

Grade 9

Problem 1.

If $0 < P < 1$, then which of the following statements must be true?

- i. $2P^2 > P$
- ii. $\sqrt{P} > P^2$
- iii. $\frac{1}{p} - p < 0$

- A) i only
- B) ii only
- C) iii only
- D) I and ii only
- E) i and iii only

Problem 2.

$$\left(\frac{1}{10}\right)^3 + \left(\frac{2}{10}\right)^3 + \left(\frac{3}{10}\right)^3 + \left(\frac{4}{10}\right)^3 =$$

- A) 0.072
- B) 0.081
- C) 0.100
- D) 0.096
- E) 1.105

Problem 3.

Brian gives $\frac{3}{4}$ of his K cards to Jolie and then gives $\frac{1}{3}$ of the cards that he has left to Silvia. In terms of K , how many cards does Brian now have?

- A) $\frac{1}{4} K$
- B) $\frac{1}{5} K$
- C) $\frac{1}{6} K$
- D) $\frac{1}{7} K$
- E) $\frac{1}{8} K$

Problem 4.

The statement $Q^3 < Q^2 < Q^1$ is true when

- i. $Q > 1$
- ii. $-1 < Q < 0$
- iii. $0 < Q < 1$

- A) I and ii only
- B) ii and iii only
- C) ii only
- D) iii only
- E) None

Problem 5.

If the result of increasing k by 700% of k is q , then k is what percent of q ?

- A) $12\frac{1}{4}\%$
- B) $12\frac{1}{2}\%$
- C) $12\frac{3}{4}\%$
- D) $12\frac{3}{8}\%$
- E) $12\frac{7}{8}\%$

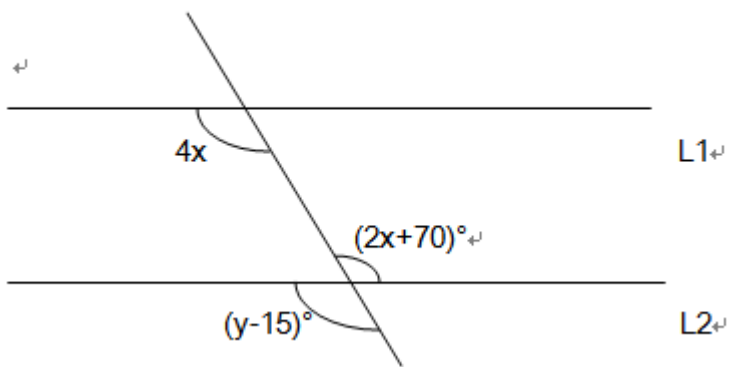
Problem 6.

A discount of 15% on the price of a computer, followed by another discount of 8% on the new price of the computer, is equivalent to a single discount of what percent of the original price?

- A) 15.7 %
- B) 18.5 %
- C) 21.8 %
- D) 22.5 %
- E) 24.5 %

Problem 7.

Pr.3)

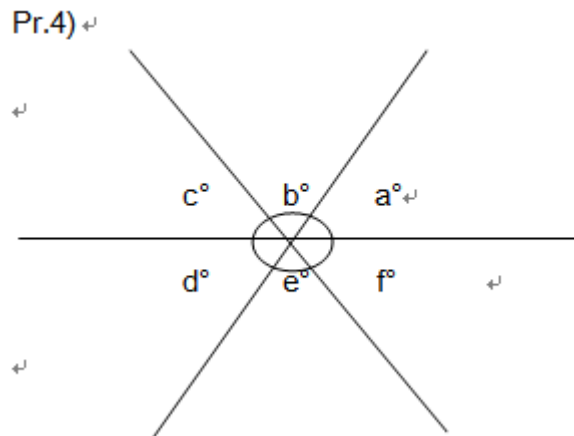


In the figure above $L1 \parallel L2$. What is the value of y ?

- A) 145°
- C) 155°
- D) 130°

- B) 140°
- E) 165°

Problem 8.



In the figure above, which of the following statements must be true?

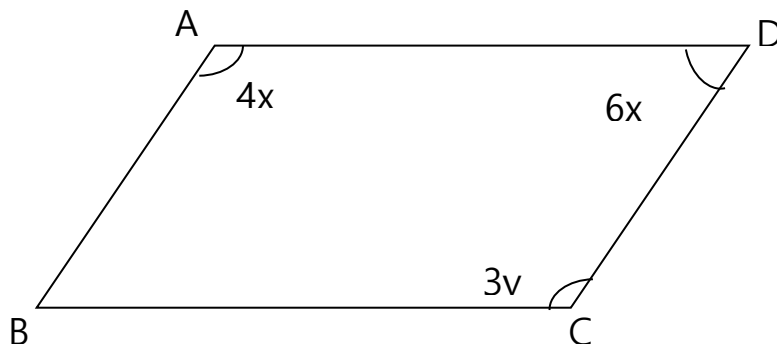
- I. $d + b = a + e$
 - II. $d + b + f = 180^\circ$
 - III. $c + e = a + d$
- A) I only
B) II only
C) I and III
D) II and III
E) I and II

Problem 9.

