

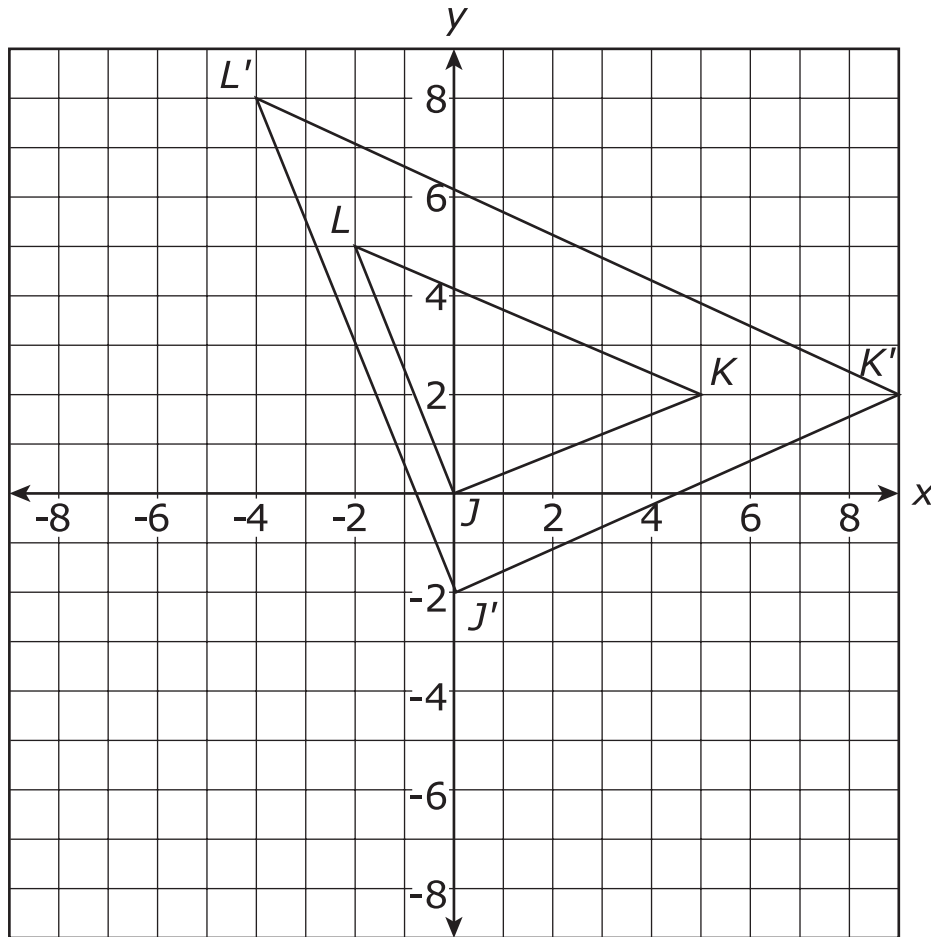
Tennessee Comprehensive Assessment Program

