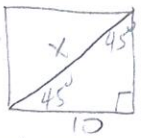
Geometry
Special Right Triangles Applications Practice

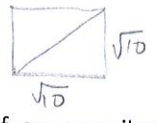
Name: key
Date: _____

1. Find the length of a diagonal of a square with sides 10 in. long.



$10\sqrt{2} = x$

2. The area of a square is 10 cm². What is the product of the lengths of the diagonals of the square?



$\text{Area} = s^2$

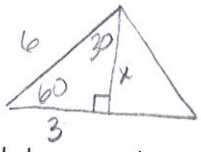
$s^2 = 10$

$s = \sqrt{10}$

$\text{Diagonal} = \sqrt{10} \cdot \sqrt{2} = \sqrt{20} = 2\sqrt{5}$

$(2\sqrt{5})(2\sqrt{5}) =$ 20 cm

3. One side of an equilateral triangle measures 6 cm. Find the measure of an altitude of the triangle.

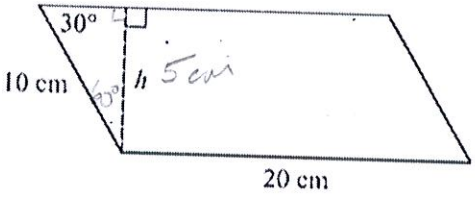


$x = 3\sqrt{3}$ cm

4. A parallelogram has sides that are 10 cm and 20 cm long. The measure of one of the acute angles of the parallelogram is 30°. What is the area of the parallelogram? (area = base * height)

$\text{Area} = (20)(5)$

$A = 100\ \text{cm}^2$

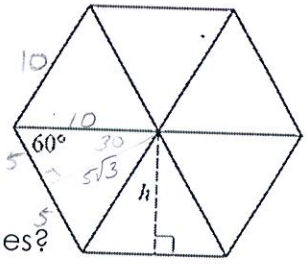


5. What is the area of a regular hexagon with sides that are 10 units long?

Area of 1 triangle $= \frac{1}{2}(10)(5\sqrt{3}) = 25\sqrt{3}$

Area of hexagon (6 triangles) $= 25\sqrt{3}(6)$

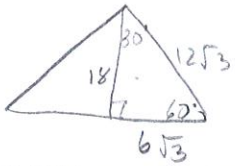
$150\sqrt{3}\ \text{units}^2$



6. What is the side length of a square that has a diagonal length of 12 inches?

$\frac{12}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{12\sqrt{2}}{2} =$ $6\sqrt{2}$ inches

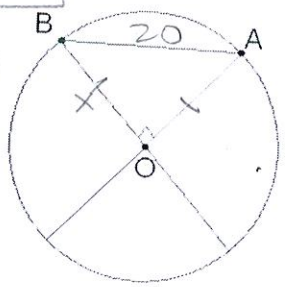
7. What is the perimeter of an equilateral triangle that has a height of 18 cm?



$\frac{18}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{18\sqrt{3}}{3} = 6\sqrt{3}$

$\text{Perimeter} = 12\sqrt{3}(3) =$ $36\sqrt{3}$ cm

8. If segment AB has a length of 20, what is the radius of the circle with center O?



$\frac{20}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{20\sqrt{2}}{2} =$ $10\sqrt{2}$