

Geometry

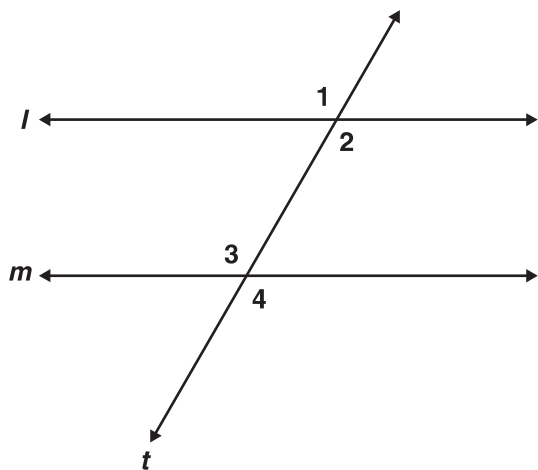
Released Test Questions

1 Which of the following best describes deductive reasoning?

- A using logic to draw conclusions based on accepted statements
- B accepting the meaning of a term without definition
- C defining mathematical terms to correspond with physical objects
- D inferring a general truth by examining a number of specific examples

CSG00185

2 In the diagram below, $\angle 1 \cong \angle 4$.



Which of the following conclusions does *not* have to be true?

- A $\angle 3$ and $\angle 4$ are supplementary angles.
- B Line l is parallel to line m .
- C $\angle 1 \cong \angle 3$
- D $\angle 2 \cong \angle 3$

CSG10066

3 Consider the arguments below.

- I. Every multiple of 4 is even. 376 is a multiple of 4. Therefore, 376 is even.
- II. A number can be written as a repeating decimal if it is rational. Pi cannot be written as a repeating decimal. Therefore, pi is not rational.

Which one(s), if any, use deductive reasoning?

- A I only
- B II only
- C both I and II
- D neither I nor II

CSG00552

4 Theorem: A triangle has at most one obtuse angle.

Eduardo is proving the theorem above by contradiction. He began by assuming that in $\triangle ABC$, $\angle A$ and $\angle B$ are both obtuse. Which theorem will Eduardo use to reach a contradiction?

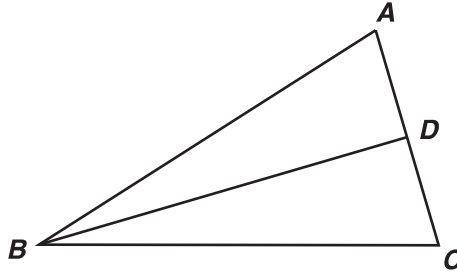
- A If two angles of a triangle are equal, the sides opposite the angles are equal.
- B If two supplementary angles are equal, the angles each measure 90° .
- C The largest angle in a triangle is opposite the longest side.
- D The sum of the measures of the angles of a triangle is 180° .

CSG00025

- 5 Use the proof to answer the question below.

Given: $\overline{AB} \cong \overline{BC}$; D is the midpoint of \overline{AC}

Prove: $\triangle ABD \cong \triangle CBD$



<u>Statement</u>	<u>Reason</u>
1. $\overline{AB} \cong \overline{BC}$; D is the midpoint of \overline{AC}	1. Given
2. $\overline{AD} \cong \overline{CD}$	2. Definition of Midpoint
3. $\overline{BD} \cong \overline{BD}$	3. Reflexive Property
4. $\triangle ABD \cong \triangle CBD$	4. ?

What reason can be used to prove that the triangles are congruent?

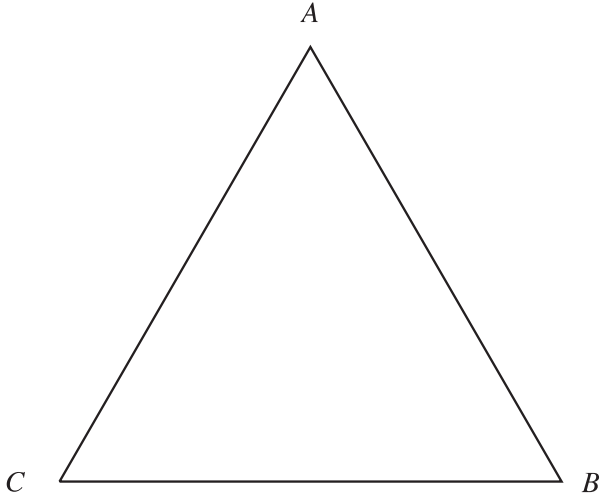
- A AAS
- B ASA
- C SAS
- D SSS

CSG10068

Geometry

Released Test Questions

- 6 In the figure below, $AB > BC$.



