

In order to receive full credit, you must show and/or explain your answers for ALL questions. **Any plagiarism** (which includes but is NOT limited to using AI to respond to these questions) will result in an automatic 0, an academic integrity referral, and a contact home.

- 

2. Line  $CD$  is the perpendicular bisector of segment  $AB$ . The lines intersect at point  $E$ . Which of these statements is true?

- A.  $E$  is closer to  $A$ .
- B.  $E$  is closer to  $B$ .
- C.  $E$  is the same distance from  $A$  and  $B$ .
- D. There is not enough information to be sure.

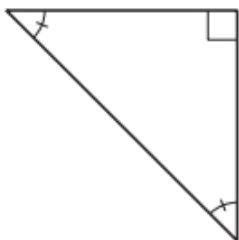
Name \_\_\_\_\_

**First TEP of SY26-27**

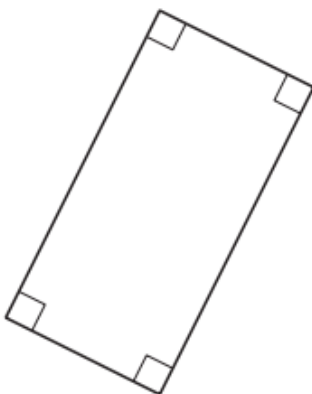
3.

. Select **all** the figures with 180-degree rotation symmetry.

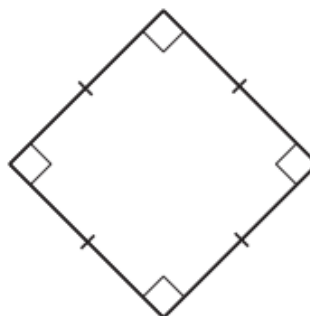
**A**



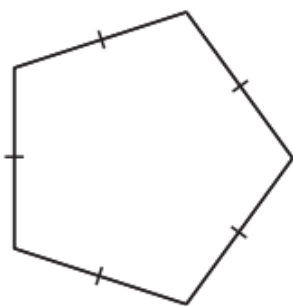
**B**



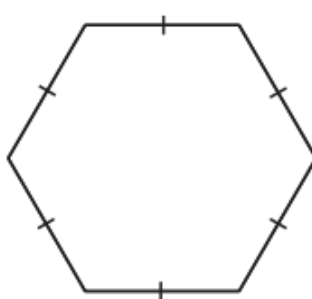
**C**



**D**



**E**



A. Image A: right, isosceles triangle

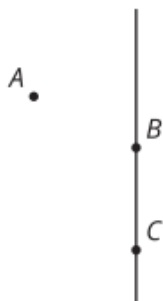
B. Image B: rectangle

C. Image C: square

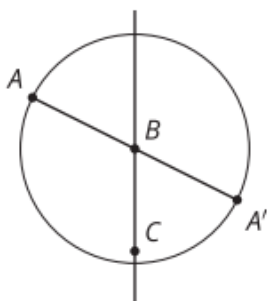
D. Image D: regular pentagon

E. Image E: regular hexagon

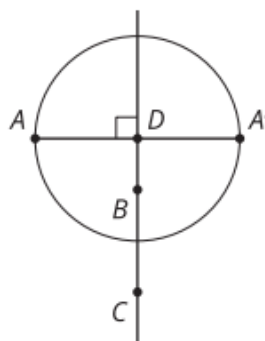
4.

Select the construction that guarantees  $A'$  is a reflection of point  $A$  across line  $BC$ .

