

7.4

Special Right Triangles

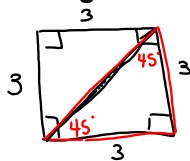
9, 11, 14, 20

$$\textcircled{20} \quad \frac{20}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{20\sqrt{5}}{\sqrt{25}} = \frac{20\sqrt{5}}{5} = 4\sqrt{5}$$

9.4

Nov 17-8:23 AM

Draw a square on your paper. Make the side lengths your birth date month. Find the diagonal. Simplify the radical.



Now let's compare our results:

Month	Length of \overline{AD} (leg)	Length of \overline{CD} (leg)	Length of \overline{AC} (hypotenuse)
January	1	1	$\sqrt{2}$
February	2	2	$2\sqrt{2}$
March	3	3	$3\sqrt{2}$
April	4	4	$4\sqrt{2}$
May	5	5	$5\sqrt{2}$
June			$6\sqrt{2}$
July			$7\sqrt{2}$
August			$8\sqrt{2}$
September			$9\sqrt{2}$
October			$10\sqrt{2}$
November			$11\sqrt{2}$
December			$12\sqrt{2}$

8. Make a conjecture about the length of the hypotenuse based on the length of the legs.

Nov 11-11:22 AM

45-45-90

What are the angles in the triangle?
 $45^\circ-45^\circ-90^\circ$

What is the ratio for the side in the triangle?

45°-45°-90° Triangle
 or an isosceles right triangle

the legs are congruent

hypotenuse = leg $\cdot \sqrt{2}$

Nov 11-11:24 AM

45-45-90

Solve for x and y .

$\frac{18\sqrt{2}}{2}$

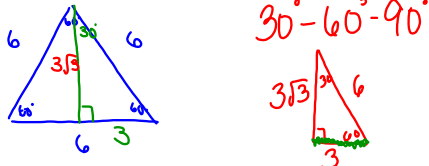
$\frac{18 \cdot \sqrt{2}}{\sqrt{2}} = \frac{18\sqrt{2}}{2} = 9\sqrt{2}$

$\frac{15\sqrt{2}}{2}$

examples

Nov 11-11:25 AM

Draw an Equilateral Triangle and make the sides 6. Draw line down the center. Use the Pythagorean Theorem to find the lengths.



Now let's compare our results:

Month	Length of \overline{JK} (hypotenuse)	Length of \overline{JM} (shorter leg)	Length of \overline{KM} (longer leg)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

16. Make a conjecture about the length of the longer leg based on the length of the shorter leg.

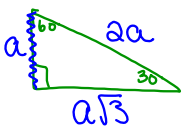
Nov 11-12:43 PM

30-60-90

What are the angles?

$30^\circ - 60^\circ - 90^\circ$

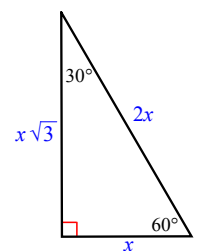
How are the sides related?



30°-60°-90° Triangle

hypotenuse = shorter leg · 2

longer leg = shorter leg · $\sqrt{3}$



Nov 11-1:48 PM

30-60-90

Solve for x and y .

$11\sqrt{3}$
 x
 y 22
 60°
 11

6
 30°
 $3\sqrt{3}$
 x 3
 y

$10\sqrt{3}$
 30
 60°
 $20\sqrt{3}$

$\frac{30}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{30\sqrt{3}}{3} = 10\sqrt{3}$

7
 30°
 y
 $\frac{14\sqrt{3}}{3}$
 x $\frac{7\sqrt{3}}{3}$

Conclusion

1. What are the ratios of the sides of a 30-60-90 triangle? $a : 2a : a\sqrt{3}$
2. What are the ratios of the sides of a 45-45-90 triangle? $a : a : a\sqrt{2}$
3. Questions?

examples

Nov 11-12:37 PM

Assignment
Special Right Triangle Wkst

Nov 11-1:58 PM