

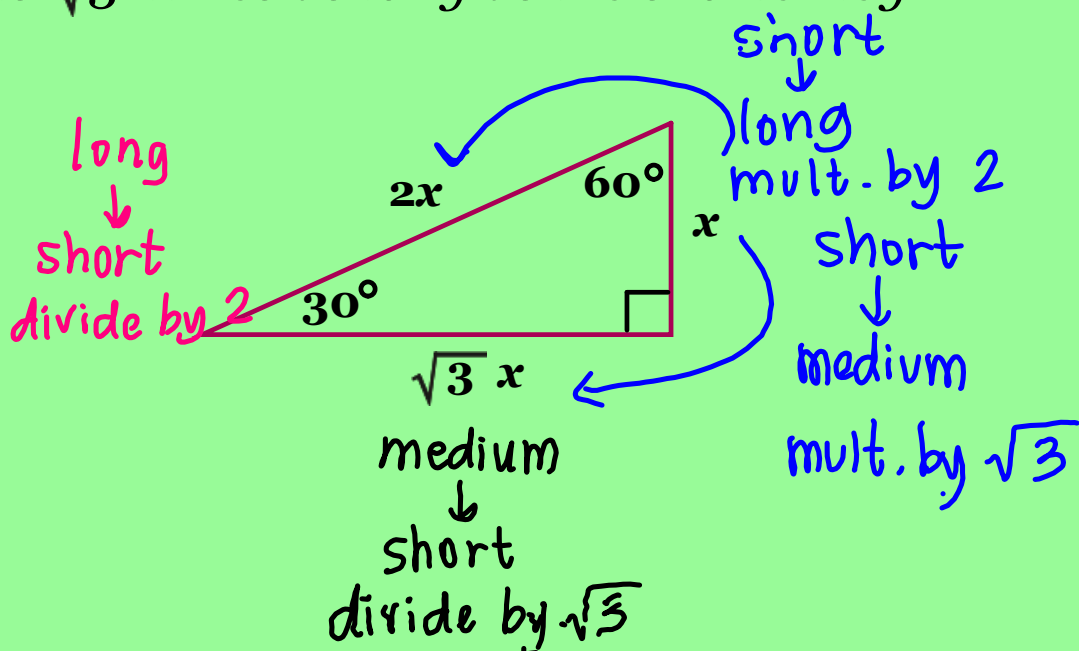
7.4 Part 2

SPECIAL RIGHT TRIANGLES

$30^\circ - 60^\circ - 90^\circ$

Theorem 9.9

In a $30^\circ - 60^\circ - 90^\circ$ triangle, the hypotenuse is twice as long as the shorter leg, and the longer leg is $\sqrt{3}$ times as long as the shorter leg.



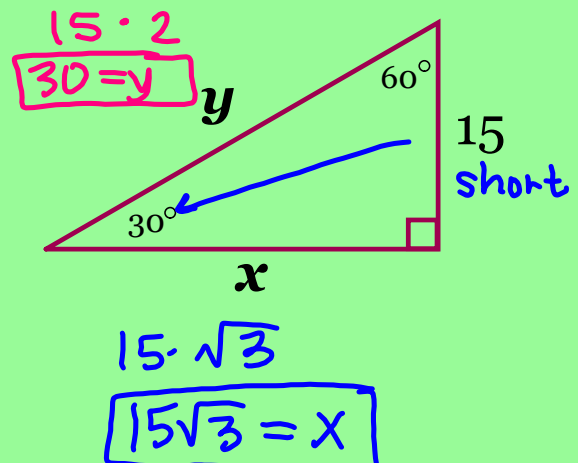


When going from a
short side
 to a **long** side...
MULTIPLY!

When going from a
long side
 to a **short** side...
DIVIDE!

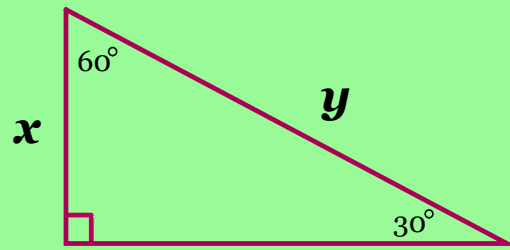
Example 1

Find the value of x and y .
 Leave your answer in
 radical form.