TCAP

Geometry Item Release



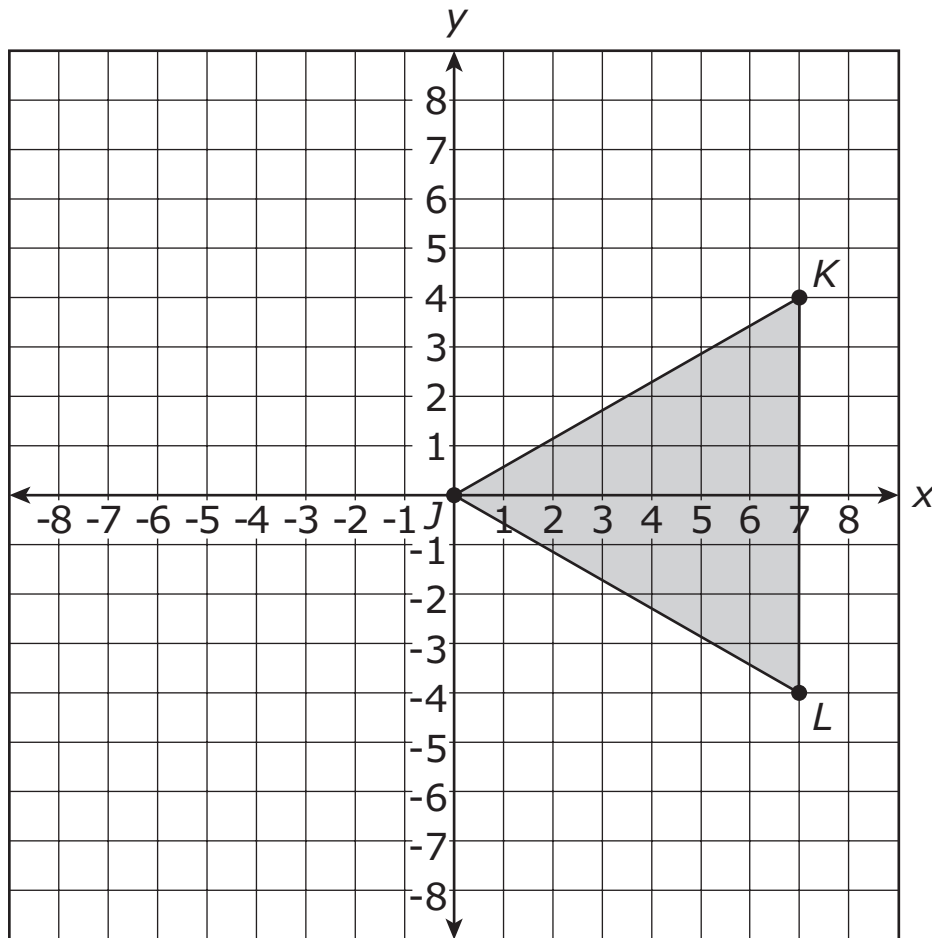
00. Triangles JKL and $J'K'L'$ are graphed on the coordinate grid.



Which statement is true?

- A.** The triangles are congruent because $\frac{JK}{J'K'} = \frac{KL}{K'L'} = \frac{JL}{J'L'}$.
- B.** The triangles are not congruent because $m\angle J \neq m\angle J'$, $m\angle K \neq m\angle K'$, and $m\angle L \neq m\angle L'$.
- C.** The triangles are congruent because the corresponding angles of $\triangle J'K'L'$ and $\triangle JKL$ are congruent.
- D.** The triangles are not congruent because the corresponding sides of $\triangle J'K'L'$ and $\triangle JKL$ are not congruent.

00. Triangle JKL is reflected across the y -axis to create the image, triangle $J'K'L'$.



Which criteria for triangle congruence will prove triangle JKL is congruent to triangle $J'K'L'$?

Select **all** that apply.

- A. Side Side Side
- B. Side Angle Side
- C. Side Side Angle
- D. Angle Side Angle
- E. Angle Angle Angle

- 00.** Triangle VXY is graphed on a coordinate grid. Which series of transformations will result in a triangle that is similar, but not congruent, to triangle VXY ?

Select the **two** that apply.

- A.** a translation 4 units down followed by a translation 6 units left
- B.** a translation 3 units left followed by a rotation of 180° about the origin
- C.** a rotation of 60° about the origin followed by a translation 0.5 unit left
- D.** a dilation with a factor of 0.25 using the origin as the center of dilation followed by a translation 4 units down
- E.** a rotation of 90° about the origin followed by a dilation with a factor of 4 using the origin as the center of dilation
- F.** a dilation with a factor of 0.5 followed by a dilation with a factor of 2 using the origin as the center of dilation for both

- 00.** In a right triangle, the cosine of one acute angle is $\frac{5}{13}$.

What is the sine of the other acute angle?

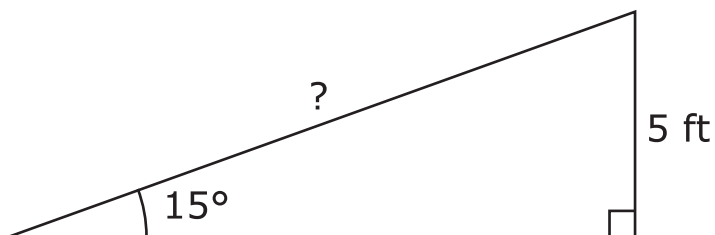
A. $\frac{5}{13}$

B. $\frac{13}{5}$

C. $\frac{5}{12}$

D. $\frac{12}{13}$

- 00.** A ramp is placed on a loading dock that is 5 ft tall.



