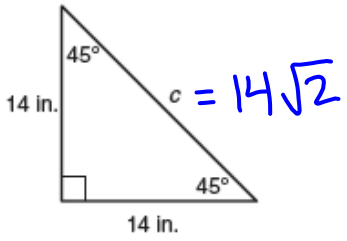
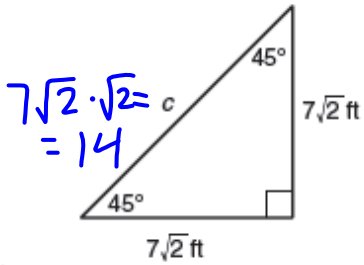
GET OUT YOUR BINDERS AND WORK ON THESE REVIEW PROBLEMS. NO QUIZ TODAY!!

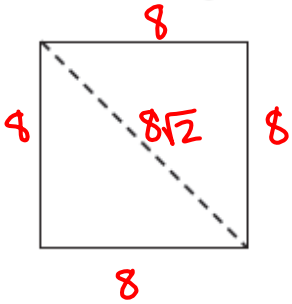
1. The legs of the isosceles triangle each measure 14 inches. Calculate the length of the hypotenuse.



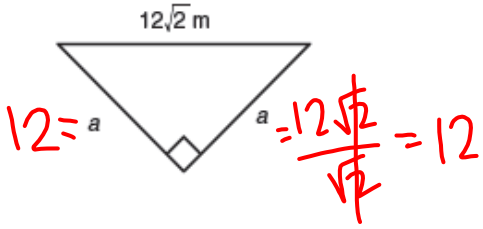
2. Calculate the value of c.



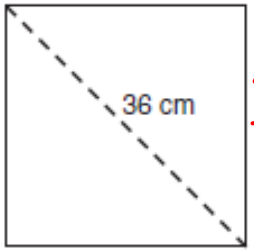
3. The perimeter of the square is 32 centimeters. Calculate the length of its diagonal.



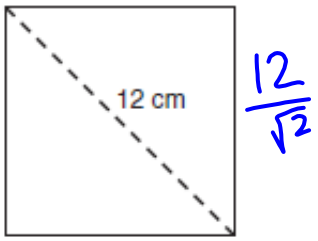
4. Calculate the value of a.



5. The length of a diagonal of the square is 36 centimeters. Calculate the length of each side.

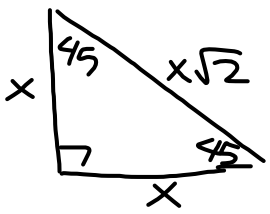


6. The length of a diagonal of the square is 12 centimeters. ~~Calculate the area.~~

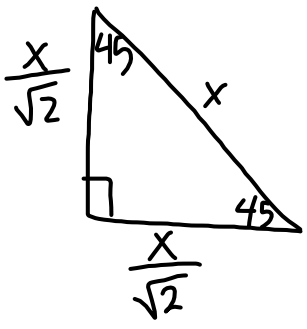


45°-45°-90° Triangle

If given leg length



If given hypotenuse,

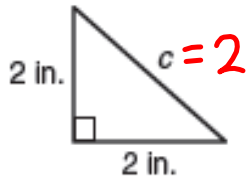


Oct 1-8:41 AM

REVIEW

Determine the length of the hypotenuse of each 45°–45°–90° triangle. Write your answer as a radical in simplest form.

1.



$c = 2\sqrt{2}$

$2^2+2^2=c^2$

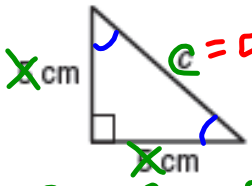
$4+4=c^2$

$8=c^2$

$\sqrt{2\cdot4}=\sqrt{8}=c$

$\sqrt{2}\sqrt{4}=2\sqrt{2}$

2.



$c = 5\sqrt{2}$

$x^2+x^2=c^2$

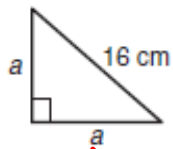
$\sqrt{2x^2}=\sqrt{c^2}$

$\sqrt{2}\cdot\sqrt{x^2}=c$

$\sqrt{2}\cdot x=c$

Determine the lengths of the legs of each 45°–45°–90° triangle. Write your answer as a radical in simplest form.

5.



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

$a^2+a^2=16^2$

$\frac{2a^2}{2}=\frac{256}{2}$

$\sqrt{a^2}=\sqrt{\frac{256}{2}}$

$a=\sqrt{\frac{16^2}{2}}$

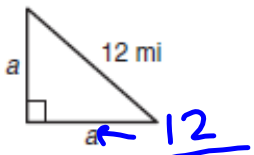
$a=\frac{\sqrt{16^2}}{\sqrt{2}}$

$a=\frac{16}{\sqrt{2}}$

$\frac{16}{\sqrt{2}}=\frac{a\sqrt{2}}{\sqrt{2}}$

$\frac{16}{\sqrt{2}}=a$

6.



