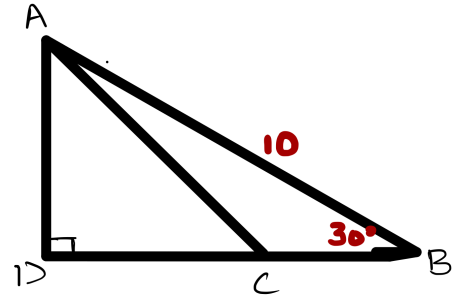


SPECIAL TRIANGLE PRACTICE

1.

In the figure above, $AD = DC$, $\angle B = 30^\circ$, and $AB = 10$. What is the ratio of AC to CB ?

- A) $\frac{\sqrt{2}}{\sqrt{3}-1}$
- B) $\frac{\sqrt{3}}{\sqrt{2}-1}$
- C) $\frac{\sqrt{2}}{\sqrt{5}-\sqrt{3}}$
- D) $\frac{2}{3}$



2.

A right triangle has a hypotenuse of length 42 centimeters and an angle measuring 30° . What is the perimeter, in centimeters, of this triangle?

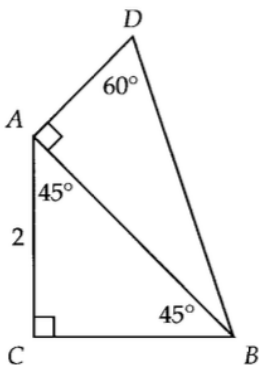
- A) $21 + 21\sqrt{3}$
- B) $56 + 14\sqrt{3}$
- C) $63 + 21\sqrt{3}$
- D) $63 + 42\sqrt{3}$

3.

A circle is inscribed in an equilateral triangle. The radius of the circle is 9 inches. What is the perimeter, in inches, of the triangle?

- A) $18\sqrt{3}$
- B) $27\sqrt{3}$
- C) $54\sqrt{3}$
- D) 108

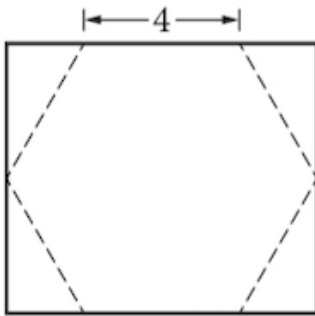
4.



What is the length of DB in the figure above?

- A) $\frac{2\sqrt{3}}{3}$
- B) $\frac{2\sqrt{6}}{3}$
- C) $\frac{4\sqrt{6}}{3}$
- D) $\sqrt{3}$

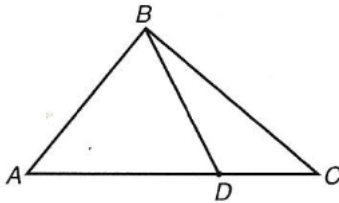
5.



Thomas is making a sign in the shape of a regular hexagon with 4-inch sides, which he will cut out from a rectangular sheet of metal, as shown in the figure above. What is the sum of the areas of the four triangles that will be removed from the rectangle?

- A) $8\sqrt{3}$
- B) $8\sqrt{2}$
- C) $4\sqrt{2}$
- D) 16

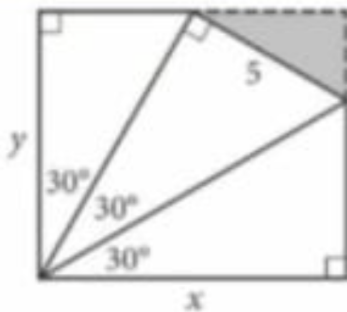
6.



In the figure above, the ratio of AD to DC is 3 to 2. If the area of $\triangle ABC$ is 40, what is the area of $\triangle BDC$?

- (A) 16
- (B) 24
- (C) 30
- (D) 36

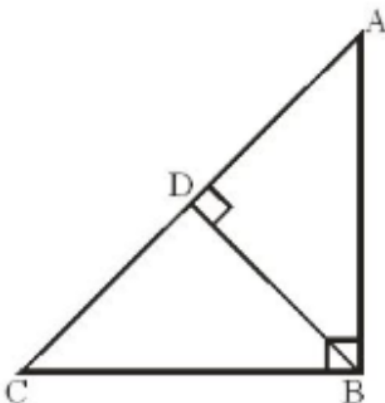
7.



The figure above shows that the shaded triangular region with a hypotenuse of 5 centimeters (cm) has been removed from a rectangular tile with dimensions x cm by y cm. Of the following, which best approximates the area, in sq cms, of the tile before the piece was removed?

- A) 15
- B) 43
- C) 50
- D) 65

8.



In the given triangle, $AB = a$ and $BC = b$, find the cosine $\angle CBD$.

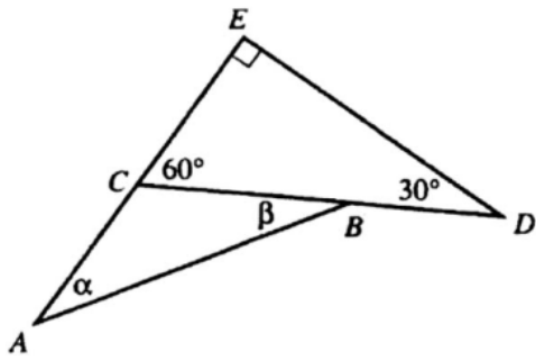
- (A) $\frac{a}{b}$
- (B) $\frac{a}{\sqrt{a^2+b^2}}$
- (C) $\frac{b}{a}$
- (D) $\frac{b}{\sqrt{a^2+b^2}}$

9.

The angle measures of $\triangle CDE$ are shown below.

Point B of $\triangle ABC$ lies on $\overline{CD}$,

and point C lies on $\overline{AE}$. What is the value of $\cos(\alpha + \beta)$?



- (A) $\frac{1}{2}$
- (B) $\frac{\sqrt{2}}{2}$
- (C) $\frac{\sqrt{3}}{2}$
- (D) 1

10.

The perimeter of a right isosceles triangle is $52 + 52\sqrt{2}$.
What is the length of the hypotenuse?