

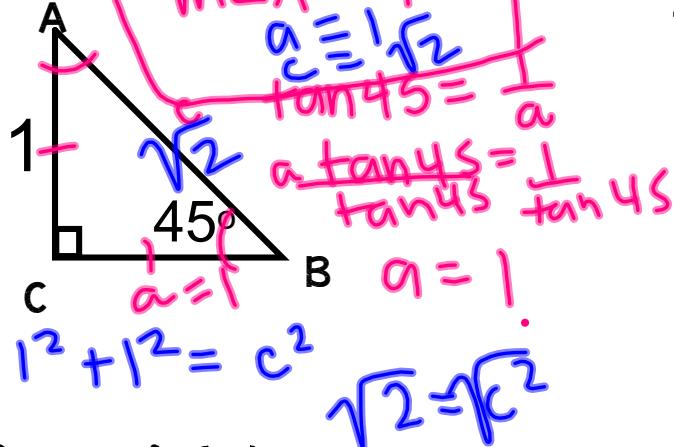
# I.4 Special Right Triangles

**EQ:** How do I find the side lengths of 45-45-90 and 30-60-90 triangles?

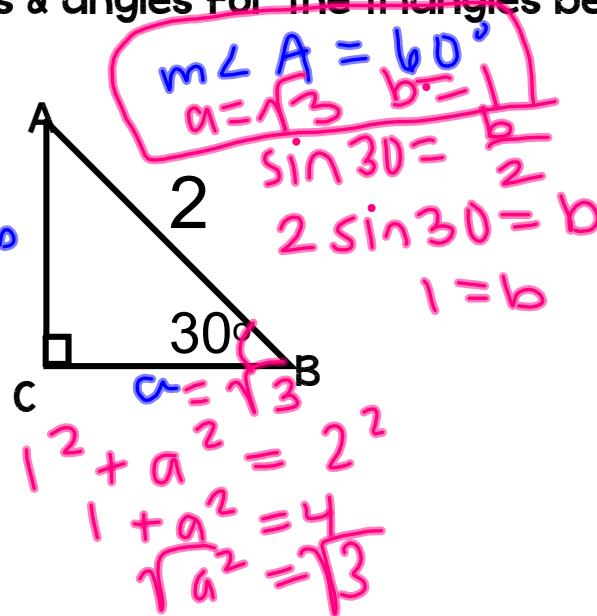
## Warm-Up

Find all missing sides & angles for the triangles below.

1.



2.



## About Me

1. What did you actually do over the long weekend?

2. Would you rather be invisible or be able to read minds?

# Updated Unit I Calendar

Name: \_\_\_\_\_

## Right Triangle Trigonometry

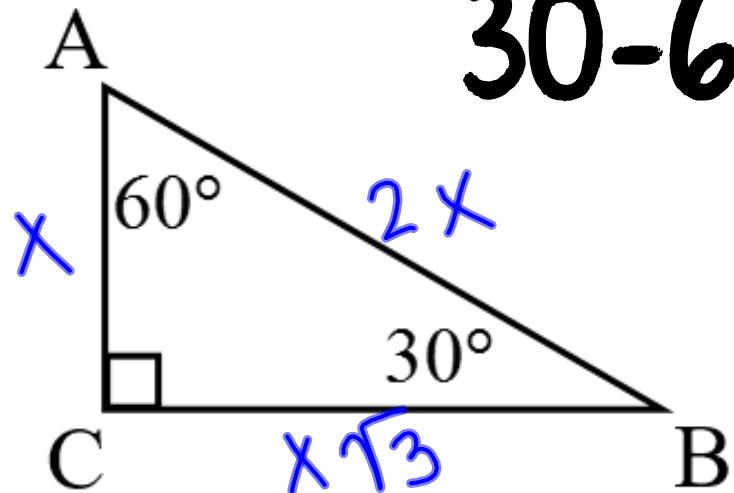
### PreCalculus – Revised Unit 1 HW Calendar

<b>Monday</b>	<b>Tuesday</b>	<b>Wednesday</b>	<b>Thursday</b>	<b>Friday</b>
<del>29 1.1 Right Triangle Trigonometry</del>	<del>30 1.1 Right Triangle Trig Day 2</del>	<del>31 1.2 Solving Right Triangles</del>	<del>9/1 1.3 Right Triangle Applications</del>	<del>2 Work Day</del>
<del>5 No School</del>	6 1.4 Special Right Triangles	7 Review & Work Day	8 <i>open notes</i> <b>TEST</b> 1.1-1.4	9 1.5 Angle Measure
12 1.6 Radians	13 1.7 Reference Angles	14 Work Day	15 <b>Quiz</b> 1.5-1.7	16 1.8 Exact Values
19 1.9 More Exact Values	20 Review	21 <b>Test Unit 1</b>	22	23

