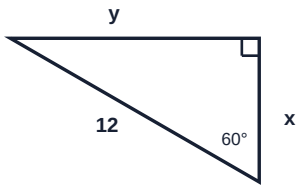
Name: _____ Date: _____

Special Right Triangles

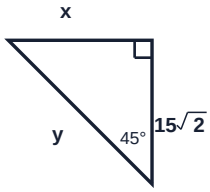
Use the angle measures to choose a side ratio. Show your work and give exact answers in simplest radical form.

1. Find x and y. Show the side-ratio calculation.



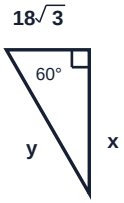
Ratio, calculation and exact answer:

2. Find x and y. Show the side-ratio calculation.



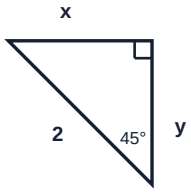
Ratio, calculation and exact answer:

3. Find x and y. Show the side-ratio calculation.



Ratio, calculation and exact answer:

4. Find x and y. Show the side-ratio calculation.



Ratio, calculation and exact answer:

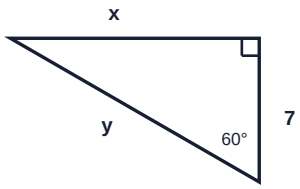
Diagrams are not to scale. Use the stated facts and marks.

Name: _____ Date: _____

Special Right Triangles

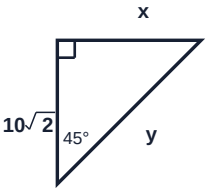
Use the angle measures to choose a side ratio. Show your work and give exact answers in simplest radical form.

5. Find x and y. Show the side-ratio calculation.



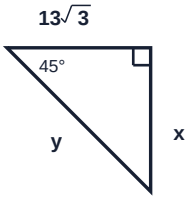
Ratio, calculation and exact answer:

6. Find x and y. Show the side-ratio calculation.



Ratio, calculation and exact answer:

7. Find x and y. Show the side-ratio calculation.



Ratio, calculation and exact answer:

8. Find x and y. Show the side-ratio calculation.



Ratio, calculation and exact answer:

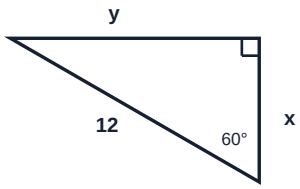
Diagrams are not to scale. Use the stated facts and marks.

Name: _____ Date: _____

Special Right Triangles - Worked Key

Use these worked explanations to check the matching numbered questions.

1. Worked solution



x = 6; y = $6\sqrt{3}$.

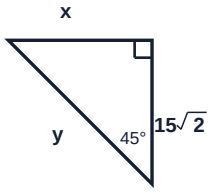
30-60-90: short leg : long leg : hypotenuse = 1 : $\sqrt{3}$: 2.

Short leg = 12 / 2 = 6.

x (short leg) = 6 × 1 = 6.

y (long leg) = 6 × $\sqrt{3}$ = $6\sqrt{3}$.

2. Worked solution



x = $15\sqrt{2}$; y = 30.

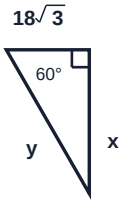
45-45-90: leg : leg : hypotenuse = 1 : 1 : $\sqrt{2}$.

The basic leg is 15 $\sqrt{2}$.

x (leg) = $15\sqrt{2}$ × 1 = $15\sqrt{2}$.

y (hypotenuse) = 15 $\sqrt{2}$ × $\sqrt{2}$ = 30.

3. Worked solution



x = 54; y = $36\sqrt{3}$.

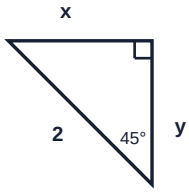
30-60-90: short leg : long leg : hypotenuse = 1 : $\sqrt{3}$: 2.

The basic leg is 18 $\sqrt{3}$.

x (long leg) = 18 $\sqrt{3}$ × $\sqrt{3}$ = 54.

y (hypotenuse) = 18 $\sqrt{3}$ × 2 = $36\sqrt{3}$.

4. Worked solution



x = $\sqrt{2}$; y = $\sqrt{2}$.

45-45-90: leg : leg : hypotenuse = 1 : 1 : $\sqrt{2}$.

Basic leg = 2 / $\sqrt{2}$ = $\sqrt{2}$.

x (leg) = $\sqrt{2}$ × 1 = $\sqrt{2}$.

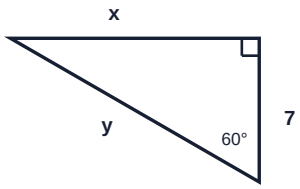
y (leg) = $\sqrt{2}$ × 1 = $\sqrt{2}$.

Name: _____ Date: _____

Special Right Triangles - Worked Key

Use these worked explanations to check the matching numbered questions.

5. Worked solution



$x = 7\sqrt{3}$; $y = 14$.

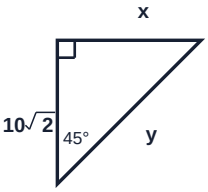
30-60-90: short leg : long leg : hypotenuse = 1 : $\sqrt{3}$: 2.

The basic leg is 7.

x (long leg) = $7 \times \sqrt{3} = 7\sqrt{3}$.

y (hypotenuse) = $7 \times 2 = 14$.

6. Worked solution



$x = 10\sqrt{2}$; $y = 20$.

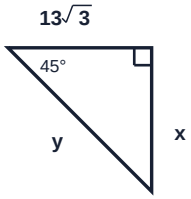
45-45-90: leg : leg : hypotenuse = 1 : 1 : $\sqrt{2}$.

The basic leg is $10\sqrt{2}$.

x (leg) = $10\sqrt{2} \times 1 = 10\sqrt{2}$.

y (hypotenuse) = $10\sqrt{2} \times \sqrt{2} = 20$.

7. Worked solution



$x = 13\sqrt{3}$; $y = 13\sqrt{6}$.

45-45-90: leg : leg : hypotenuse = 1 : 1 : $\sqrt{2}$.

The basic leg is $13\sqrt{3}$.

x (leg) = $13\sqrt{3} \times 1 = 13\sqrt{3}$.

y (hypotenuse) = $13\sqrt{3} \times \sqrt{2} = 13\sqrt{6}$.

8. Worked solution



$x = 4$; $y = 4\sqrt{3}$.

30-60-90: short leg : long leg : hypotenuse = 1 : $\sqrt{3}$: 2.

Short leg = 8 / 2 = 4.

x (short leg) = $4 \times 1 = 4$.

y (long leg) = $4 \times \sqrt{3} = 4\sqrt{3}$.

Diagrams are not to scale. Use the stated facts and marks.