If we assume that $m\angle A = m\angle C$, it follows that $AB = BC$. This contradicts the given statement that $AB > BC$. What conclusion can be drawn from this contradiction?

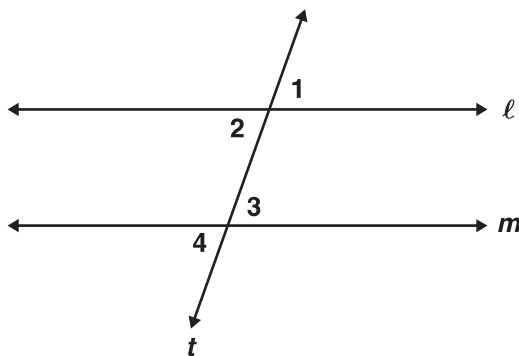
- A $m\angle A = m\angle B$
- B $m\angle A \neq m\angle B$
- C $m\angle A = m\angle C$
- D $m\angle A \neq m\angle C$

CSG00524

- 7 Use the proof to answer the question below.

Given: $\angle 2 \cong \angle 3$

Prove: $\angle 1 \cong \angle 4$



<u>Statement</u>	<u>Reason</u>
1. $\angle 2 \cong \angle 3$	1. Given
2. $\angle 1 \cong \angle 2$; $\angle 3 \cong \angle 4$	2. ?
3. $\angle 1 \cong \angle 4$	3. Transitive Property

What reason can be used to justify statement 2?

- A Complements of congruent angles are congruent.
- B Vertical angles are congruent.
- C Supplements of congruent angles are congruent.
- D Corresponding angles are congruent.

CSG10069

Geometry

Released Test Questions

- 8** “Two lines in a plane always intersect in exactly one point.”

Which of the following best describes a counterexample to the assertion above?

- A coplanar lines
- B parallel lines
- C perpendicular lines
- D intersecting lines

CSG00320

- 9** Which figure can serve as a counterexample to the conjecture below?

If one pair of opposite sides of a quadrilateral is parallel, then the quadrilateral is a parallelogram.

- A rectangle
- B rhombus
- C square
- D trapezoid

CSG10194

- 10** Given: $TRAP$ is an isosceles trapezoid with diagonals \overline{RP} and \overline{TA} . Which of the following *must* be true?

- A $\overline{RP} \perp \overline{TA}$
- B $\overline{RP} \parallel \overline{TA}$
- C $\overline{RP} \cong \overline{TA}$
- D \overline{RP} bisects \overline{TA}

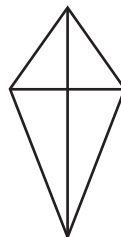
CSG00260

- 11** A conditional statement is shown below.

If a quadrilateral has perpendicular diagonals, then it is a rhombus.

Which of the following is a counterexample to the statement above?

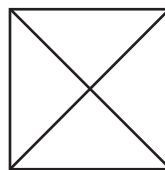
A



C



B



D

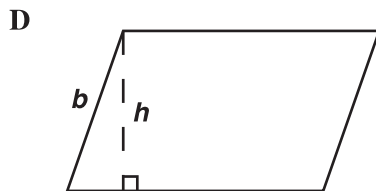
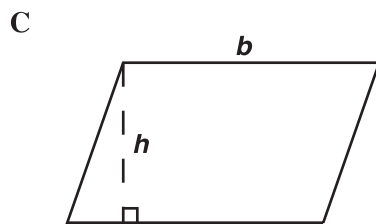
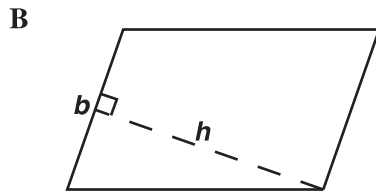
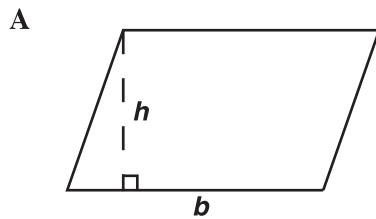


CSG20216

- 12** Students in a class rewrote theorems in their own words. One student wrote the following statement.