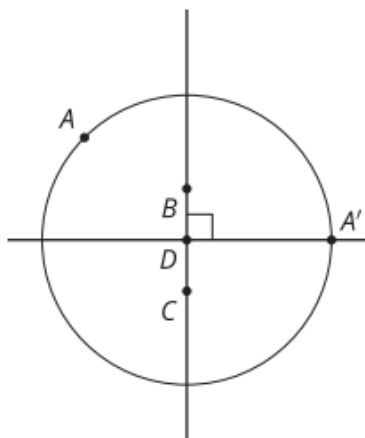
Construction A



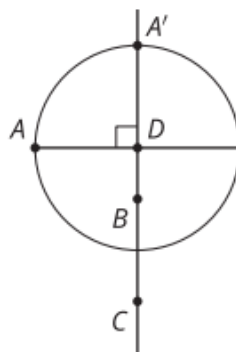
Construction B



Construction C



Construction D



A. Construction A

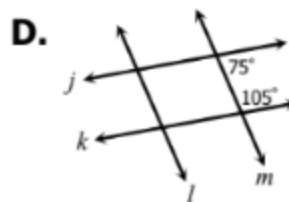
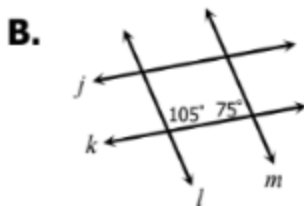
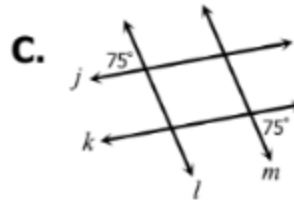
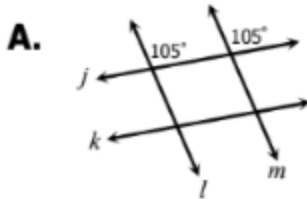
B. Construction B

C. Construction C

D. Construction D

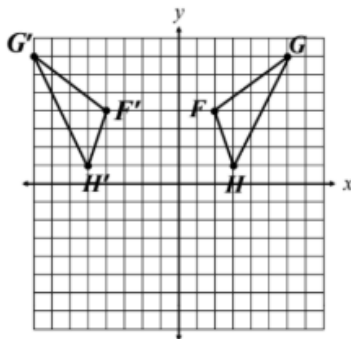
5.

Which diagram shows a pair of angle measures that prove  $j \parallel k$ ?



6.

Which transformation was used to map  $F'G'H'$ ?



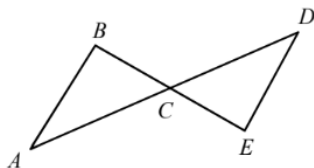
- A.** Reflection over  $x = -1$
- B.** Reflection over  $y = -1$
- C.** Rotation  $90^\circ$  counterclockwise about the origin.
- D.** Rotation  $270^\circ$  counterclockwise about the origin.

7.

**A partial proof is given below. Use the information given to complete questions 22-25.**

**Given:**  $\overline{AB} \parallel \overline{DE}$ ;  $C$  is the midpoint of  $\overline{BE}$

**Prove:**  $\triangle ABC \cong \triangle DEC$



| Statements                                                                             | Reasons  |
|----------------------------------------------------------------------------------------|----------|
| 1. $\overline{AB} \parallel \overline{DE}$ ;<br>$C$ is the midpoint of $\overline{BE}$ | 1. Given |
| 2. $\angle BAC \cong \angle EDC$                                                       | 2.       |
| 3. $\overline{BC} \cong \overline{CE}$                                                 | 3.       |
| 4. $\angle BCA \cong \angle ECD$                                                       | 4.       |
| 5. $\triangle ABC \cong \triangle DEC$                                                 | 5.       |

8 Which reason justifies statement 2?

- A. Vertical Angles
- B. Alternate Interior Angles
- C. Corresponding Angles
- D. Consecutive Interior Angles

9 Which reason justifies statement 3?

- A. Reflexive Property
- B. Transitive Property
- C. Definition of Midpoint
- D. Definition of Congruent Sides

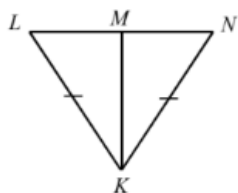
10 Which reason justifies statement 4?

- A. Vertical Angles
- B. Alternate Interior Angles
- C. Corresponding Angles
- D. Consecutive Interior Angles

11 Which reason justifies statement 5?

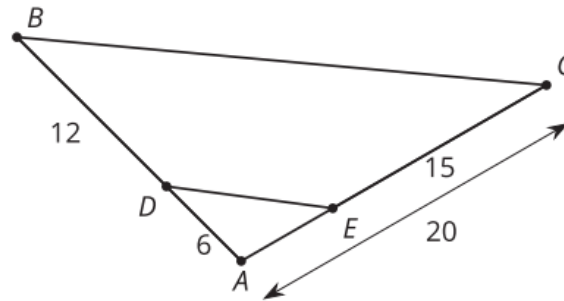
- A. Side-Side-Side
- B. Side-Angle-Side
- C. Angle-Side-Angle
- D. Angle-Angle-Side

