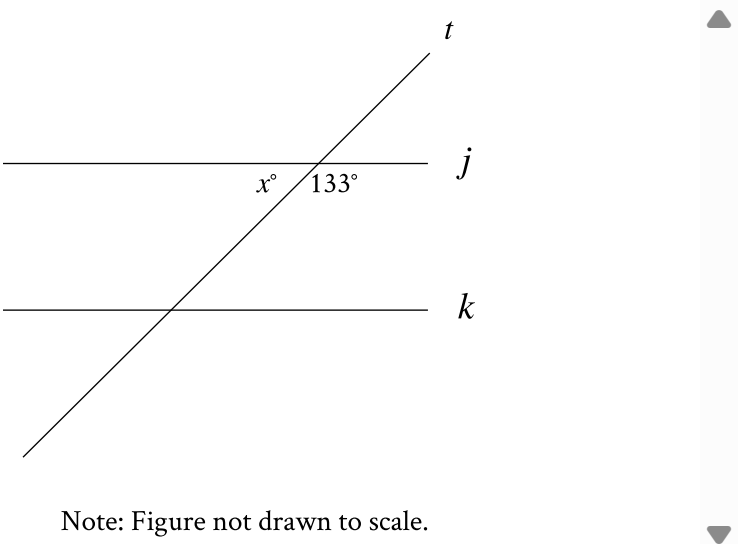
Choice C is incorrect and may result from conceptual or calculation errors.

Choice D is incorrect. This is the sum of the measures of angle S and angle U .

Question ID ea980ef3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: ea980ef3



In the figure, line j is parallel to line k . What is the value of x ?

ID: ea980ef3 Answer

Correct Answer: 47

Rationale

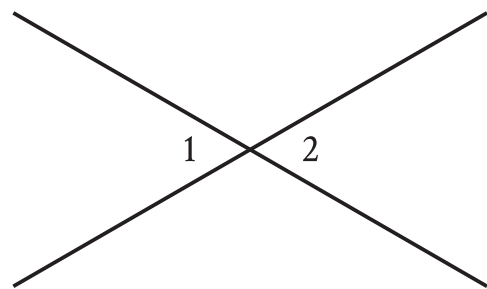
The correct answer is 47. Based on the figure, the angle with measure x° and the angle with measure 133° together form a straight line. Therefore, these two angles are supplementary, so the sum of their measures is 180° . It follows that $x + 133 = 180$. Subtracting 133 from both sides of this equation yields $x = 47$.

Question Difficulty: Easy

Question ID 34dd43dc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 34dd43dc



Note: Figure not drawn to scale.

In the figure, two lines intersect at a point. Angle **1** and angle **2** are vertical angles. The measure of angle **1** is **72°**. What is the measure of angle **2**?

- A. 72°
- B. 108°
- C. 144°
- D. 288°

ID: 34dd43dc Answer

Correct Answer: A

Rationale

Choice A is correct. It’s given that angle 1 and angle 2 are vertical angles, and the measure of angle 1 is 72°. Vertical angles have equal measures. Therefore, the measure of angle 2 is 72°.

Choice B is incorrect. This is the measure of an angle that is supplementary, not congruent, to angle 1.

Choice C is incorrect. This is the sum of the measures of angle 1 and angle 2.

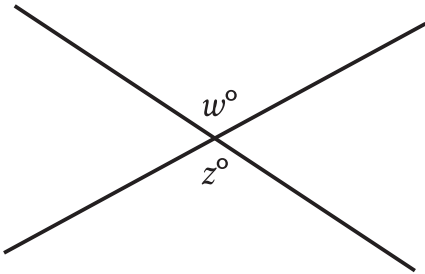
Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 9a00b5dc

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 9a00b5dc



Note: Figure not drawn to scale.

In the figure, two lines intersect at a point. If $w = 136$, what is the value of z ?