**Assignments & Answer Keys can be found at [www.mskmath.com](http://www.mskmath.com)**

# 1.4 Special Right Triangles

**EQ:** How do I find the side lengths of 45-45-90 and 30-60-90 triangles?



30-60-90

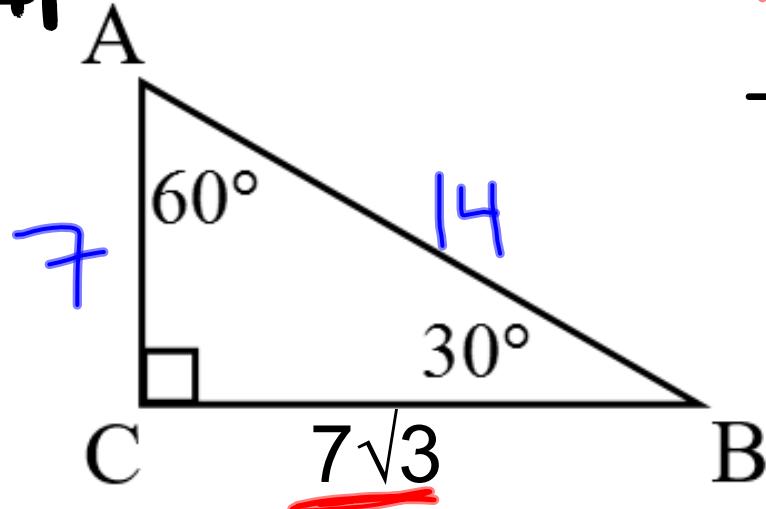
"scalene"

$$\begin{array}{c} 30 \quad 60 \quad 90 \\ \hline x \quad x\sqrt{3} \quad 2x \end{array}$$

# 1.4 Special Right Triangles

**EQ:** How do I find the side lengths of 45-45-90 and 30-60-90 triangles?

**ex #1**



$$\begin{array}{c}
 \text{AC} & \text{BC} & \text{AB} \\
 30 & 60 & 90 \\
 \hline
 x & x\sqrt{3} & 2x \\
 7 & 7\sqrt{3} & 2 \cdot 7 = 14
 \end{array}$$

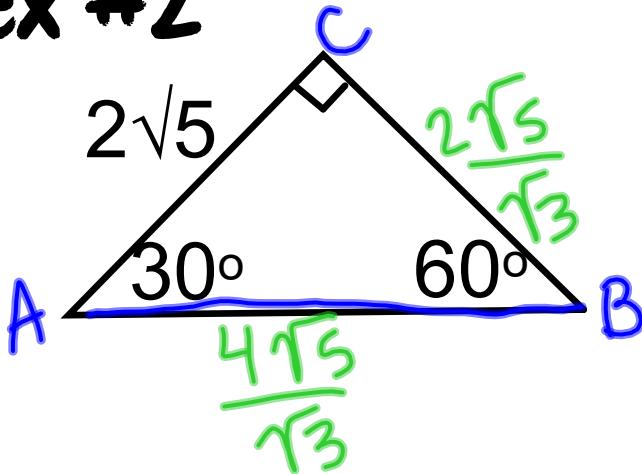
$$\frac{x\sqrt{3}}{\sqrt{3}} = \frac{7\sqrt{3}}{\sqrt{3}}$$