Example 2

Find the value of x and y .
Leave your answer in radical form.

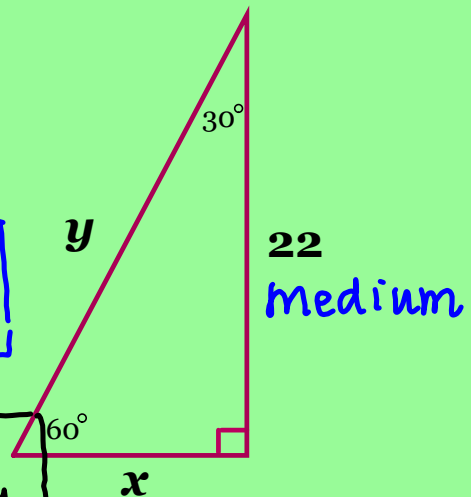


$$\frac{7}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{7\sqrt{3}}{3} = x \quad \text{medium}$$

$$\frac{7\sqrt{3}}{3} \cdot \frac{2}{1} = \frac{14\sqrt{3}}{3} = y$$

Example 3

Find the value of x and y .
Leave your answer in radical form.



$$\frac{22}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{22\sqrt{3}}{3} = x$$

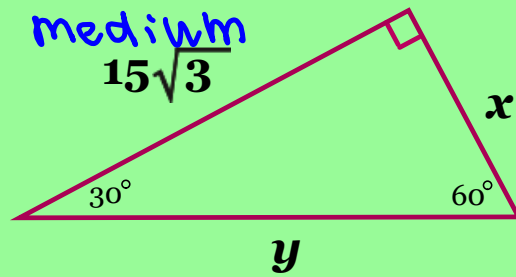
$$\frac{22\sqrt{3}}{3} \cdot \frac{2}{1} = \frac{44\sqrt{3}}{3} = y$$

Example 4

Find the value of x and y .
Leave your answer in radical form.

$$\frac{15\sqrt{3}}{\sqrt{3}} = \boxed{15 = x}$$

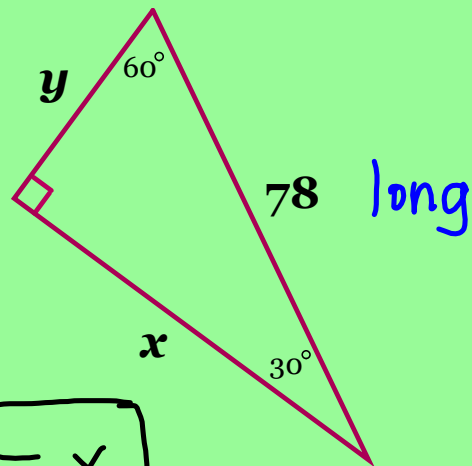
$$15 \cdot 2 = \boxed{30 = y}$$

Example 5

Find the value of x and y .
Leave your answer in radical form.