- A. 36
- B. 44
- C. 68
- D. 136

ID: 9a00b5dc Answer

Correct Answer: D

Rationale

Choice D is correct. In the figure shown, the angles with measures w° and z° are vertical angles. Since vertical angles are congruent, $w = z$. Therefore, if $w = 136$, the value of z is 136.

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

Choice B is incorrect. This is the measure, in degrees, of an angle that's supplementary, not congruent, to the angle with measure w° .

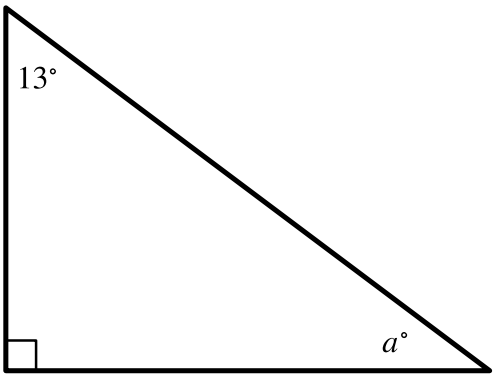
Choice C is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 1540f856

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 1540f856



Note: Figure not drawn to scale.

In the right triangle shown, what is the value of a ?

- A. 13
- B. 77
- C. 90
- D. 103

ID: 1540f856 Answer

Correct Answer: B

Rationale

Choice B is correct. The triangle shown is a right triangle, where the interior angle shown with a right angle symbol has a measure of 90° . It's shown that the other two interior angles measure 13° and a° . The sum of the measures of the interior angles of a triangle is 180° ; therefore, $90 + 13 + a = 180$. Combining like terms on the left-hand side of this equation yields $103 + a = 180$. Subtracting 103 from both sides of this equation yields $a = 77$.

Choice A is incorrect. This is the measure, in degrees, of the other acute interior angle of the right triangle, not the value of a .

Choice C is incorrect. This is the measure, in degrees, of the right angle of the right triangle, not the value of a .

Choice D is incorrect. This is the sum of the measures, in degrees, of the other two interior angles of the right triangle, not the value of a .

Question ID aac3872b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: aac3872b

In triangle ABC , the measure of angle B is 52° and the measure of angle C is 17° . What is the measure of angle A ?

- A. 21°
- B. 35°
- C. 69°
- D. 111°

ID: aac3872b Answer

Correct Answer: D

Rationale

Choice D is correct. The sum of the angle measures of a triangle is 180° . Adding the measures of angles B and C gives $52 + 17 = 69^\circ$. Therefore, the measure of angle A is $180 - 69 = 111^\circ$.

Choice A is incorrect and may result from subtracting the sum of the measures of angles B and C from 90° , instead of from 180° .

Choice B is incorrect and may result from subtracting the measure of angle C from the measure of angle B .

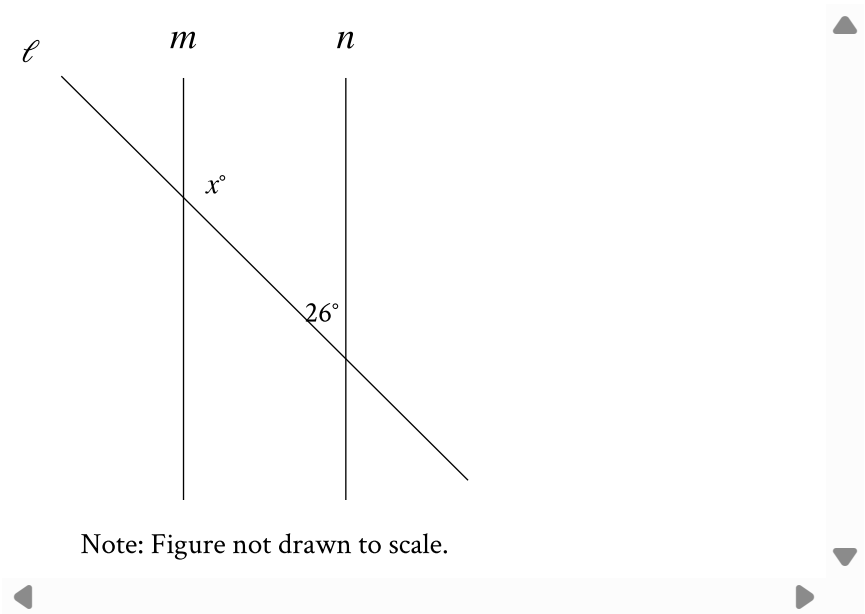
Choice C is incorrect and may result from adding the measures of angles B and C but not subtracting the result from 180° .