The area of a parallelogram is the product of any base (b) and any height (h).

Which figure shows a counterexample to prove the statement *false*?



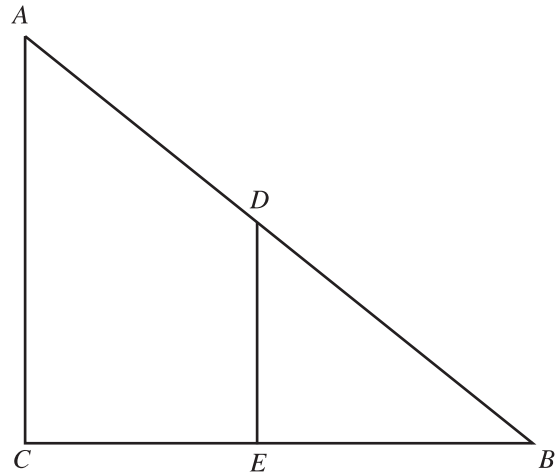
CSG10102

- 13** Which triangles must be similar?

- A two obtuse triangles
- B two scalene triangles with congruent bases
- C two right triangles
- D two isosceles triangles with congruent vertex angles

CSG00578

- 14** Which of the following facts would be sufficient to prove that triangles ABC and DBE are similar?



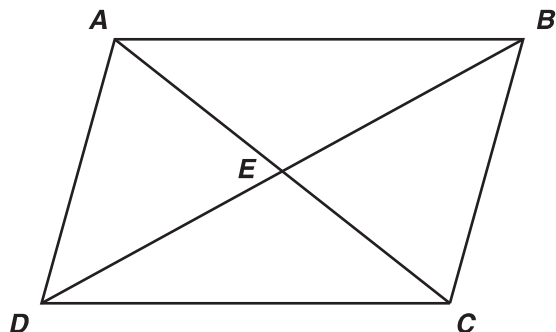
- A \overline{CE} and \overline{BE} are congruent.
- B $\angle ACE$ is a right angle.
- C \overline{AC} and \overline{DE} are parallel.
- D $\angle A$ and $\angle B$ are congruent.

CSG00544

Geometry

Released Test Questions

- 15 Parallelogram $ABCD$ is shown below.



Which pair of triangles can be established to be congruent to prove that $\angle DAB \cong \angle BCD$?

- A $\triangle ADC$ and $\triangle BCD$
- B $\triangle AED$ and $\triangle BEC$
- C $\triangle DAB$ and $\triangle BCD$
- D $\triangle DEC$ and $\triangle BEA$

CSG10146

- 16 If $\triangle ABC$ and $\triangle XYZ$ are two triangles such that $\frac{AB}{XY} = \frac{BC}{YZ}$, which of the following would be sufficient to prove the triangles are similar?

- A $\angle A \cong \angle X$
- B $\angle B \cong \angle Y$
- C $\angle C \cong \angle Z$
- D $\angle X \cong \angle Y$

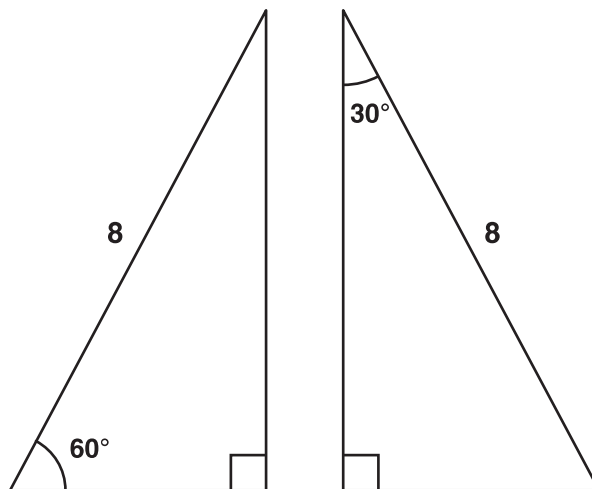
CSG10218

- 17 In parallelogram $FGHI$, diagonals \overline{IG} and \overline{FH} are drawn and intersect at point M . Which of the following statements *must* be true?

