Triangle Sum Theorem (Part 2)

**For each triangle, determine the measure of the missing angle, showing and explaining every step of the solution. Write the angle measures in the provided table, in order from smallest to largest, identifying their opposite sides (use the other two letters), as well.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |  |
| --- | --- | --- | --- |
| **Example:** Determine the measure of $∠C$, and fill in the table. |  | Angles | Opposite Sides |
| Small | $$m∠C=11°$$ | $$AB=2$$ |
| Medium | $$m∠B=44°$$ | $$AC=6$$ |
| Large | $$m∠A=125°$$ | $$BC=7$$ |
|  |  |  |

*Notice that there is more information than is needed to solve for* $m∠C$*. This means that you do not have to use or to include the unnecessary information. In this case, we don’t need to use the side measures in our given while we are solving for* $m∠C$*.*

|  |  |  |
| --- | --- | --- |
|  | **Statements (the steps to solve)** | **Reasons (the explanations for each step)** |
|  | On $△$*ABC,* $m∠A=125° \& m∠B=44°.$ | **Given** |
|  | $$m∠A+m∠B+m∠C=180$$ | $△$ **Sum Thm** |
|  | $$125+44+m∠C=180$$ | **Subst. (NOT Sub or Subs!)** |
|  | $$169+m∠C=180$$ | **Simp.** |
|  | $$m∠C=11°$$ | **Subtr. Prop. of =** |

 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|

|  |  |  |  |
| --- | --- | --- | --- |
| 1. Determine the measure of $∠D$, and fill in the table. |  | Angles | Opposite Sides |
| Small | $$m∠ =$$ |  |
| Medium | $$m∠ =$$ |  |
| Large | $$m∠ =$$ |  |

|  |  |  |
| --- | --- | --- |
|  | **Statements (the steps to solve)** | **Reasons (the explanations for each step)** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

 |
|

|  |  |  |  |
| --- | --- | --- | --- |
| 2. On $△$*GHI*, $m∠G=35° \& m∠H=4°$, $GH=54$,$ HI=49 \& GI=6$. Determine the measure of $∠I$, and use your solution and fill in the table. |  | Angles | Opposite Sides |
| Small | $$m∠ =$$ |  |
| Medium | $$m∠ =$$ |  |
| Large | $$m∠ =$$ |  |

|  |  |  |
| --- | --- | --- |
|  | **Statements (the steps to solve)** | **Reasons (the explanations for each step)** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

 |
|

|  |  |  |  |
| --- | --- | --- | --- |
| 3. On $△$*KLM*, $m∠K=75° \& m∠M=84°. MK=4, $$KL=11 \& LM=10$. Determine the measure of $∠L$, and fill in the table. |  | Angles | Opposite Sides |
| Small |  |  |
| Medium |  |  |
| Large |  |  |

|  |  |  |
| --- | --- | --- |
|  | **Statements (the steps to solve)** | **Reasons (the explanations for each step)** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

 |
|

|  |  |  |  |
| --- | --- | --- | --- |
| 4. Determine the measure of $∠Q$, and fill in the table. |  | Angles | Opposite Sides |
| Small |  |  |
| Medium |  |  |
| Large |  |  |

|  |  |  |
| --- | --- | --- |
|  | **Statements (the steps to solve)** | **Reasons (the explanations for each step)** |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

 |
|

|  |  |  |  |
| --- | --- | --- | --- |
| 5. On $△$*RST*, $m∠R=60°, m∠T=60° \& ST=2$. Determine the measure of $∠S$, and fill in the table. |  | Angles | Opposite Sides |
| Small |  |  |
| Medium |  |  |
| Large |  |  |

|  |  |  |
| --- | --- | --- |
|  | **Statements (the steps to solve)** | **Reasons (the explanations for each step)** |
|  |  |  |

 |
|

|  |  |  |  |
| --- | --- | --- | --- |
| 6. Determine the measure of $∠Y$, and fill in the table. |  | Angles | Opposite Sides |
| Small |  |  |
| Medium |  |  |
| Large |  |  |

|  |  |  |
| --- | --- | --- |
|  | **Statements (the steps to solve)** | **Reasons (the explanations for each step)** |
|  |  |  |