Question Difficulty: Easy

Question ID f47594d0

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: f47594d0



Note: Figure not drawn to scale.

In the figure shown, line *m* is parallel to line *n*. What is the value of *x*?

- A. 13
- B. 26
- C. 52
- D. 154

ID: f47594d0 Answer

Correct Answer: D

Rationale

Choice D is correct. The sum of consecutive interior angles between two parallel lines and on the same side of the transversal is 180 degrees. Since it's given that line *m* is parallel to line *n*, it follows that $x + 26 = 180$. Subtracting 26 from both sides of this equation yields 154. Therefore, the value of *x* is 154.

Choice A is incorrect. This is half of the given angle measure.

Choice B is incorrect. This is the value of the given angle measure.

Choice C is incorrect. This is twice the value of the given angle measure.

Question Difficulty: Easy

Question ID 1c55945b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 1c55945b

In $\triangle XYZ$, the measure of $\angle X$ is 23° and the measure of $\angle Y$ is 66° . What is the measure of $\angle Z$?

- A. 43°
- B. 89°
- C. 91°
- D. 179°

ID: 1c55945b Answer

Correct Answer: C

Rationale

Choice C is correct. The triangle angle sum theorem states that the sum of the measures of the interior angles of a triangle is 180° . It's given that in $\triangle XYZ$, the measure of $\angle X$ is 23° and the measure of $\angle Y$ is 66° . It follows that the measure of $\angle Z$ is $180 - 23 - 66^\circ$, or 91° .

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

Choice B is incorrect. This is the sum of the measures of $\angle X$ and $\angle Y$, not the measure of $\angle Z$.

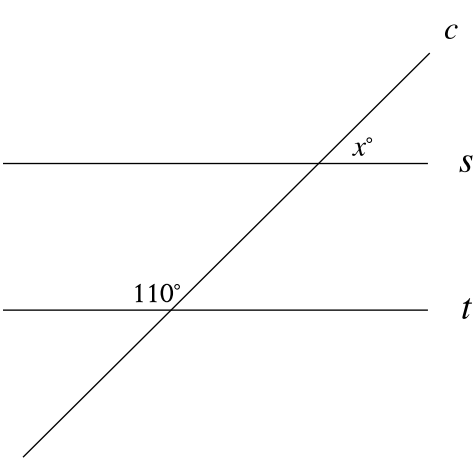
Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 8e5cbda2

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 8e5cbda2



Note: Figure not drawn to scale.



In the figure shown, line c intersects parallel lines s and t . What is the value of x ?

ID: 8e5cbda2 Answer

Correct Answer: 70

Rationale

The correct answer is 70. Based on the figure, the angle with measure 110° and the angle vertical to the angle with measure x° are same side interior angles. Since vertical angles are congruent, the angle vertical to the angle with measure x° also has measure x° . It's given that lines s and t are parallel. Therefore, same side interior angles between lines s and t are supplementary. It follows that $x + 110 = 180$. Subtracting 110 from both sides of this equation yields $x = 70$.

Question Difficulty: Easy

Question ID e5cc491b

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: e5cc491b

In $\triangle XYZ$, the measure of $\angle X$ is 24° and the measure of $\angle Y$ is 98° . What is the measure of $\angle Z$?