$$x = 7$$

# 1.4 Special Right Triangles

**EQ:** How do I find the side lengths of 45-45-90 and 30-60-90 triangles?

**ex #2**



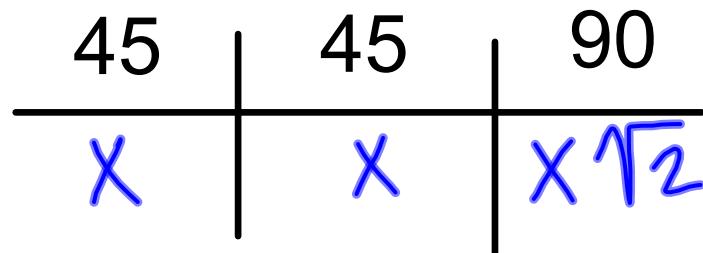
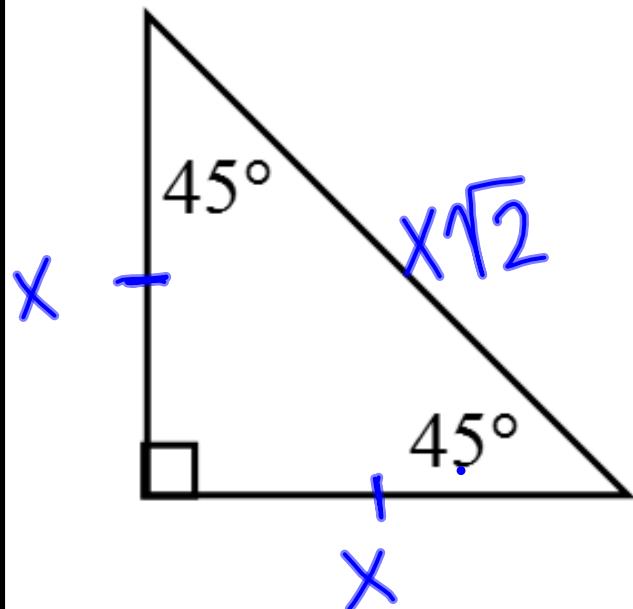
$$\begin{array}{c}
 \text{CB} \quad \text{AC} \quad \text{AB} \\
 30 \quad 60 \quad 90 \\
 x \quad x\sqrt{3} \quad 2x \\
 \frac{2\sqrt{5}}{\sqrt{3}} \quad 2\sqrt{5} \quad \frac{2 \cdot 2\sqrt{5}}{\sqrt{3}} = \frac{4\sqrt{5}}{\sqrt{3}} \\
 \frac{x\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{5}}{\sqrt{3}} \\
 x = \frac{2\sqrt{5}}{\sqrt{3}}
 \end{array}$$

# 1.4 Special Right Triangles

**EQ:** How do I find the side lengths of 45-45-90 and 30-60-90 triangles?

## 45-45-90

"isosceles"  
2 sides =

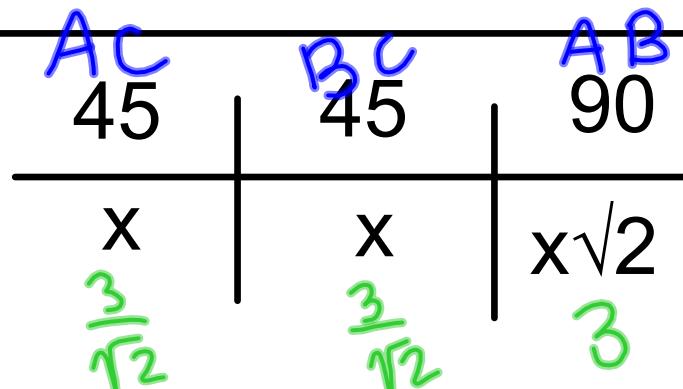
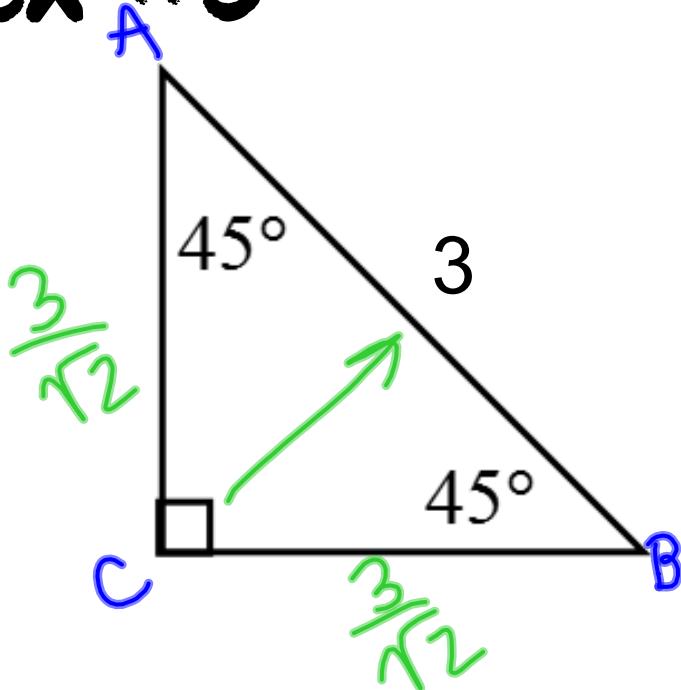


$$\begin{aligned}x^2 + x^2 &= c^2 \\ \sqrt{2x^2} &= \sqrt{c^2} \\ x\sqrt{2} &\end{aligned}$$