Which ratio can be used to find the length of the ramp?

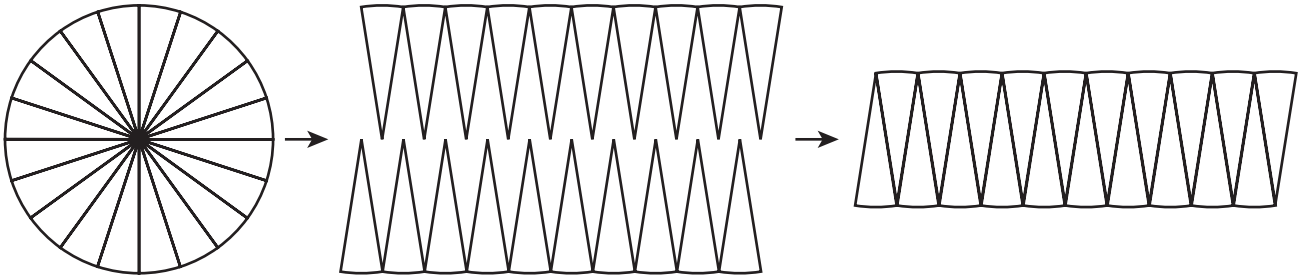
A. $\frac{5}{\sin 15^\circ}$

B. $\frac{5}{\cos 15^\circ}$

C. $\frac{\sin 15^\circ}{5}$

D. $\frac{\cos 15^\circ}{5}$

- 00.** Logan is investigating the circumference of a circle with a radius of 10 inches. He divides the circle into 20 equal sections. Next he removes the sections and lines up the pieces to make a figure as shown.

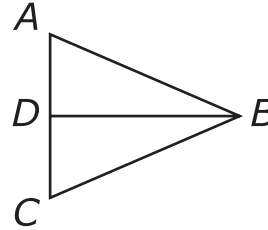


To the nearest whole inch, what are the height and length of the base of the figure?

- A.** height = 10 in.
base = 31 in.
- B.** height = 10 in.
base = 63 in.
- C.** height = 20 in.
base = 31 in.
- D.** height = 20 in.
base = 63 in.

00. A partial proof is given, using isosceles triangle ABC , where angle B is the vertex angle.

Given: Isosceles $\triangle ABC$
 \overline{BD} bisects $\angle ABC$
 Prove: $\triangle ABD \cong \triangle CBD$

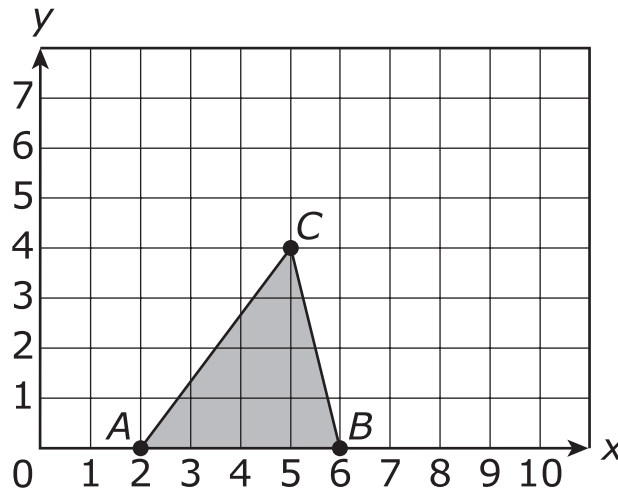


Statements	Reasons
1. Isosceles $\triangle ABC$	1. Given
2. $\overline{AB} \cong \overline{BC}$	2. Definition of an isosceles triangle
3. \overline{BD} bisects $\angle ABC$	3. Given
4. $\angle ABD \cong \angle CBD$	4. Definition of an angle bisector
5.	5.
6. $\triangle ABD \cong \triangle CBD$	6. Side-Angle-Side (SAS)

Which statement and reason complete the proof?