- A. 58°
- B. 74°
- C. 122°
- D. 212°

ID: e5cc491b Answer

Correct Answer: A

Rationale

Choice A is correct. The triangle angle sum theorem states that the sum of the measures of the interior angles of a triangle is 180° . It's given that in $\triangle XYZ$, the measure of $\angle X$ is 24° and the measure of $\angle Y$ is 98° . It follows that the measure of $\angle Z$ is $180 - 24 - 98^\circ$, or 58° .

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

Choice C is incorrect. This is the sum of the measures of $\angle X$ and $\angle Y$, not the measure of $\angle Z$.

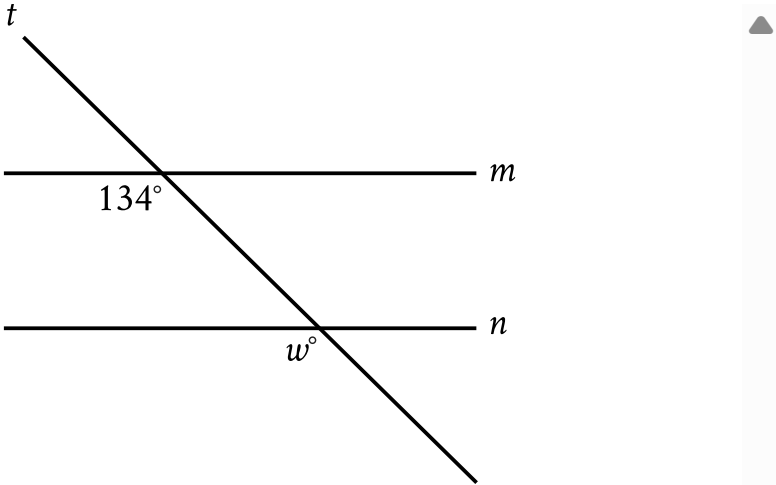
Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID c655ab2f

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: c655ab2f



Note: Figure not drawn to scale.

In the figure, line *m* is parallel to line *n*. What is the value of *w*?

- A. 13
- B. 34
- C. 66
- D. 134

ID: c655ab2f Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that lines *m* and *n* are parallel. Since line *t* intersects both lines *m* and *n*, it's a transversal. The angles in the figure marked as 134° and w° are on the same side of the transversal, where one is an interior angle with line *m* as a side, and the other is an exterior angle with line *n* as a side. Thus, the marked angles are corresponding angles. When two parallel lines are intersected by a transversal, corresponding angles are congruent and, therefore, have equal measure. It follows that $w^\circ = 134^\circ$. Therefore, the value of *w* is 134.

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 ID 2384a4cb

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 2384a4cb

In triangle ABC , $AB = 4,680$ millimeters (mm) and $BC = 4,680$ mm. Which statement is sufficient to prove that triangle ABC is equilateral?

- A. $AC = 4,680$ mm
- B. $AC = 468$ mm
- C. $AC = 46.8$ mm
- D. $AC = 4.68$ mm

ID: 2384a4cb Answer

Correct Answer: A

Rationale

Choice A is correct. In an equilateral triangle, all three sides have the same length. It’s given that in triangle ABC , $AB = 4,680$ mm and $BC = 4,680$ mm. Therefore, if $AC = 4,680$ mm, then all three sides of triangle ABC have the same length, so triangle ABC is equilateral. Therefore, $AC = 4,680$ mm is sufficient to prove that triangle ABC is equilateral.

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: Easy

Question ID 6e2abed7

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 6e2abed7

In a right triangle, the measure of one of the acute angles is 51° . What is the measure, in degrees, of the other acute angle?

- A. 6
- B. 39
- C. 49
- D. 51

ID: 6e2abed7 Answer

Correct Answer: B

Rationale

Choice B is correct. The sum of the measures of the interior angles of a triangle is 180 degrees. Since the triangle is a right triangle, it has one angle that measures 90 degrees. Therefore, the sum of the measures, in degrees, of the remaining two angles is $180 - 90$, or 90. It's given that the measure of one of the acute angles in the triangle is 51 degrees. Therefore, the measure, in degrees, of the other acute angle is $90 - 51$, or 39.