Which of the following cannot represent the degree measure of an equiangular polygon?

- A. 144
- B. 162
- C. 112
- D. 165
- E. 135

Problem 10.



In the figure A,B,C,D above is a parallelogram, what is the value of y ?

- A. 18
- B. 16
- C. 26
- D. 24
- E. 20

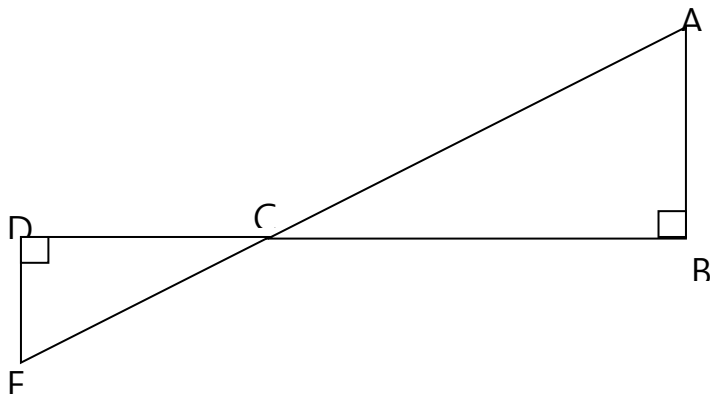
Problem 11.

What is the number of side of a polygon in which the sum of the degree measures of the interior angles is 6 times the sum of the degree measures of the exterior angles?

- A) 10
- B) 11
- C) 12
- D) 13
- E) 14

Problem 12

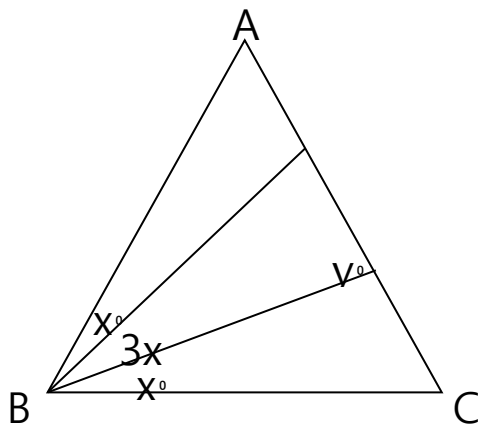
If in the figure, $\overline{CD} = 2$, $\overline{BC} = 6$, $\overline{DE} = 1$, then \overline{AE} ?



- A) 4
- B) $4\sqrt{3}$
- C) $5\sqrt{3}$
- D) $4\sqrt{5}$
- E) 6

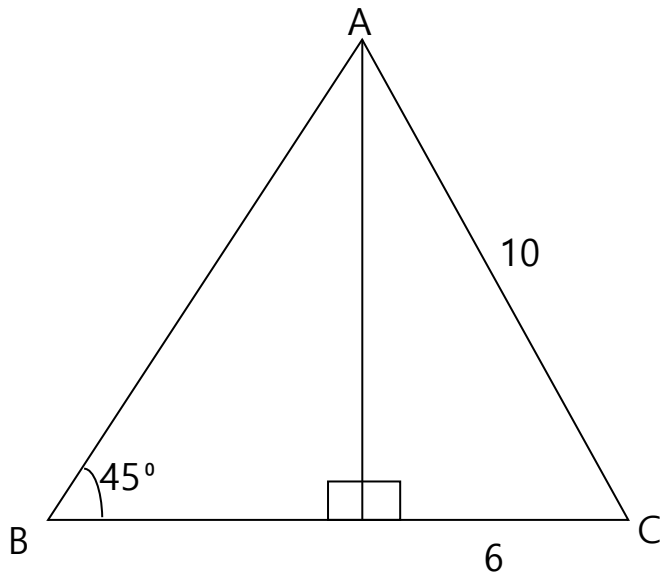
Problem 13.

In equilateral triangle ABC, $y = ?$



- A. 60°
- B. 64°
- C. 70°
- D. 71°
- E. 72°

Problem 14.

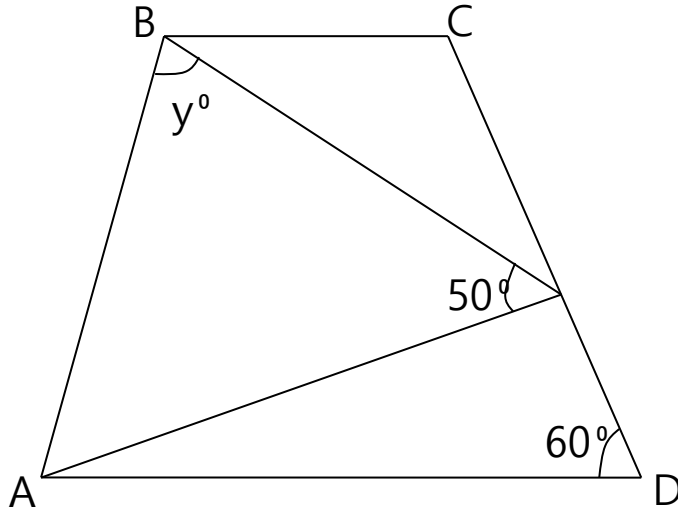


In the figure above, what is the length of AB ?