- A. $\overline{BD} \cong \overline{BD}$, Reflexive Property
- B. $\overline{AD} \cong \overline{DC}$, Definition of a midpoint
- C. $\angle ADB \cong \angle CDB$, All right angles are congruent.
- D. $\angle A \cong \angle C$, Base angles of an isosceles triangle are congruent.

00. The coordinates of the vertices of $\triangle ABC$ are integers, as shown on the coordinate plane.

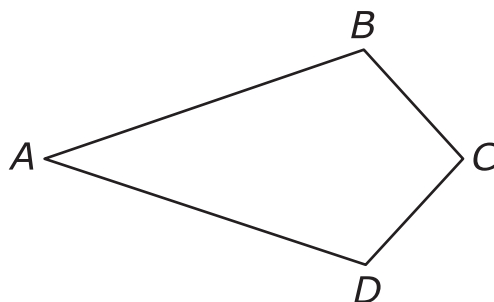


Triangle ABC will be dilated by a scale factor of 2. Which statements are true about the image of $\triangle ABC$?

Select the **two** true statements.

- A. If the center of dilation is the origin, then the image is a triangle that has a side on the x-axis.
- B. If the center of dilation is the origin, then the image is a triangle that has a side on the y-axis.
- C. If the center of dilation is the origin, then the image is a triangle that does not have any sides parallel to the sides of $\triangle ABC$.
- D. If the center of dilation is the point $(0, 1)$, then the image is a triangle that is similar to $\triangle ABC$ but that has been rotated.
- E. If the center of dilation is the point $(0, 1)$, then the image is a triangle that has corresponding sides that are parallel to the sides of $\triangle ABC$.

00. In quadrilateral $ABCD$, $\overline{BC} \cong \overline{CD}$ and $\overline{AB} \cong \overline{AD}$.



Which single statement is sufficient to prove that $\angle B \cong \angle D$?

- A. $\triangle ABD$ is isosceles because $\overline{AB} \cong \overline{AD}$.
- B. $\triangle BCD$ is isosceles because $\overline{BC} \cong \overline{CD}$.
- C. $\triangle ABC \cong \triangle ADC$ because $\overline{AC} \cong \overline{AC}$, $\overline{AB} \cong \overline{AD}$, and $\overline{BC} \cong \overline{CD}$.
- D. $m\angle A + m\angle B + m\angle C + m\angle D = 360^\circ$ because $ABCD$ is a convex quadrilateral.

- 00.** Which equation represents a line perpendicular to the line represented by the equation $2x - 5y = 5$?
- A.** $5x + 2y = 6$
 - B.** $6x - 15y = 15$
 - C.** $5x - 2y = 6$
 - D.** $2x + 5y = 20$

- 00.** The center of circle O is located at $(25, 20)$, and the radius of the circle is 10 units. Which of the following points lies on the circle?
- A.** $(-24, -17)$
 - B.** $(-17, -14)$
 - C.** $(19, 28)$
 - D.** $(26, 23)$

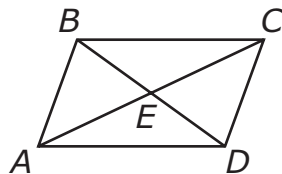
- 00.** Circle O is represented by the equation shown.

$$(x + 4)^2 + (y - 4)^2 = 9$$

Which statement describes circle O ?

- A.** The length of a radius of circle O is 3 units, and circle O lies in Quadrant II.
- B.** The length of a radius of circle O is 3 units, and circle O lies in Quadrant III.
- C.** The length of a radius of circle O is 4.5 units, and circle O lies in Quadrant II.
- D.** The length of a radius of circle O is 4.5 units, and circle O lies in Quadrant III.