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

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

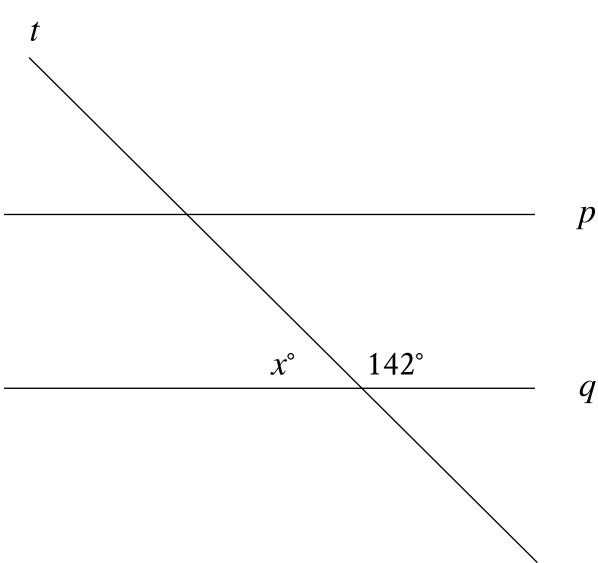
Choice D is incorrect. This is the measure, in degrees, of the acute angle whose measure is given.

Question Difficulty: Easy

Question ID 03bd81f1

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 03bd81f1



Note: Figure not drawn to scale.

◀ ▶

In the figure, line p is parallel to line q , and line t intersects both lines. What is the value of $x + 142$?

- A. 52
- B. 90
- C. 142
- D. 180

ID: 03bd81f1 Answer

Correct Answer: D

Rationale

Choice D is correct. In the figure shown, the angle marked x° and the angle marked 142° form a linear pair of angles. If two angles form a linear pair of angles, the sum of the measures of the angles is 180° . Therefore, the value of $x + 142$ is 180.

Choice A is incorrect. This is 90 less than 142, not the sum of x and 142.

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

Choice C is incorrect. This is the measure, in degrees, of one of the angles shown.

Question ID 027efe3c

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 027efe3c

Triangles ABC and DEF are congruent, where A corresponds to D , and B and E are right angles. The measure of angle A is 18° . What is the measure of angle F ?

- A. 18°
- B. 72°
- C. 90°
- D. 162°

ID: 027efe3c Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that triangle ABC is congruent to triangle DEF . Corresponding angles of congruent triangles are congruent and, therefore, have equal measure. It's given that angle A corresponds to angle D , and that the measure of angle A is 18° . It's also given that the measures of angles B and E are 90° . Since these angles have equal measure, they are corresponding angles. It follows that angle C corresponds to angle F . Let x° represent the measure of angle C . Since the sum of the measures of the interior angles of a triangle is 180° , it follows that $18^\circ + 90^\circ + x^\circ = 180^\circ$, or $108^\circ + x^\circ = 180^\circ$. Subtracting 108° from both sides of this equation yields $x^\circ = 72^\circ$. Therefore, the measure of angle C is 72° . Since angle C corresponds to angle F , it follows that the measure of angle F is also 72° .

Choice A is incorrect. This is the measure of angle D , not the measure of angle F .

Choice C is incorrect. This is the measure of angle E , not the measure of angle F .

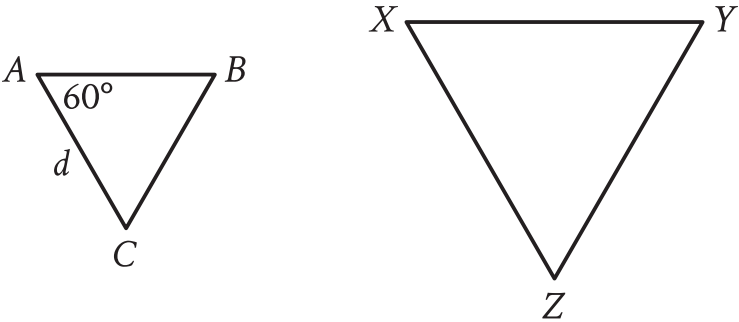
Choice D is incorrect. This is the sum of the measures of angles E and F , not the measure of angle F .