12 What additional piece of information would prove  $\triangle LMK \cong \triangle NMK$  by Side-Angle-Side?



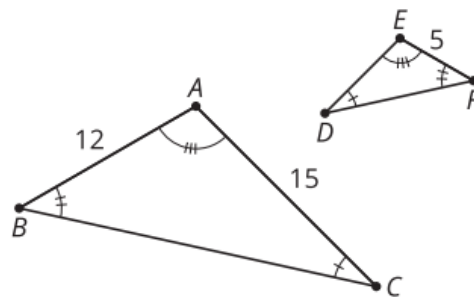
- A.  $M$  is the midpoint of  $\overline{LN}$
- B.  $\angle LMK \cong \angle NMK$
- C.  $\angle MLK \cong \angle MNK$
- D.  $\overline{MK}$  bisects  $\angle LKN$

13.

Is line  $BC$  parallel to line  $DE$ ? Choose the best justification.

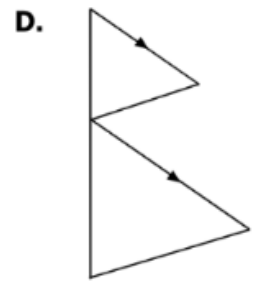
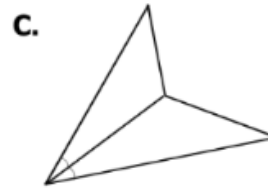
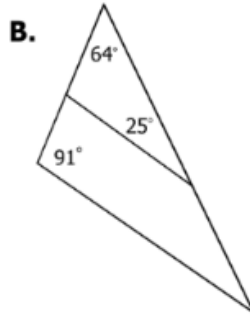
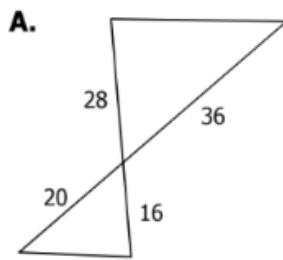
- A. Line  $BC$  is parallel to line  $DE$  because triangle  $ABC$  is a dilation of triangle  $ADE$  by a scale factor of 3 from point  $A$ .
- B. Line  $BC$  is parallel to line  $DE$  because triangle  $ABC$  is a dilation of triangle  $ADE$  by a scale factor of 2 from point  $A$ .
- C. Line  $BC$  is parallel to line  $DE$  because triangle  $ABC$  is a dilation of triangle  $ADE$  by a scale factor of  $\frac{4}{3}$  from point  $A$ .
- D. Line  $BC$  is *not* parallel to line  $DE$  because there is no dilation that sends triangle  $ADE$  to triangle  $ABC$ .

14. Triangle  $ABC$  is similar to triangle  $EFD$ . What scale factor is required to dilate triangle  $ABC$  so that its image,  $A'B'C'$ , is congruent to triangle  $EFD$ ?



- A. 3
- B.  $\frac{12}{5}$
- C.  $\frac{5}{12}$
- D.  $\frac{1}{3}$

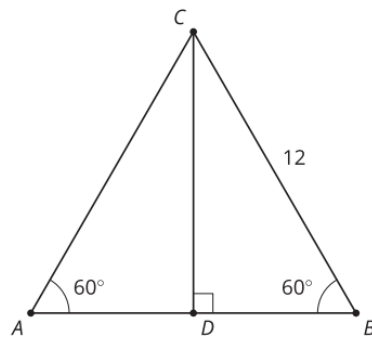
15. Based on the given information, which diagram contains a pair of similar triangles?



**For questions 16 - 21: You may use a scientific calculator but you must show your work. Round angles to the nearest degree and side lengths to the nearest tenth.**

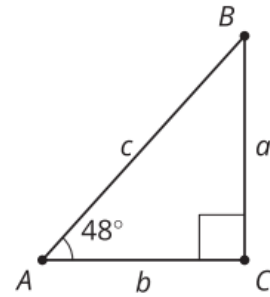
16. You may use a scientific calculator and your reference chart. Round angles to the nearest degree and side lengths to the nearest tenth.

1. What is the area of triangle  $ABC$ ?



- A.  $6\sqrt{3}$  square units  
B.  $18\sqrt{3}$  square units  
C.  $36\sqrt{3}$  square units  
D.  $72\sqrt{3}$  square units

17.

. Based on the figure, select **all** true equations.