00. Segments AC and BD are diagonals of parallelogram $ABCD$.

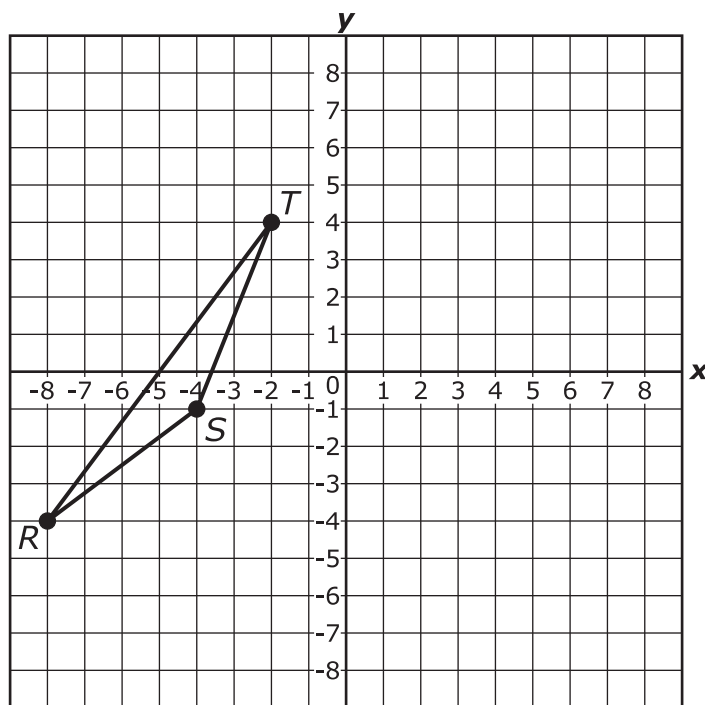


Using $\overline{AD} \cong \overline{BC}$, which pairs of angles must be congruent to prove $\triangle AED \cong \triangle CEB$ by the Angle-Side-Angle theorem?

Select the **two** that apply.

- A. $\angle BCA \cong \angle BDA$
- B. $\angle BEC \cong \angle AED$
- C. $\angle CAD \cong \angle BCA$
- D. $\angle DAC \cong \angle DBC$
- E. $\angle DBC \cong \angle BDA$

00. The graph of $\triangle RST$ is shown.



The triangle is rotated 90° counterclockwise about the origin to create $\triangle R'S'T'$. What are the coordinates of point R' ?

- A. $(8, -4)$
- B. $(-8, 4)$
- C. $(4, -8)$
- D. $(-4, 8)$

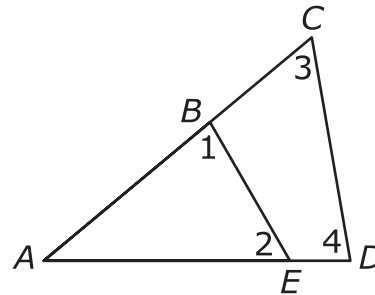
00. A partial proof is given. Two statements are missing.

Given: $\frac{AB}{AD} = \frac{AE}{AC}$

Points A , B , and C are collinear.

Points A , E , and D are collinear.

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



Statement 1: $\frac{AB}{AD} = \frac{AE}{AC}$; Points A , B , and C are collinear; Points A , E , and D are collinear.

Statement 2:

Statement 3:

Statement 4: $\angle 1 \cong \angle 4$

Which relationships could be the two missing statements?

Select the **two** that apply.