Question Difficulty: Easy

Question ID 3543e575

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 3543e575



Note: Figures not drawn to scale.

For the triangles shown, triangle ABC is dilated by a scale factor of 3 to obtain triangle XYZ , where $d = 16$. What is the measure, in degrees, of angle X ?

- A. 20
- B. 57
- C. 60
- D. 63

ID: 3543e575 Answer

Correct Answer: C

Rationale

Choice C is correct. It's given that triangle XYZ is obtained by a dilation of triangle ABC . It follows that triangle ABC is similar to triangle XYZ , where A corresponds to X . Since corresponding angles in similar triangles have the same measure and the measure of angle A is 60 degrees, it follows that the measure of angle X is also 60 degrees.

Choice A is incorrect and may result from conceptual errors.

Choice B is incorrect and may result from conceptual errors.

Choice D is incorrect and may result from conceptual errors.

Question Difficulty: Easy

Question ID 40a475f8

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 40a475f8

Triangles EFG and JKL are congruent, where E , F , and G correspond to J , K , and L , respectively. The measure of angle E is 45° and the measure of angle F is 20° . What is the measure of angle J ?

- A. 20°
- B. 45°
- C. 135°
- D. 160°

ID: 40a475f8 Answer

Correct Answer: B

Rationale

Choice B is correct. It's given that triangles EFG and JKL are congruent such that angle E corresponds to angle J . Corresponding angles of congruent triangles are congruent, so angle E and angle J must be congruent. Therefore, if the measure of angle E is 45° , then the measure of angle J is also 45° .

Choice A is incorrect. This is the measure of angle K , not angle J .

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

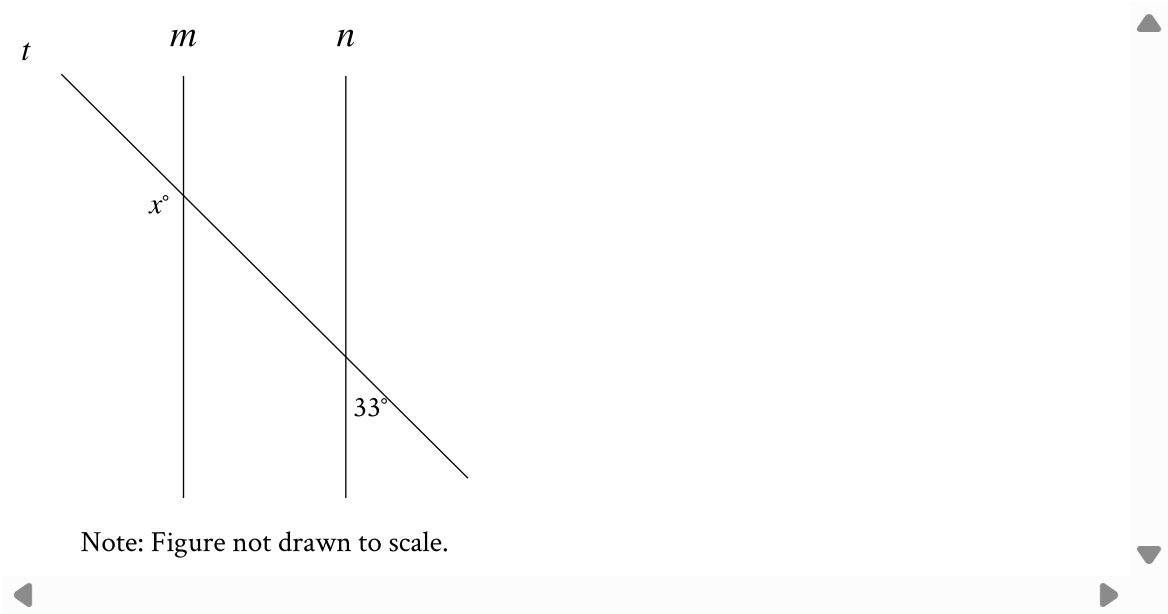
Choice D is incorrect and may result from conceptual or calculation errors.

