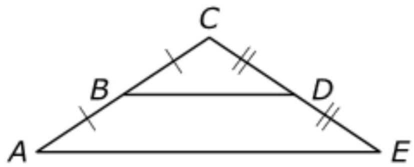


Given: B is the midpoint of $\overline{AC}$ and D is the midpoint of $\overline{CE}$.

Prove: $\overline{BD} \parallel \overline{AE}$

Statement	Reason
1) B is the midpoint of $\overline{AC}$; D is the midpoint of $\overline{CE}$.	1) Given
2) $BC = \frac{1}{2}AC$; $CD = \frac{1}{2}CE$	2) Midpoint theorem
3) $\frac{BC}{AC} = \frac{1}{2}$; $\frac{1}{2} = \frac{CD}{CE}$	3) Division property of equality
4) $\frac{BC}{AC} = \frac{CD}{CE}$	4) Transitive property of equality
5) $\angle C \cong \angle C$	5) Reflexive property of congruence
6)	6)
7)	7)
8) $\overline{BD} \parallel \overline{AE}$	8) If corresponding angles are congruent, then the lines are parallel.

Select from the drop-down menus to correctly complete each statement.

In step 6 of the proof, the statement is

- ΔACE ≅ ΔBCD
- ΔACE ~ ΔBCD

and the reason is

- SSS congruence
- SAS congruence
- ASA congruence
- AAS congruence
- HL congruence
- SSS similarity AA similarity
- HL similarity

In step 7 of the proof, the statement is

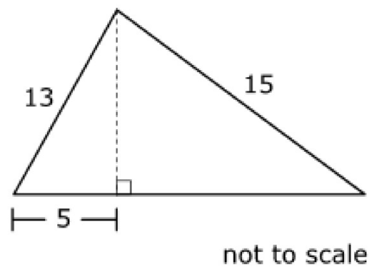
- ∠CAE ≅ ∠CEA
- ∠AEC ≅ ∠CBD
- ∠CAE ≅ ∠CBD
- BD = ½ AE
- BC/AC = CD/CE = BD/AE

and the reason is

- Corresponding angles of congruent triangles are congruent
- Corresponding angles of similar triangles are congruent
- Corresponding sides of similar triangles are proportional
- If the lines are parallel, then corresponding angles are congruent If the lines are parallel, then alternate interior angles are congruent In an isosceles triangle, base angles are congruent
- Vertical angles are congruent
- Midpoint Theorem

2. **VF902938**

A triangular banner is to be made according to the specifications in the figure shown, with dimensions given in inches.



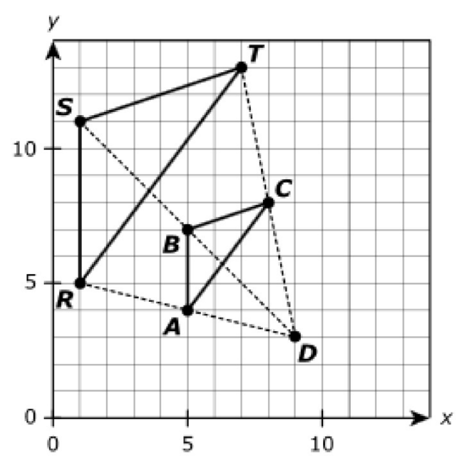
Wooden sticks will be used to outline the perimeter of the banner in order to attach the interior material. How many inches of wooden sticks will be required?

Enter your answer in the box.

[ ] inches

3. **VF646431**

On the *xy*-coordinate plane, $\triangle ABC$ has been dilated from center D to form $\triangle RST$.



Select from the drop-down menus to correctly complete the sentences.