A. $\angle 2 \cong \angle 3$

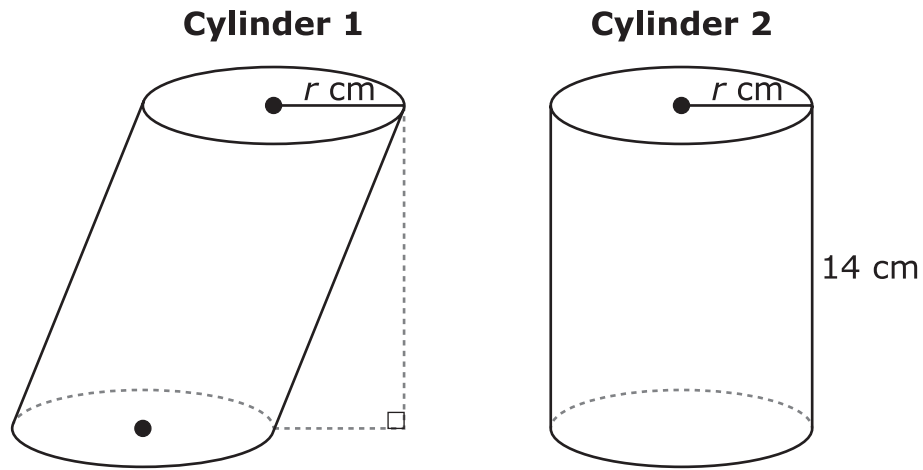
B. $\angle A \cong \angle A$

C. $\frac{AB}{BE} = \frac{CD}{AD}$

D. $\triangle ABE \sim \triangle ACD$

E. $\triangle EAB \sim \triangle CAD$

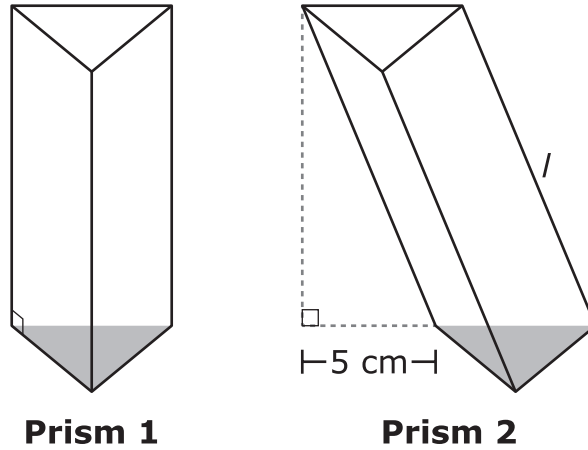
- 00.** In the diagram, Cylinder 1 and Cylinder 2 have the same radius, r . The volume of Cylinder 2 is $1,543.5\pi$ cubic centimeters.



What is the **area**, in square centimeters, of the base of Cylinder 1?

- A.** 10.5π
- B.** 21.0π
- C.** 55.125π
- D.** 110.25π

00. Two triangular prisms are shown in the figure.



- A. 17 cm
- B. 13 cm
- C. 12 cm
- D. 11 cm

The area of the base of Prism 1 and the area of the base of Prism 2 are both equal to 9 square centimeters. Prism 1 and Prism 2 have equal heights. The volume of Prism 1 is 108 cubic centimeters. What is the slant height, l , of Prism 2?

Metadata- Math

Items

Page Number	UIN	Grade	Item Type	Key	DOK	TN Standards	Calculator
4	TN0001496	Geometry	MC	D	2	G.CO.B.7	N
5	TN0001497	Geometry	MS	A,B,D	2	G.CO.B.8	N
6	TN0001519	Geometry	MS	D,E	2	G.SRT.A.2	Y
7	TN0001537	Geometry	MC	A	2	G.SRT.C.7	Y
8	TN0001623	Geometry	MC	A	2	G.SRT.C.8	Y
9	TN0001658	Geometry	MC	A	3	G.GMD.A.1	Y
10	TN0025973	Geometry	MC	A	2	G.CO.C.10	Y
11	TN0029381	Geometry	MS	A,E	1	G.SRT.A.1	Y
12	TN0031130	Geometry	MC	C	3	G.SRT.B.5	Y
13	TN0031944	Geometry	MC	A	2	G.GPE.B.3	Y
14	TN0032417	Geometry	MC	C	2	G.GPE.B.2	Y
15	TN0063345	Geometry	MC	A	2	G.GPE.A.1	Y
16	TN0066806	Geometry	MS	C,E	3	G.CO.C.11	Y
17	TN0069474	Geometry	MC	C	2	G.CO.B.6	Y
18	TN0083039	Geometry	MS	B,E	3	G.SRT.B.4	N
19	TN0084869	Geometry	MC	D	2	G.GMD.A.1	Y
20	TN0085449	Geometry	MC	B	2	G.GMD.A.1	Y

Metadata Definitions:

UIN	Unique letter/number code used to identify the item.
Grade	Grade level or Course.
Item Type	Indicates the type of item. MC= Multiple Choice; MS= Multiple Select
Key	Correct answer. This may be blank for constructed response items where students write or type their responses.
DOK	Depth of Knowledge (cognitive complexity) is measured on a three-point scale. 1 = Recall or simple reproduction of information; 2 = Skills and concepts: comprehension and processing of text; 3 = Strategic thinking, prediction, elaboration.
TN Standards	Primary educational standard assessed.
Calculator	Y for items that permit calculator use.