- A $\triangle FGI$ must be an obtuse triangle.
- B $\triangle HIG$ must be an acute triangle.
- C $\triangle FMG$ must be congruent to $\triangle HMG$.
- D $\triangle GMH$ must be congruent to $\triangle IMF$.

CSG00559

- 18 Which of the following *best* describes the triangles shown below?



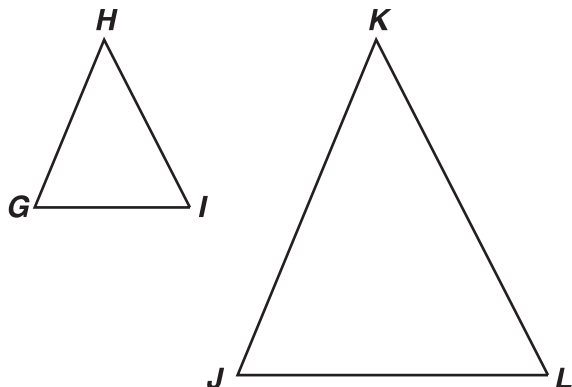
- A both similar and congruent
- B similar but not congruent
- C congruent but not similar
- D neither similar nor congruent

CSG00478

Released Test Questions

Geometry

- 19 Which of the following statements must be true if $\triangle GHI \sim \triangle JKL$?



- A The two triangles must be scalene.
 B The two triangles must have exactly one acute angle.
 C At least one of the sides of the two triangles must be parallel.
 D The corresponding sides of the two triangles must be proportional.

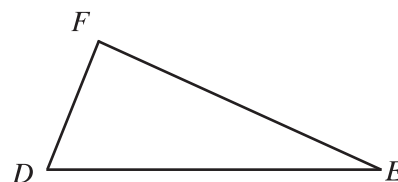
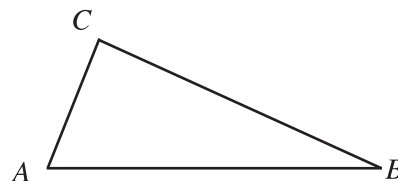
CSG20074

- 20 Which method listed below could *not* be used to prove that two triangles are congruent?

- A Prove all three sets of corresponding sides congruent.
 B Prove all three sets of corresponding angles congruent.
 C Prove that two sides and an included angle of one triangle are congruent to two sides and an included angle of the other triangle.
 D Prove that two angles and an included side of one triangle are congruent to two angles and an included side of the other triangle.

CSG10151

- 21 In the figure below, $\overline{AC} \cong \overline{DF}$ and $\angle A \cong \angle D$.



Which additional information would be enough to prove that $\triangle ABC \cong \triangle DEF$?

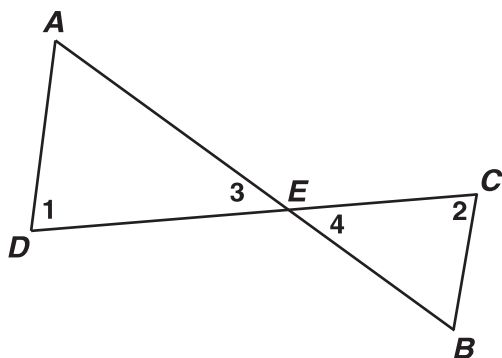
- A $\overline{AB} \cong \overline{DE}$
 B $\overline{AB} \cong \overline{BC}$
 C $\overline{BC} \cong \overline{EF}$
 D $\overline{BC} \cong \overline{DE}$

CSG00517

Geometry

Released Test Questions

- 22 Given: \overline{AB} and \overline{CD} intersect at point E ;
 $\angle 1 \cong \angle 2$