$\frac{12}{\sqrt{2}}$

$12=a\sqrt{2}$

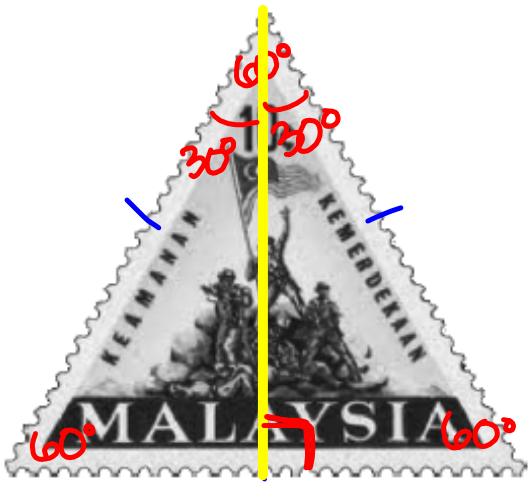
More Stamps, Really?

Properties of a 30°–60°–90° Triangle

3.4

PG. 243-4 IN YOUR BOOK

This stamp was issued in Malaysia.



1. How is this stamp different from the stamps you studied in the previous lesson?

equilateral, taller,

2. This Malaysian stamp is shaped like an equilateral triangle. What is the measure of each interior angle of the triangle? Explain your reasoning.

60° ; 180° ÷ 3

3. Use the diagram of the stamp to draw an altitude to the base of the equilateral triangle. Describe the two triangles formed by the altitude.

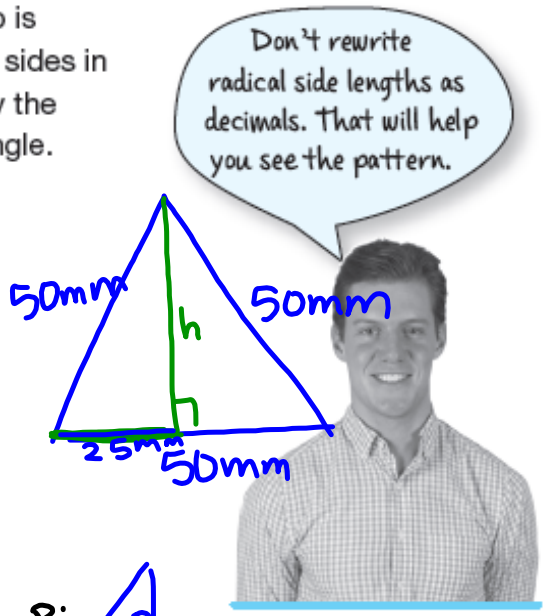
30°-60°-90° Δs

4. How do you know that the two triangles formed by the altitude drawn to the base of an equilateral triangle are congruent.

sides are all ≅ (SSS Δ≅)

PG.245 IN YOUR BOOK

5. If the length of each side of the Malaysian stamp is 50 millimeters, determine the length of the three sides in each of the two 30°–60°–90° triangles formed by the altitude drawn to the base of the equilateral triangle.



$50^2 = 25^2 + h^2$

$2500 = 625 + h^2$

$-625 \quad -625$

$\sqrt{1875} = \sqrt{h^2}$

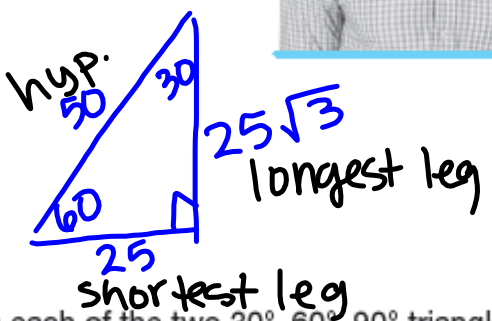
$\sqrt{25 \cdot 75} = h$

$\sqrt{25 \cdot 25 \cdot 3} = h$

$\sqrt{25} \cdot \sqrt{25} \cdot \sqrt{3} = h$

$5 \cdot 5 \cdot \sqrt{3} = h$

$25\sqrt{3} = h$



6. How does the length of the hypotenuse in each of the two 30°–60°–90° triangles relate to the length of the shortest leg?

The hypotenuse is two times the length of the shortest leg.

7. How does the length of the longer leg in each of the two 30°–60°–90° triangles relate to the length of the shortest leg?

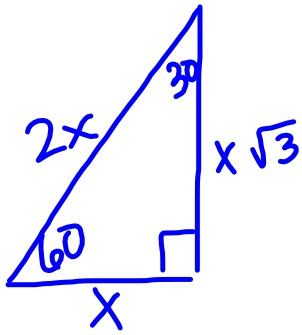
The longer leg is $\sqrt{3}$ times the shortest leg.

PG.246 IN YOUR BOOK

The 30°–60°–90° **Triangle Theorem** states: "the length of the hypotenuse in a 30°–60°–90° triangle is two times the length of the shorter leg, and the length of the longer leg is $\sqrt{3}$ times the length of the shorter leg."

