SM 2
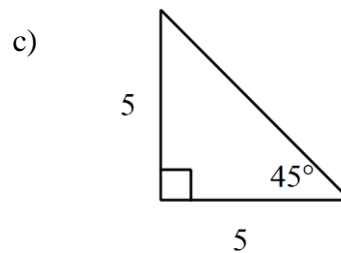
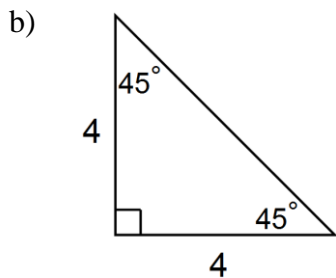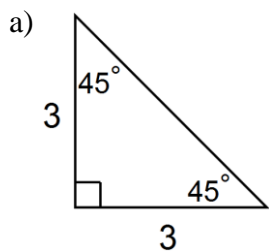**Objective: Special Right Triangles Notes**

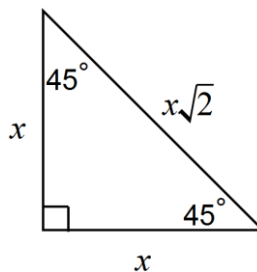**How do I find a missing side of a right triangle?**

Use the _____ to find the length of the hypotenuse for each right triangle.
Express your answers in simplest radical form.
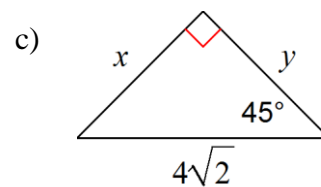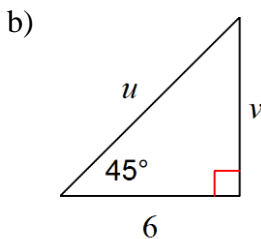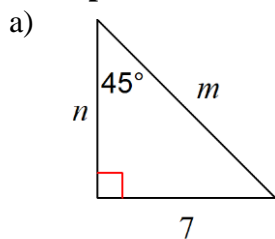
a)

45°
3
45°
3

b)

45°
4
45°
4

c)

5
45°
5

There are 2 triangles that when you do the Pythagorean Theorem with them you will always get the same ratio.

45°-45°-90° Right Triangles:
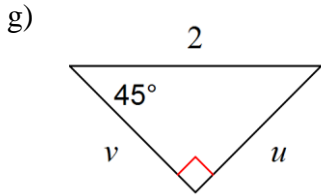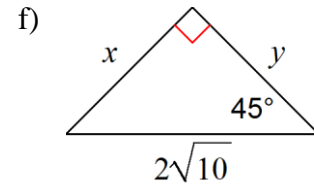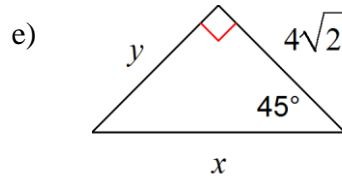
- **Legs are _____**

- **Hypotenuse = _____**

45°
x
$x\sqrt{2}$
45°
x

Examples: Find the value of each variable.

a)

45°
n m
7

b)

u
v
45°
6

c)

x y
45°
$4\sqrt{2}$

d)

$2\sqrt{5}$

x $45°$ y

e)

y $4\sqrt{2}$ $45°$ x

f)

x y $45°$ $2\sqrt{10}$

g)

2 $45°$ v u

h)

3 m $45°$ n
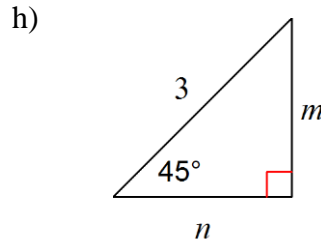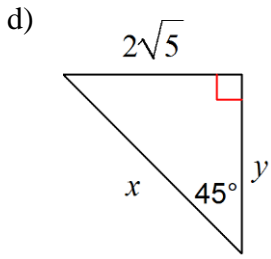
30°-60°-90° Right Triangles:

- **Hypotenuse =** _____

- **Long Leg =** _____

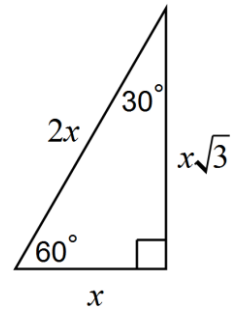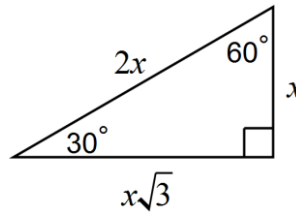$2x$ $60°$ x $30°$ $x\sqrt{3}$