 |
|

|  |  |  |  |
| --- | --- | --- | --- |
| 7. On $△$*BCD,* $m∠B=118° \& m∠C=36°. BC=4, $$CD=8 \& BD=5$. Determine the measure of $∠D$, and fill in the table. |  | Angles | Opposite Sides |
| Small |  |  |
| Medium |  |  |
| Large |  |  |

|  |  |  |
| --- | --- | --- |
|  | **Statements (the steps to solve)** | **Reasons (the explanations for each step)** |
|  |  |  |

 |
|

|  |  |  |  |
| --- | --- | --- | --- |
| 8. Determine the measure of $∠G$, and fill in the table. |  | Angles | Opposite Sides |
| Small |  |  |
| Medium |  |  |
| Large |  |  |

|  |  |  |
| --- | --- | --- |
|  | **Statements (the steps to solve)** | **Reasons (the explanations for each step)** |
|  |  |  |

 |
|

|  |  |  |  |
| --- | --- | --- | --- |
| 9. On $△$*HJK*, $m∠H=173° \& m∠K=5°. HJ=12, $$JK=17 \& HK=5$. Determine the measure of $∠J$, and fill in the table. |  | Angles | Opposite Sides |
| Small |  |  |
| Medium |  |  |
| Large |  |  |

|  |  |  |
| --- | --- | --- |
|  | **Statements (the steps to solve)** | **Reasons (the explanations for each step)** |
|  |  |  |

 |
|

|  |  |  |  |
| --- | --- | --- | --- |
| 10. Determine the measure of $∠L$, and fill in the table. |  | Angles | Opposite Sides |
| Small |  |  |
| Medium |  |  |
| Large |  |  |

|  |  |  |
| --- | --- | --- |
|  | **Statements (the steps to solve)** | **Reasons (the explanations for each step)** |
|  |  |  |

 |

Triangle Sum Theorem Part 2 Answers

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1.

|  |  |
| --- | --- |
| $$m∠E=28°$$ | $$DF=8$$ |
| $$m∠D=31°$$ | $$EF=9$$ |
| $$m∠F=121°$$ | $$DE=15$$ |

 | 2.

|  |  |
| --- | --- |
| $$m∠H=4°$$ | $$GI=6$$ |
| $$m∠G=35°$$ | $$HI=49$$ |
| $$m∠I=141°$$ | $$GH=54$$ |

 | 3.

|  |  |
| --- | --- |
| $$m∠L=21°$$ | $$KM=4$$ |
| $$m∠K=75°$$ | $$LM=10$$ |
| $$m∠M=84°$$ | $$KL=11$$ |

 | 4.

|  |  |
| --- | --- |
| $$m∠P=35°$$ | $$NQ=2$$ |
| $$m∠N=53°$$ | $$PQ=3$$ |
| $$m∠Q=92°$$ | $$NP=4$$ |

 |
| 5.

|  |  |
| --- | --- |
| $$m∠R=60°$$ | $$ST=2$$ |
| $$m∠S=60°$$ | $$RT=2$$ |
| $$m∠T=60°$$ | $$RS=2$$ |

 | 6.

|  |  |
| --- | --- |
| $$m∠V=46°$$ | $$WY=6$$ |
| $$m∠W=51°$$ | $$VY=7$$ |
| $$m∠Y=83°$$ | $$VW=9$$ |

 | 7.

|  |  |
| --- | --- |
| $$m∠D=26°$$ | $$BC=4$$ |
| $$m∠C=36°$$ | $$BD=5$$ |
| $$m∠B=118°$$ | $$CD=8$$ |

 | 8.

|  |  |
| --- | --- |
| $$m∠F=40°$$ | $$EG=8$$ |
| $$m∠E=49°$$ | $$FG=9$$ |
| $$m∠G=91°$$ | $$EF=12$$ |

 |
| 9.

|  |  |
| --- | --- |
| $$m∠J=2°$$ | $$HK=5$$ |
| $$m∠K=5°$$ | $$HJ=12$$ |
| $$m∠H=173°$$ | $$JK=17$$ |

 | 10.

|  |  |
| --- | --- |
| $$m∠N=35°$$ | $$LM=4$$ |
| $$m∠L=64°$$ | $$MN=6$$ |
| $$m∠M=81°$$ | $$LN=7$$ |

 |