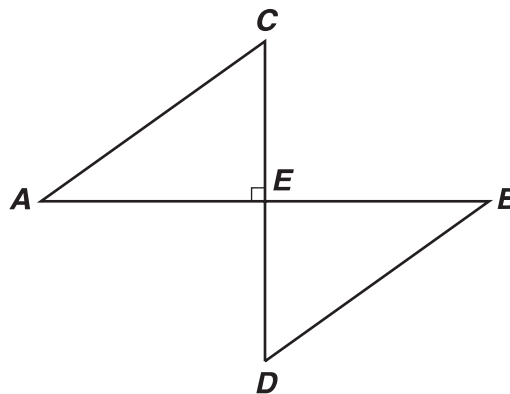


Which theorem or postulate can be used to prove $\triangle AED \sim \triangle BEC$?

- A AA
- B SSS
- C ASA
- D SAS

CSG10074

- 23 Given: E is the midpoint of \overline{CD} ; $\angle C \cong \angle D$

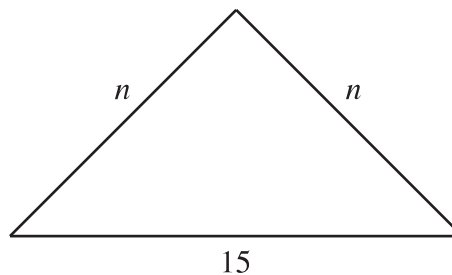


Which of the following statements *must* be true?

- A $\angle A \cong \angle D$
- B $\angle B \cong \angle C$
- C $\overline{CE} \cong \overline{BE}$
- D $\overline{AC} \cong \overline{BD}$

CSG10078

- 24 In the figure below, n is a whole number. What is the *smallest* possible value for n ?



- A 1
- B 7
- C 8
- D 14

CSG00295

Released Test Questions

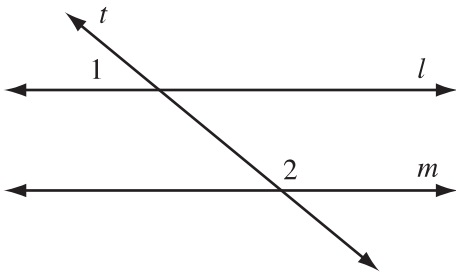
Geometry

- 25** Which of the following sets of numbers could represent the lengths of the sides of a triangle?

A 2, 2, 5
 B 3, 3, 5
 C 4, 4, 8
 D 5, 5, 15

CSG10041

- 26** In the accompanying diagram, parallel lines l and m are cut by transversal t .

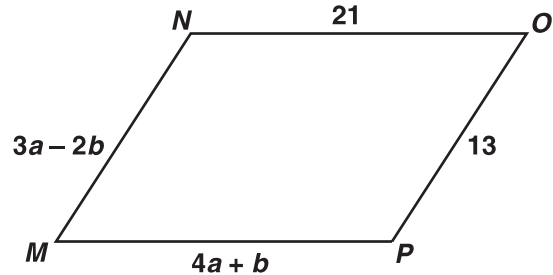


Which statement about angles 1 and 2 *must* be true?

A $\angle 1 \cong \angle 2$.
 B $\angle 1$ is the complement of $\angle 2$.
 C $\angle 1$ is the supplement of $\angle 2$.
 D $\angle 1$ and $\angle 2$ are right angles.

CSG00579

- 27** What values of a and b make quadrilateral $MNOP$ a parallelogram?



A $a = 1, b = 5$
 B $a = 5, b = 1$
 C $a = \frac{11}{7}, b = \frac{34}{7}$
 D $a = \frac{34}{7}, b = \frac{11}{7}$

CSG10163

- 28** Quadrilateral $ABCD$ is a parallelogram. If adjacent angles are congruent, which statement *must* be true?

A Quadrilateral $ABCD$ is a square.
 B Quadrilateral $ABCD$ is a rhombus.
 C Quadrilateral $ABCD$ is a rectangle.
 D Quadrilateral $ABCD$ is an isosceles trapezoid.

CSG20048