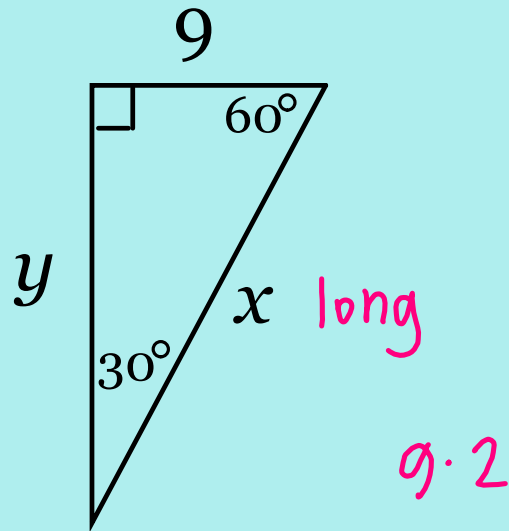
$$\frac{78}{2} = \boxed{39 = y}$$

$$39 \cdot \sqrt{3} = \boxed{39\sqrt{3} = x}$$



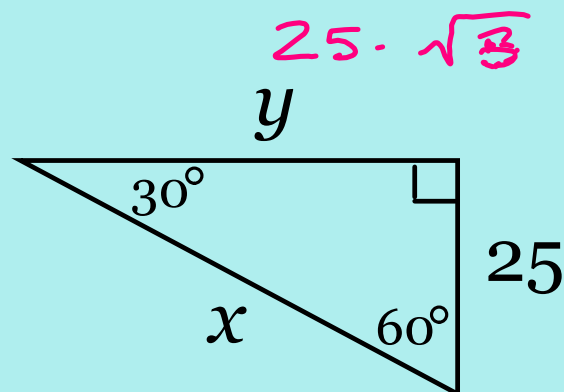
1 Find the value of x .

- A 9
- B $9\sqrt{2}$
- C $9\sqrt{3}$
- D 18



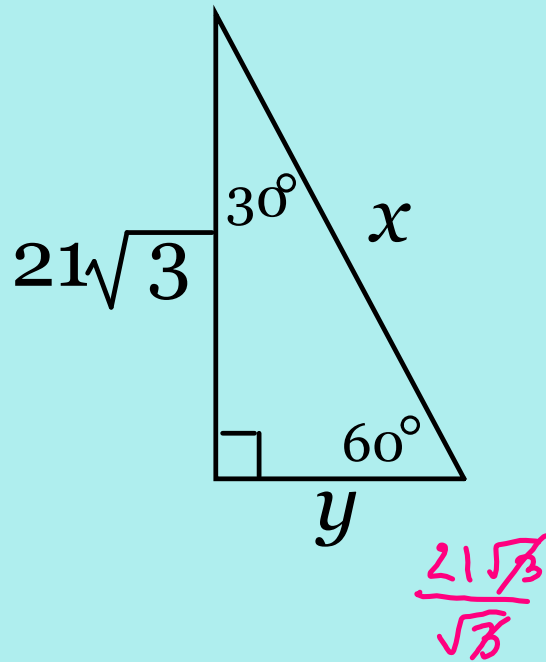
2 Find the value of y .

- A 25
- B $25\sqrt{2}$
- C $25\sqrt{3}$
- D 50



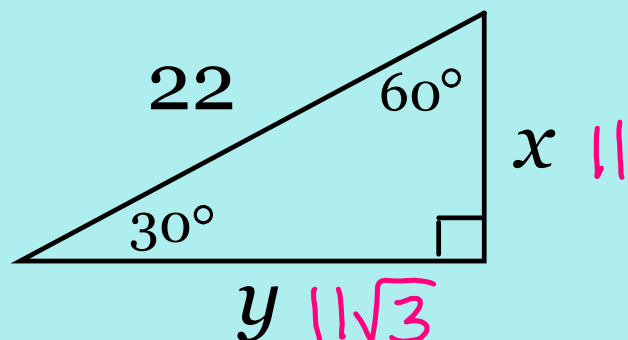
3 What is the value of x ?

- A 42
- B $42\sqrt{3}$
- C $21\sqrt{2}$
- D 21



4 Find the value of y .

- A 11
- B $11\sqrt{3}$
- C $44\sqrt{3}$
- D 44



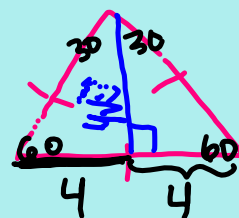
5 The hypotenuse of a 30° - 60° - 90° triangles measures 16. What is the measure of the shortest side?

A $16\sqrt{3}$ C $8\sqrt{3}$

B $16\sqrt{2}$ D 8

$$\frac{16}{2}$$

6 The measure of an altitude of an equilateral triangle is $4\sqrt{3}$. Find the perimeter.



A 24 C $12\sqrt{3}$

$$\frac{4\sqrt{3}}{\sqrt{3}} = 4$$

B $12 + 4\sqrt{3}$ D 36