A.  $\cos(42) = \frac{b}{c}$

B.  $\cos(48) = \frac{b}{c}$

C.  $\sin(42) = \frac{b}{c}$

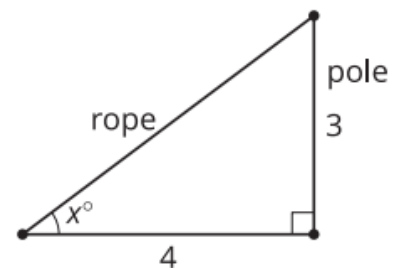
D.  $\sin(48) = \frac{b}{c}$

E.  $\tan(42) = \frac{b}{a}$

F.  $\tan(48) = \frac{a}{b}$

18.

In building a tent, Jada ties a rope from the top of a pole 3 meters high to a stake that is 4 meters away from the base of the pole. Jada draws this diagram to help find the angle made between the rope and the ground. Which equation can Jada use to find the value of  $x$ ?



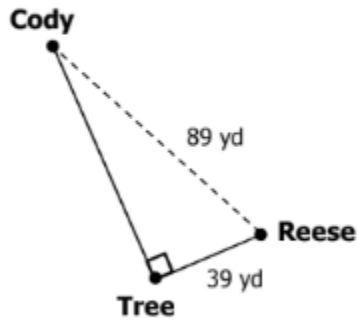
A.  $x = \tan\left(\frac{3}{4}\right)$

B.  $\tan(x) = \frac{3}{4}$

C.  $x = \tan\left(\frac{4}{3}\right)$

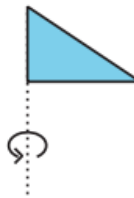
D.  $\tan(x) = \frac{4}{3}$

- 19 The diagram shows the locations of Cody and Reese after running different directions from a tree. How far did Cody run?



- A. 50 yd
- B. 64 yd
- C. 75 yd
- D. 80 yd

20. Here is a right triangle.



Which solid results from rotating the triangle using the axis of rotation shown?

- A. cone
- B. hexagonal pyramid
- C. triangular pyramid
- D. triangular prism

Name \_\_\_\_\_

**First TEP of SY26-27**

21.

Olive oil is a cooking ingredient. The density of olive oil is 0.92 grams per cubic centimeter. An olive farmer wants to sell bottles that contain 460 grams of oil. What is the volume of the smallest container that holds 460 grams of oil?

- A. 423 cubic centimeters
- B. 460 cubic centimeters
- C. 500 cubic centimeters
- D. 552 cubic centimeters

22. The radius of a cylinder is multiplied by 6 while the height is kept the same. What effect does this have on the volume of the cone?

The volume will be multiplied by -

- a. 6
- b. 12
- c. 36
- d. 216

Show or explain your answer for 22:

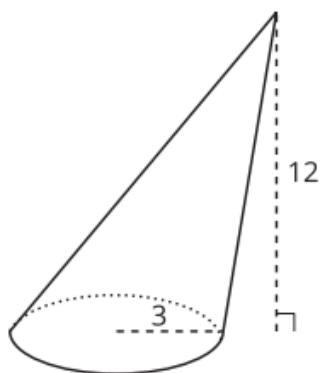
Name \_\_\_\_\_

First TEP of SY26-27

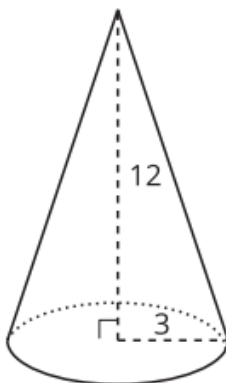
23.

Select **all** shapes that have a volume of  $36\pi$  cubic units.