$2x$ $30°$ $x\sqrt{3}$ $60°$ x

Examples: Find the value of each variable.

a)

$60°$ x 5 y

b)

u v $60°$ 6

c)

$60°$ m n $5\sqrt{3}$

d)

x
y
$60°$
14

e)

$10\sqrt{3}$
y
$30°$
x

f)

m
n
$60°$
8

g)

$60°$
m
n
10

h)

y
$3\sqrt{3}$
$60°$
x

i)

$10\sqrt{2}$
y
$30°$
x

j)

$2\sqrt{6}$
v
$60°$
u

k)

$60°$
$2\sqrt{3}$
y
x

l)

y
$\sqrt{15}$
$30°$
x
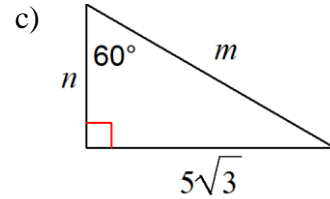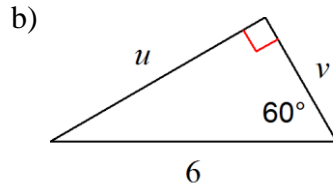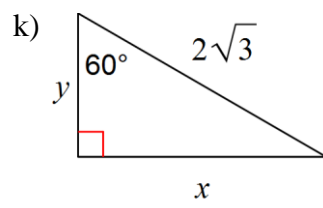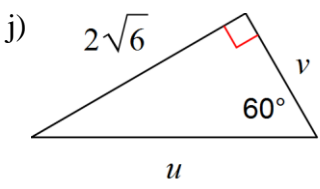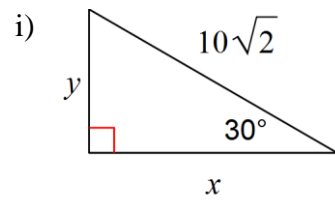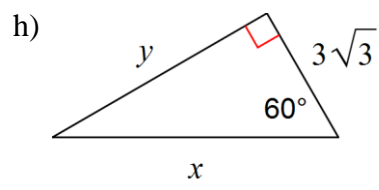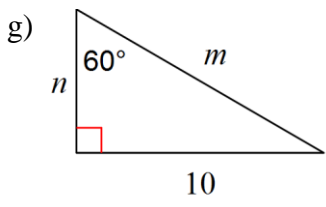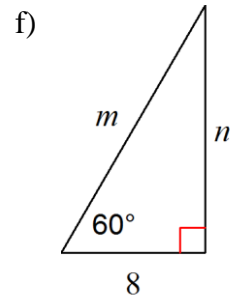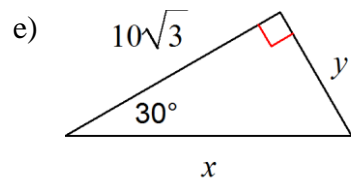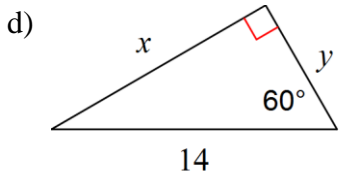
Now let's mix the two types together. First you need to decide which type of special right triangle it is. Then you can use the pattern to find the missing sides.
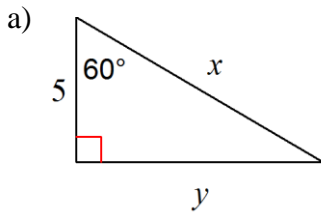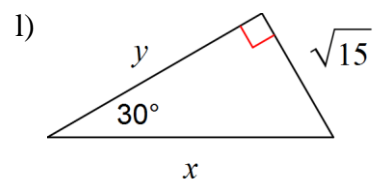
Examples: Find the value of each variable.

a)

y 5   45° x

b)

m n 60°   6

c)

x y 45° $9\sqrt{2}$

d)

60°   28 y x

e)

y $\sqrt{10}$ 45° x

f)

10   y 60° x

g)

y $\sqrt{10}$ 45° x

h)

m n 60° $\dfrac{\sqrt{3}}{2}$

i)

45° $14\sqrt{2}$ b a

j)

x 60° y $8\sqrt{3}$

k)

a $\dfrac{\sqrt{6}}{4}$ 60° b

l)

45° u $7\sqrt{6}$ v