Geometry CC – Mr. Valentino
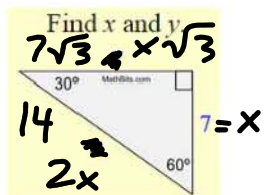
Name: _____

Unit 7 Lesson 2: **45-45-90 Triangles**

Date: _____ Per: _____

We will now look at...**45-45-90 Triangles!**

But first...a DO NOW!

Find x and y

$7\sqrt{3}$ $x\sqrt{3}$

14

$2x$

$7 = x$

30° 60°

We will now look at a **different** Special Right Triangle that can be extremely useful in many instances! We will construct this triangle with a square:
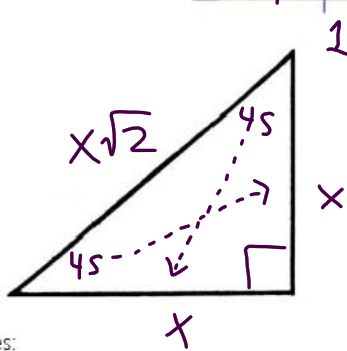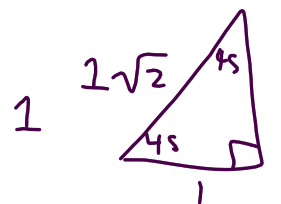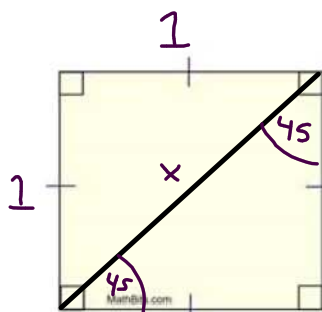
What is the measure of the diagonal?

$a^2 + b^2 = c^2$

$1^2 + 1^2 = x^2$

$1 + 1 = x^2$

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

$\sqrt{2} = x$

1

1   x 1

45

45

1

$1\sqrt{2}$ 45

45

1

1

$X\sqrt{2}$ 45

45   X

X

The 45-45-90 Triangle!

Time for some examples:

Find x and y.

$9\sqrt{2}$ 45°

y 9

45°

x 9

Find x and y.

$6\sqrt{2}$

45°

y

$6\sqrt{2}$ 12

45°

$x\sqrt{2}$

$6\sqrt{2}\sqrt{2}$

$6\sqrt{4}$

$6 \cdot 2 = 12$
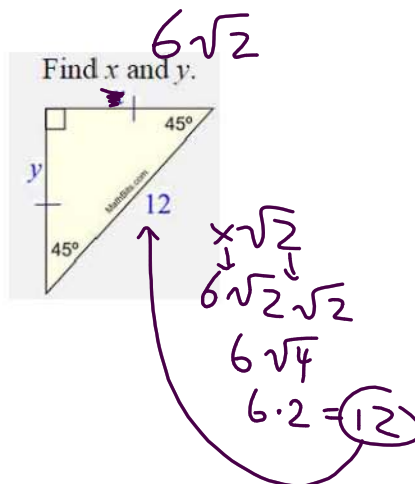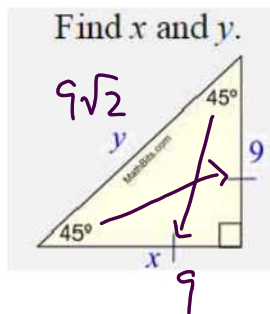
Now you try solving for the missing values:

1)

$\sqrt{2}$ $\sqrt{2}$ y 45°

x

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

2)

8

45

$8\sqrt{2}$ m 45° n 8

3)

45° $9\sqrt{2}$

b

a

4)

x 9

45°

y

5)

$1\sqrt{2}$ x y $1\sqrt{2}$

45°

2

6)

a $5\sqrt{2}$

45°

b

7) $5\sqrt{2}$

u v $5\sqrt{2}$

45°

10

8) $\dfrac{9\sqrt{2}}{2} \cdot \sqrt{2}$

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

45°

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

$\dfrac{9\sqrt{4}}{2} = \dfrac{9 \cdot 2}{2} = \dfrac{18}{2} = 9$

9)

45° $3\sqrt{5}$

y

x

10)

y

45°

5

x