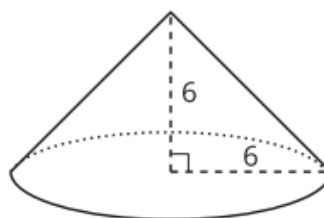
**A**



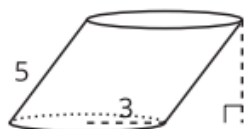
**B**



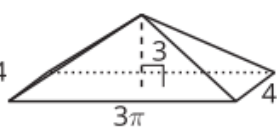
**C**



**D**



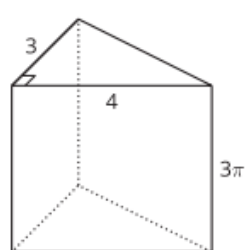
**E**



**F**



**G**



A. Figure A

B. Figure B

C. Figure C

D. Figure D

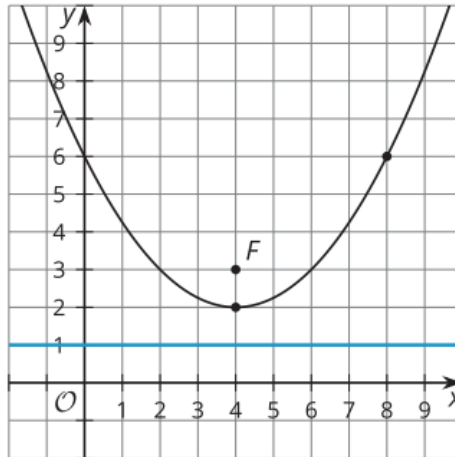
E. Figure E

F. Figure F

G. Figure G

24.

The parabola in the image has its focus at  $(4, 3)$ . Its directrix is the line  $y = 1$ . The point  $(8, 6)$  is on the parabola.



Select **all** of the statements that are true.

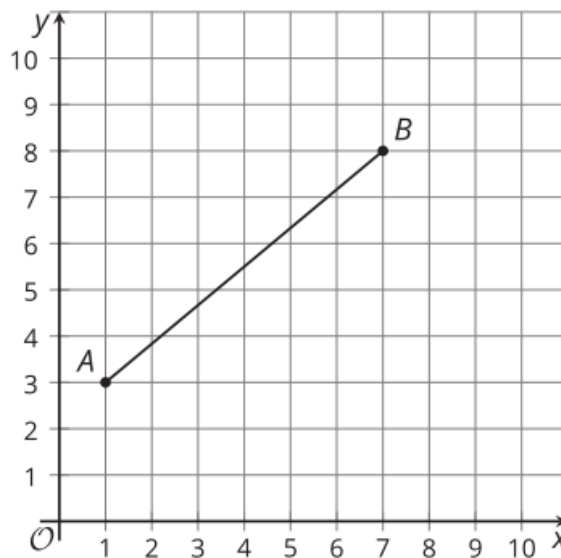
- A. The equation  $(x - 4)^2 + (y - 3)^2 = y^2$  represents this parabola.
- B. The equation  $(x - 4)^2 + (y - 3)^2 = (y - 1)^2$  represents this parabola.
- C. The point  $(8, 6)$  is the same distance from the point  $(4, 3)$  as it is from the line  $y = 1$ .
- D. The point  $(2, 3)$  is on the parabola.
- E. The point  $(0.5, 5)$  is on the parabola.
- F. If point  $(x, y)$  is on the parabola, then the distance between  $(x, y)$  and the point  $(4, 3)$  is the same as the distance between  $(x, y)$  and the  $y$ -axis.

25. Find the center and radius of the circle given by this equation:

$$x^2 - 10x + y^2 + 6y - 30 = 0$$

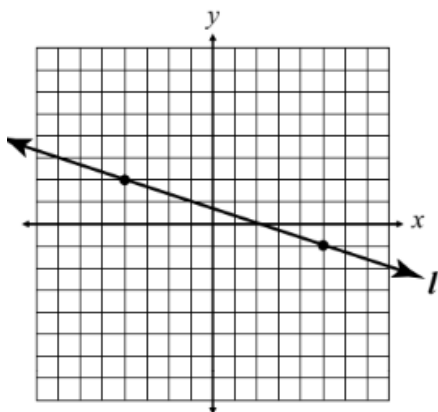
26.

Find the point that partitions segment  $AB$  in a 2 : 1 ratio.



27.

The graph of line  $l$  is shown below. Which of the following represents the slope of a line parallel to line  $l$ ?



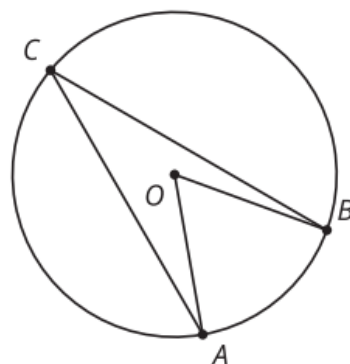
A. -3

B. 3

C.  $-\frac{1}{3}$ D.  $\frac{1}{3}$

28.