- A. 8
- B. $8\sqrt{2}$
- C. $8\sqrt{3}$
- D. $10\sqrt{2}$
- E. 10

Problem 15.

Note : Figure is not drawn to scale.



In the figure, if $BC=CE$, $BC \parallel AD$, and AE bisects $\angle BAD$, what is the value of y ?

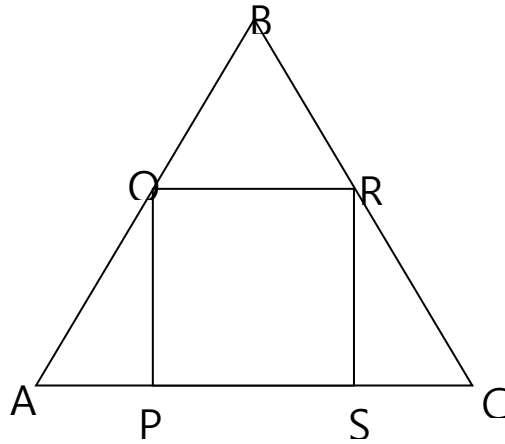
- A. 105°
- B. 110°
- C. 115°
- D. 120°
- E. 125°

Problem 16.

The lengths of the side of ABC are consecutive integers. If triangle ABC has the same perimeter as an equilateral triangle with a side length of 12, what is the length of the longest side of ABC?

- A. 14
- B. 13
- C. 12
- D. 11
- E. None of these above

Problem 17.



In the figure above, the vertices of square PQRS lies on the sides of equilateral triangle ABC. If the area of the square is 3, what is the perimeter of ABC?

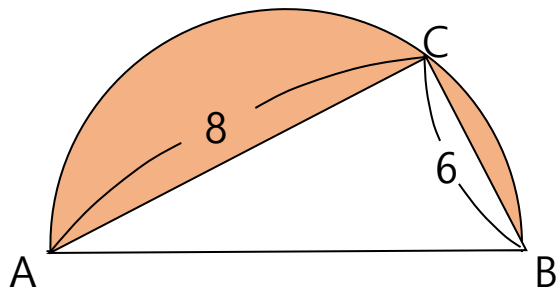
- A. 9
- B. 12
- C. $3+6\sqrt{3}$
- D. $6+6\sqrt{3}$
- E. $6+3\sqrt{3}$

Problem 18.

What is the area of a circle with a circumference of 16π ?

- A. 32π
- B. 36π
- C. 42π
- D. 64π
- E. 81π

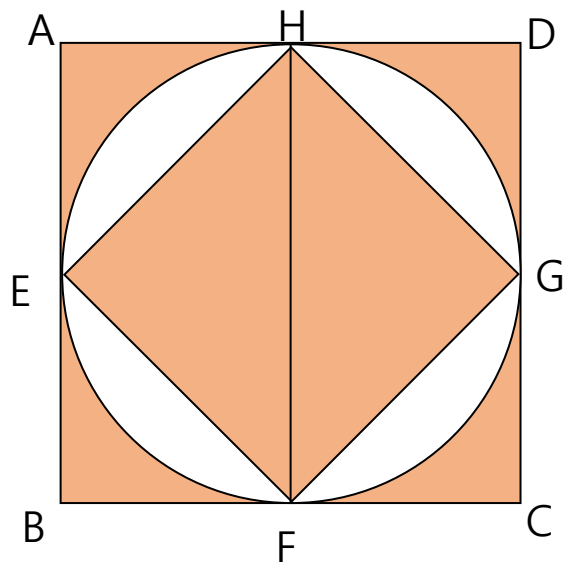
Problem 19.



In the figure above, arc ACB is a circle of which AB is a diameter. If $AC=8$ and $BC=6$, what is the area of the shaded region?

- A. $25\pi - 48$
- B. $25\pi - 24$
- C. $12.5\pi - 24$
- D. $12.5\pi - 48$
- E. $50\pi - 24$

Problem 20.



In the figure above, $ABCD$ is a square. A circle which is inscribed in $ABCD$ has a square inside as same as inscribed itself. What is the area of the shaded regions if the area of circle is π ?

- A. $4 - \pi$
- B. $6 + \pi$
- C. $4 + \pi$
- D. $6 - 2\pi$
- E. $6 - \pi$