# 1.4 Special Right Triangles

**EQ:** How do I find the side lengths of 45-45-90 and 30-60-90 triangles?

**ex #3**



$$\frac{x\sqrt{2}}{\sqrt{2}} = \frac{3}{\sqrt{2}}$$

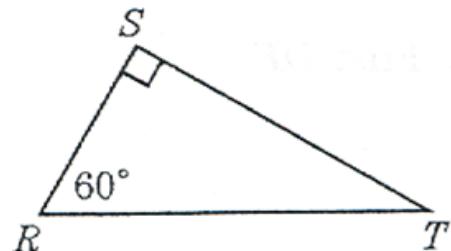
$$x = \frac{3}{\sqrt{2}}$$

# I.4 Special Right Triangles

EQ: How do I find the side lengths of 45-45-90 and 30-60-90 triangles?

## CLOSING

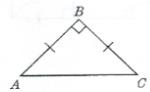
4. If  $ST = 4$ , find the lengths of  $SR$  and  $RT$ .



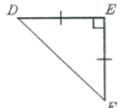
odds Name: \_\_\_\_\_

## 1.4 Special Right Triangles

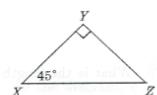
1. If
- $AB = 2\sqrt{2}$
- , find the length of
- $AC$
- .



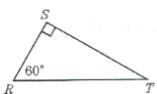
2. If
- $DF = 10$
- , find the length of
- $EF$
- .



3. If
- $YZ = 4k\sqrt{6}$
- , express
- $XZ$
- in terms of
- $k$
- .



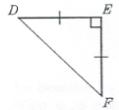
4. If
- $ST = 4$
- , find the lengths of
- $SR$
- and
- $RT$
- .



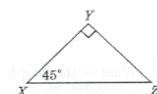
5. If
- $d = 3\sqrt{2}$
- , find the value of
- $x$
- .



6. If
- $DE = 4$
- , find the length of
- $DF$
- .

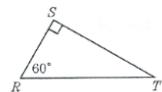


7. If
- $YZ = 2k\sqrt{14}$
- , express
- $XY$
- in terms of
- $k$
- .



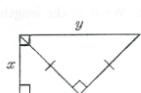
8. What is the altitude of an equilateral triangle with a perimeter of 30 units?

9. If  $ST = 9\sqrt{3}$ , find the length of  $SR$  and  $RT$ .

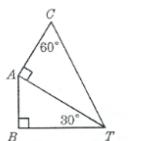


10. An isosceles right triangle has a leg of  $8\sqrt{6}$  units. What is its perimeter?

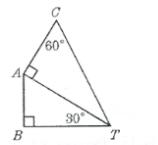
11. If  $x = 12$ , find the value of  $y$ .



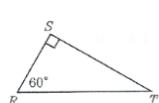
12. If  $BT = 2\sqrt{3}$ , find the length of  $CT$ .



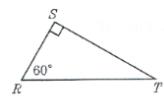
13. If  $CT = 12$ , find the length of  $AB$ .



14. If  $SR = 5$ , find the lengths of  $ST$  and  $RT$ .

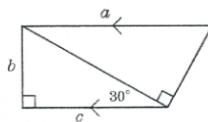


15. If  $ST = 9$ , find the length of  $SR$  and  $RT$ .

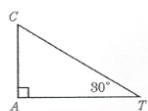


16. A square has a diagonal of length  $10\sqrt{3}$ . What is the perimeter of the square?

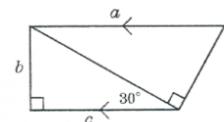
17. If  $a = 16$ , find the values of  $b$  and  $c$ .



18. If  $CA = 3m\sqrt{3}$ , express  $AT$  in terms of  $m$ .



19. If  $a = 10\sqrt{3}$ , find the values of  $b$  and  $c$ .



20. If  $CT = 2x$ , express  $BT$  in terms of  $x$ .