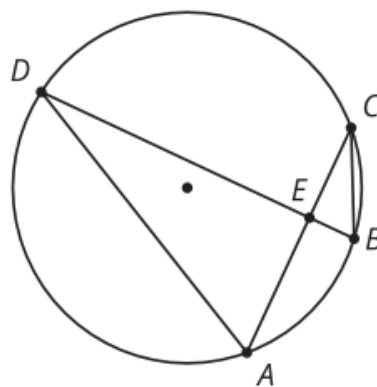
The arc from  $A$  to  $B$  not passing through  $C$  measures 50 degrees. Select **all** the true statements.



- A. Angle  $BCA$  measures 50 degrees.
- B. Angle  $BCA$  measures 25 degrees.
- C. Angle  $BOA$  measures 50 degrees.
- D. The arc from  $B$  to  $C$  not passing through  $A$  measures 180 degrees.
- E. Angles  $CBO$  and  $CAO$  are congruent.

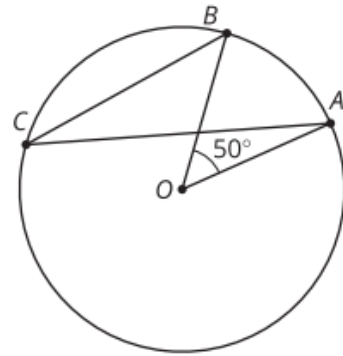
29.

Chords  $AC$  and  $DB$  intersect at point  $E$ . List 3 pairs of angles that *must* be congruent.



30.

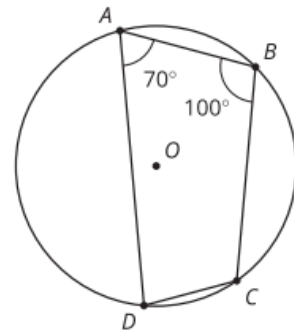
The image shows a circle centered at point  $O$ . Angle  $AOB$  measures 50 degrees. What is the measure of angle  $ACB$ ?



- A. 25 degrees
- B. 40 degrees
- C. 50 degrees
- D. 100 degrees

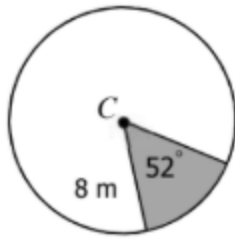
30.

The image shows a quadrilateral inscribed in a circle. Select **all** true statements.



- A. The arc from  $B$  to  $D$  passing through  $C$  measures 70 degrees.
- B. The arc from  $A$  to  $C$  passing through  $D$  measures 200 degrees.
- C. Angle  $BCD$  measures 140 degrees.
- D. The sum of the measures of the arcs from  $A$  to  $C$ , one passing through  $B$  and the other passing through  $D$ , is 360 degrees.
- E. Angle  $CDA$  measures 80 degrees.
- F. Angle  $CDA$  measures 100 degrees.

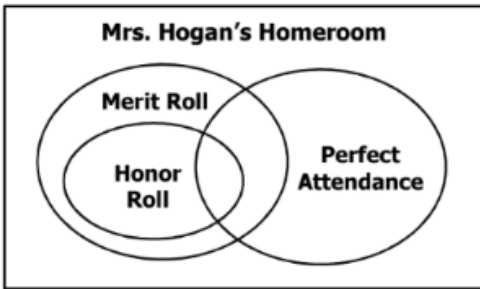
31. Which is closest to the area of the shaded sector of circle  $C$ ?



- A.**  $29\text{ cm}^2$       **C.**  $38\text{ cm}^2$   
**B.**  $34\text{ cm}^2$       **D.**  $45\text{ cm}^2$
32. Six papers are placed in a bag with names written on them. The names are: Lin, Mai, Mai, Noah, Priya, and Priya. If one name is chosen at random, what is the probability that it is Priya?
- A.  $\frac{1}{4}$   
B.  $\frac{1}{6}$   
C.  $\frac{2}{4}$   
D.  $\frac{2}{6}$
33. Select **all** of the words for which the probability of selecting the letter E at random is  $\frac{1}{3}$ .
- A. THE  
B. BEST  
C. SNEEZE  
D. FREES  
E. SPEECH

34.

The Venn diagram below shows the relationship of first quarter awards given to students in Mrs. Hogan's homeroom class. Which statement is false?



- A. All students who made honor roll also made merit roll.
- B. Some students who had perfect attendance also made honor roll.
- C. All students on merit roll also made honor roll.
- D. Some students are on merit roll, honor roll, and had perfect attendance.

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