In the figure, the length of any line segment in the image is [longer than / shorter than / the same length as] the length of the corresponding line segment in the preimage. The scale factor of the dilation is [1 / 2]

4. **2469-M42030**

Part A

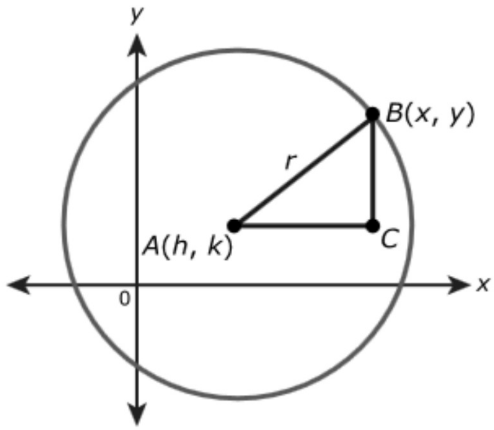
The figure shows a circle in the coordinate plane.

The center of the circle is the point $A(h, k)$.

The point $B(x, y)$ is a point on the circle.

Triangle ABC is a right triangle, with point C the vertex of the right angle.

The variable r represents the radius of the circle.



The variables h, k, x, and y can be used to write absolute value expressions for the lengths of the legs of triangle ABC. Create these expressions.

Drag and drop each variable into the correct boxes.

h k x y

$AC = |\square - \square|$ $BC = |\square - \square|$

Part B

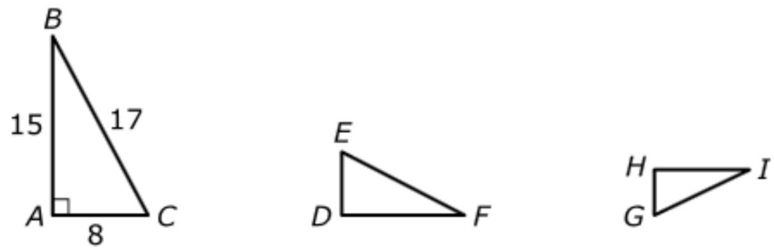
Because ΔABC is a right triangle, the lengths of its sides are related by the Pythagorean Theorem. This relationship also gives an equation for the circle. Use the center, the given point on the circle, and the radius to write an equation that represents this relationship.

Enter your equation in the space provided. Enter **only** your equation.

$$(\square - \square)^2 + (\square - \square)^2 = \square^2$$

5. **VH017545**

The figures shown are three similar triangles such that $\triangle ABC \sim \triangle DFE \sim \triangle HIG.$



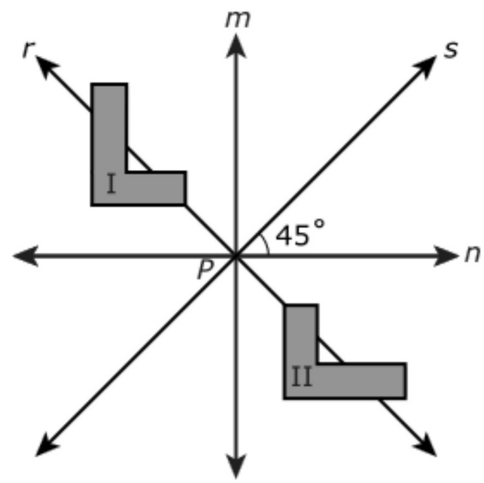
Find the values of cos *F* and cos *I*.

Select **both** correct values.

- A. $\cos F = \frac{8}{17}$
- B. $\cos F = \frac{8}{15}$
- C. $\cos F = \frac{15}{17}$
- D. $\cos I = \frac{8}{17}$
- E. $\cos I = \frac{8}{15}$
- F. $\cos I = \frac{15}{17}$

6. **M41711**

In the illustration, line m is perpendicular to line n, and line r is perpendicular to line s.



Della makes a conjecture that figure I is congruent to figure II. Select **each** transformation or combination of transformations that can help Della prove her conjecture.

Select **all** that apply.

- ☐ A. Rotate figure I 180° around point P.
- ☐ B. Reflect figure I across line s.
- ☐ C. Reflect figure I across line m, and then reflect the image across line n.
- ☐ D. Reflect figure I across line n, and then rotate the image 90° counterclockwise around point P.
- ☐ E. Rotate figure I 90° clockwise around point P, and then reflect the image across line n.
- ☐ F. Rotate figure I 180° around point P, and then reflect the image across line r.