8. Use the Pythagorean Theorem to demonstrate the 30°–60°–90° Triangle Theorem. Let x represent the length of the shortest leg.

$$x^2 + (x\sqrt{3})^2 = (2x)^2$$
$$x^2 + 3x^2 = 4x^2$$
$$4x^2 = 4x^2$$

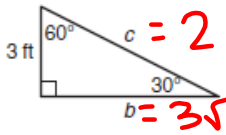


SKIP PROBLEM 2 IN YOUR BOOK $(2x)(2x)$ $4x^2$

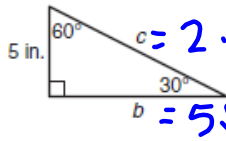
$(x\sqrt{3})(x\sqrt{3})$
$x^2 \cdot 3$
$3x^2$

NOT IN YOUR BOOK

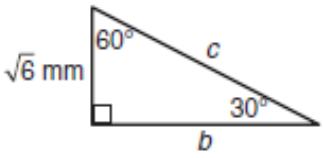
Given the length of the short leg of a 30°–60°–90° triangle, determine the lengths of the long leg and the hypotenuse. Write your answers as radicals in simplest form.

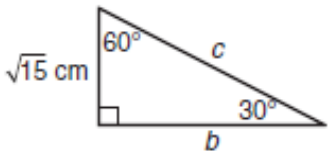
5. 

$c = 2 \cdot 3 = 6$
$b = 3\sqrt{3}$

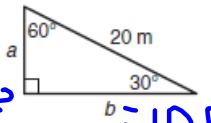
6. 

$c = 2 \cdot 5 = 10$
$b = 5\sqrt{3}$

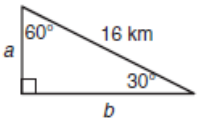
7. 

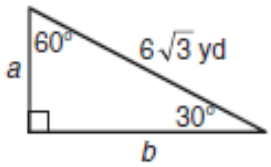
8. 

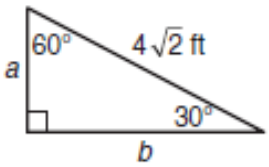
Given the length of the hypotenuse of a 30°–60°–90° triangle, determine the lengths of the two legs. Write your answers as radicals in simplest form.

9. 

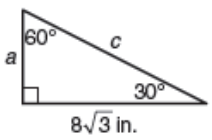
$a = 20 \cdot \frac{1}{2} = 10$
$b = 10\sqrt{3}$

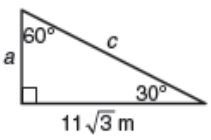
10. 

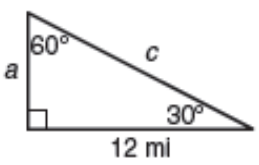
11. 

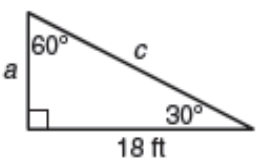
12. 

Given the length of the long side of a 30°–60°–90° triangle, determine the lengths of the short leg and tl hypotenuse. Write your answers as radicals in simplest form.

13. 

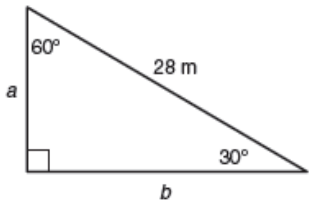
14. 

15. 

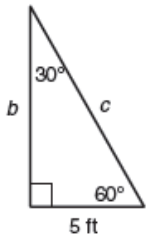
16. 

NOT IN YOUR BOOK

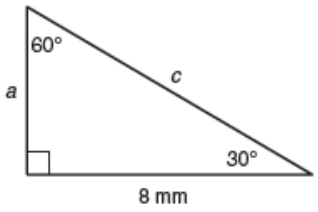
1. The length of the hypotenuse in the 30°–60°–90° triangle shown is 28 meters. Calculate the lengths of sides *a* and *b*.



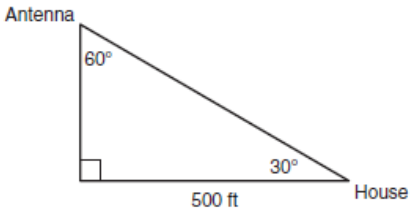
2. The length of the side opposite the 30-degree angle is 5 feet. Calculate the lengths of sides *b* and *c*.



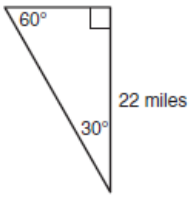
3. The length of the side opposite the 60-degree angle is 8 millimeters. Calculate the lengths of sides *a* and *c*.



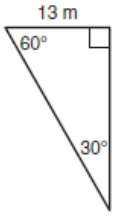
4. A broadcast antenna is situated on top of a tower. The signal travels from the antenna to your house so you can watch TV. The angle of elevation from your house to the tower measures 30 degrees, and the distance from your house to the tower is 500 feet. Calculate the height of the tower and the distance the signal travels.



5. The length of the longer leg in the 30°–60°–90° triangle shown is 22 miles. Calculate the length of the hypotenuse.



6. The length of the shorter leg in the 30°–60°–90° triangle shown is 13 meters. Calculate the length of the hypotenuse.



Oct 2-3:05 PM

Homework

Finish 3.4

Aug 24-2:00 PM