Question Difficulty: Easy

Question ID 6baaa5b3

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 6baaa5b3



In the figure, line m is parallel to line n , and line t intersects both lines. What is the value of x ?

- A. 33
- B. 57
- C. 123
- D. 147

ID: 6baaa5b3 Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that line m is parallel to line n , and line t intersects both lines. It follows that line t is a transversal. When two lines are parallel and intersected by a transversal, exterior angles on the same side of the transversal are supplementary. Thus, $x + 33 = 180$. Subtracting 33 from both sides of this equation yields $x = 147$. Therefore, the value of x is 147.

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

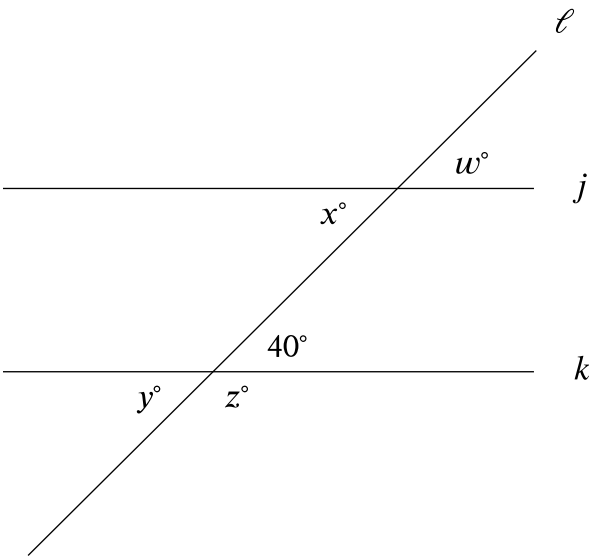
Choice B is incorrect and may result from conceptual or calculation errors.

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

Question ID 8773f193

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 8773f193



Note: Figure not drawn to scale.

In the figure shown, line ℓ intersects lines j and k . Which additional piece of information is sufficient to prove that lines j and k are parallel?

- A. $w = 40$
- B. $x = 140$
- C. $y = 40$
- D. $z = 140$

ID: 8773f193 Answer

Correct Answer: A

Rationale

Choice A is correct. In the figure shown, lines j and k are parallel if and only if a pair of corresponding angles are congruent. It's given that one angle has a measure of 40° and that the corresponding angle has a measure of w° . Therefore, $w = 40$ is sufficient to prove that lines j and k are parallel.

Choice B is incorrect. The angle measuring x° and the angle measuring 40° are alternate interior angles. Thus, if lines j and k are parallel, x is equal to 40, not 140.

Choice C is incorrect. The angle measuring y° and the angle measuring 40° are vertical angles. Thus, $y = 40$, whether lines j and k are parallel or not.

