

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

Grade: \_\_\_\_\_

Score: \_\_\_\_\_

## Worksheet #5



## MISSING ANGLE IN A TRIANGLE

**Learning goal:** Students will apply the angle sum property of triangles to find unknown angles. They will solve problems involving equal angles, angle relationships, and angle ratios using algebra.

PROBLEM STATEMENT	STEPS & WORK	ANSWER
Angles are in ratio 1:2:3. Find all angles.		
Angles are $(x+21)^\circ$ , $x^\circ$ , $(2x-45)^\circ$ . Find $x$ .		
One angle is $3\times$ the smallest, another is $5\times$ the smallest.		
In a right triangle, acute angles are in ratio 7:11.		
Sum of two angles equals the third angle.		
One angle is twice another, third is $30^\circ$ less than the largest.		
Two angles equal, third is $60^\circ$ more than each.		
One angle is $3x$ , another is $(x + 10)$ , and third is $(x - 10)$ .		
Two angles are equal. The third is $100^\circ$ . Find all angles.		
Angles are in ratio 2:3:4. Find all angles.		

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## Worksheet #5 (Answers)



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PROBLEM STATEMENT	STEPS & WORK	ANSWER
Angles are in ratio 1:2:3. Find all angles.	Let angles be $x, 2x, 3x$ . Sum = $x + 2x + 3x = 180$ $6x = 180$ $x = 30$	$30^\circ, 60^\circ, 90^\circ$
Angles are $(x+21)^\circ, x^\circ, (2x-45)^\circ$ . Find $x$ .	$(x+21) + x + (2x-45) = 180$ $4x - 24 = 180$ $4x = 204$ $x = 51$	$x = 51^\circ$
One angle is $3\times$ the smallest, another is $5\times$ the smallest.	Let smallest = $x$ . $x + 3x + 5x = 180$ $9x = 180$ $x = 20$	$20^\circ, 60^\circ, 100^\circ$
In a right triangle, acute angles are in ratio 7:11.	$7x + 11x = 90$ $18x = 90$ $x = 5$	$35^\circ, 55^\circ$
Sum of two angles equals the third angle.	Let third angle = $x$ . $x + x = 180$ $2x = 180$ $x = 90$	$90^\circ$
One angle is twice another, third is $30^\circ$ less than the largest.	Let angles be $x, 2x, 2x-30$ . $x + 2x + (2x-30) = 180$ $5x = 210$ $x = 42$	$42^\circ, 84^\circ, 54^\circ$
Two angles equal, third is $60^\circ$ more than each.	Let equal angles = $x$ . Third = $x+60$ . $x + x + (x+60) = 180$ $3x = 120$ $x = 40$	$40^\circ, 40^\circ, 80^\circ$

One angle is $3x$ , another is $(x + 10)$ , and third is $(x - 10)$ .	$3x + x + 10 + x - 10 = 180$ $5x = 180$ $x = 36$	$108^\circ, 46^\circ, 26^\circ$
Two angles are equal. The third is $100^\circ$ . Find all angles.	Let equal angles = $x$ . So, $x + x + 100 = 180$ $2x = 80$ $x = 40$	$40^\circ, 40^\circ, 100^\circ$
Angles are in ratio 2:3:4. Find all angles.	Let angles be $2x, 3x, 4x$ . $2x + 3x + 4x = 180$ $9x = 180$ $x = 20$	$40^\circ, 60^\circ, 80^\circ$



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