Honors Geometry Special Right triangles wkst 5.5

Use the properties of special right triangles (30°-60°-90° and 45°-45°-90°) to solve problems.   Assume nothing is drawn to scale please.

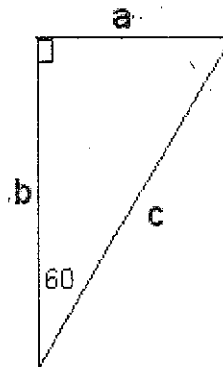1) If $a = 5$, then the exact value of b is...

a) 5   b) $5\sqrt{2}$ c) $5\sqrt{3}/3$ d) 10

2) If $a = 2\sqrt{3}$, then the exact value of b is...

a) 2   b) 6   c) $4\sqrt{3}$ d) 12

3) If $b = 7$, then the value of a to the nearest tenth is...

a) 4.0   b) 3.5   c) 12.1   d) 5

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4) If $b = 7$, then the value of c to the nearest tenth is...
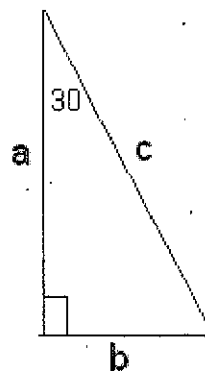
a) 8.5   b) 9.9   c) 12.1   d) 14.0

5) If $b = 7$, then the value of a to the nearest tenth is...

a) 8.5   b) 9.9   c) 12.1   d) 14.0

6) If $a = 12$, then the value of b to the nearest tenth is...

a) 6.9   b) 4.2   c) 4.0   d) 3.5

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7) If $b = 7$, then the value of c to the nearest tenth is...
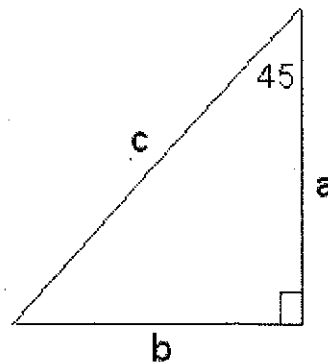
a) 9.9   b) 10.5   c) 12.1   d) 7

8) If $b = 2\sqrt{6}$, then the value of a to the nearest tenth is...

a) 10.5   b) 9.8   c) 6.9   d) 4.9

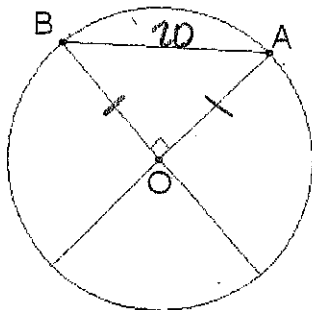9) If $c = 12$, then the exact value of b is...

a) 6   b) 9   c) $4\sqrt{3}$ d) $6\sqrt{2}$

) If $c = 5\sqrt{6}$, then the exact value of b is...

a) 10   b) 5   c) $5\sqrt{3}$ d) $5\sqrt{2}$

The following practice problems use special right triangles to work with involve geometric shapes. With some of these you could also use the Pythagorean Theorem

11) What is the exact side length of a square that has a diagonal length of 12 inches? $s = 6\sqrt{2}$ $\dfrac{12}{\sqrt{2}}$	12) What is the exact perimeter of an equilateral triangle that has a height of 18 cm? $S = 12\sqrt{3}$ $P = 3(12\sqrt{3}) = 36\sqrt{3}$

13) If segment AB has a length of 20, what is the exact radius of the circle with center O? Segment OB is congruent to segment OA

$$\dfrac{20}{\sqrt{2}} = \dfrac{20\sqrt{2}}{2} = 10\sqrt{2}$$

Practice solving problems using special right triangles that involve reading a problem and visualizing or drawing a picture.

14. A right triangle has a 60 degree angle, and the leg adjacent to that angle has a length of 7 in. Find the length of the other leg.
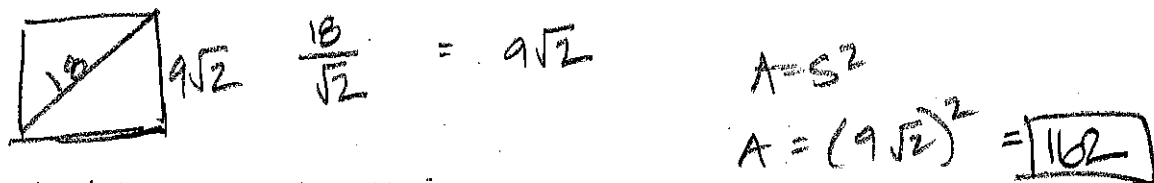
$7\sqrt{3}$

15. A right triangle has a 45 degree angle, and the hypotenuse has a length of 8 ft. Find the length of a leg.

$\dfrac{8}{\sqrt{2}} = 4\sqrt{2}$

16. The hypotenuse of a right triangle with a 30 degree angle has a length of 9 cm. What is the length of the leg adjacent to the 30 degree angle?

$\dfrac{9\sqrt{3}}{2}$

17. The diagonal of a square has a length of 18 cm. Find the area of the square.

$9\sqrt{2}$ $\dfrac{18}{\sqrt{2}} = 9\sqrt{2}$

$A = s^2$

$A = (9\sqrt{2})^2 = \boxed{162}$

18. A roof is short and steep on one side, and longer and more gradual on the other side. (See diagram shown)

Calculate the number of linear feet of roofing required, (from A to B to C).

$\boxed{24 + 12\sqrt{2}}$