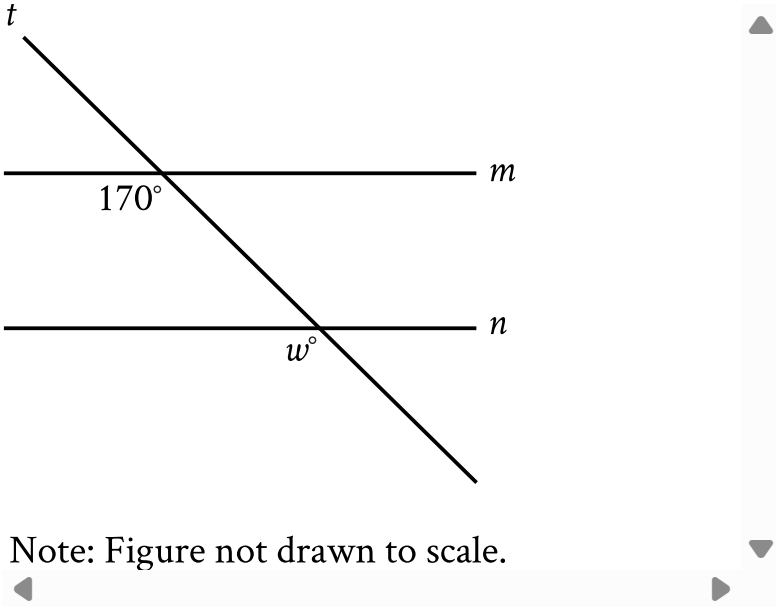
Choice D is incorrect. The angle measuring z° is supplementary to the angle measuring 40° . Thus, $z = 180 - 40$, or $z = 140$, whether lines j and k are parallel or not.

Question Difficulty: Easy

Question ID e01724ba

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: e01724ba



Note: Figure not drawn to scale.

In the figure, line m is parallel to line n . What is the value of w ?

- A. 17
- B. 30
- C. 70
- D. 170

ID: e01724ba Answer

Correct Answer: D

Rationale

Choice D is correct. It's given that lines m and n are parallel. Since line t intersects both lines m and n , it's a transversal. The angles in the figure marked as 170° and w° are on the same side of the transversal, where one is an interior angle with line m as a side, and the other is an exterior angle with line n as a side. Thus, the marked angles are corresponding angles. When two parallel lines are intersected by a transversal, corresponding angles are congruent and, therefore, have equal measure. It follows that $w^\circ = 170^\circ$. Therefore, the value of w is 170.

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

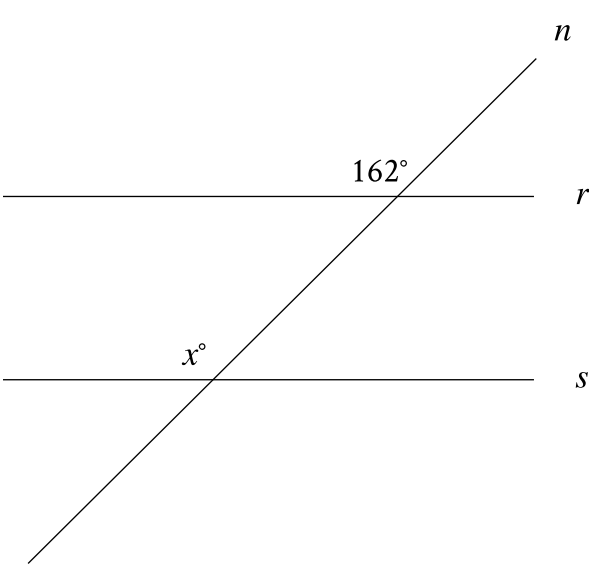
Choice B is incorrect and may result from conceptual or calculation errors.

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

Question ID 08049d70

Assessment	Test	Domain	Skill	Difficulty
SAT	Math	Geometry and Trigonometry	Lines, angles, and triangles	Easy

ID: 08049d70



Note: Figure not drawn to scale.

◀ In the figure, line *n* intersects lines *r* and *s*. Line *r* is parallel to line *s*. What is the value of *x*? ▶

ID: 08049d70 Answer

Correct Answer: 162

Rationale

The correct answer is 162. It's given that line *r* is parallel to line *s*. Since line *n* intersects both lines *r* and *s*, it's a transversal. The angles in the figure marked as 162° and *x*° are on the same side of the transversal, where one is an interior angle with line *s* as a side, and the other is an exterior angle with line *r* as a side. Thus, the marked angles are corresponding angles. When two parallel lines are intersected by a transversal, corresponding angles are congruent and, therefore, have equal measure. It follows that the value of *x* is 162.

Question Difficulty: Easy