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| **Notes – Congruent Polygons** | **Name:** |  |
| **Standard:**  | **Hour:** |

**Objective:** I can determine if two polygons are congruent by identifying all of their congruent parts. I can use the congruent parts of congruent polygons to solve for a variable and find measures.

**Definition**

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| For two or more polygons to be considered *congruent*, \_\_\_\_\_\_\_\_ of their corresponding \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ must be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. When writing congruence statements, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_! |

**Examples**

Write all of the segment and angle congruence statements for each pair of polygons. Then write the congruence statement for each polygon.

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| 1a. Related image

|  |  |
| --- | --- |
| Segments | Angles |
|  |  |

Congruence Statement:2. List all reasons for this proof. Given: RS//UT, V is the midpoint of ST and RU, and RSUTProve: RSTUTV | 1b.

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| Segments | Angles |
|  |  |

Congruence Statement: |

Use the congruence statement given to mark the polygons congruent.

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| 1. $∆GHK≅∆TRW$

 | 1. $NBRP≅ASDK$

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Use the given congruence statement to complete each blank.

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| 1. $HJKLP≅QWRTY$

$∠W≅$ \_\_\_\_\_\_ $∠H≅$ \_\_\_\_\_\_$\overbar{TY}≅$ \_\_\_\_\_\_ $\overbar{PH}≅$ \_\_\_\_\_\_$KLPHJ≅$ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | 1. $∆GHE≅∆KLP$

$∠E≅$ \_\_\_\_\_\_ $∠K≅$ \_\_\_\_\_\_$\overbar{GH}≅$ \_\_\_\_\_\_ $\overbar{PK}≅$ \_\_\_\_\_\_$∆LKP≅$ \_\_\_\_\_\_\_\_\_\_\_\_ |

**Recall – Definition**

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| Congruence means to be equal in measure. |

**Practice**

Find the indicated value using the information given.

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| 1. $∆GIH≅∆BCM$

BC = \_\_\_\_\_\_\_\_\_ x = \_\_\_\_\_\_\_\_ | 1. $QRS≅BCA$

x = \_\_\_\_\_\_\_\_  |
| 1. $DEFG≅SPQR$

x = \_\_\_\_\_\_\_ y = \_\_\_\_\_\_\_ $∠S=$ \_\_\_\_\_\_\_ $SP=$\_\_\_\_\_\_\_ |

**Homework** (Th) **– Congruent Polygons** Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Identify all pairs of congruent corresponding parts. Then write a different congruence statement than what is already given for the figures.

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| 1. $∆ABC≅∆DEF$

|  |  |
| --- | --- |
| Segments | Angles |

Congruence Statement: | 1. $GHJK≅QRST$

|  |  |
| --- | --- |
| Segments | Angles |

Congruence Statement: |

Complete each statement using the diagram provided.

$∆TJM≅∆PHS$

|  |  |  |
| --- | --- | --- |
| 1. $∠P≅$ \_\_\_\_\_\_
 | 1. $\overbar{JM}≅$ \_\_\_\_\_\_\_
 |  |
| 1. $m∠M=$ \_\_\_\_\_\_
 | 1. $m∠P=$ \_\_\_\_\_\_\_
 |  |
| 1. $MT=$ \_\_\_\_\_\_\_
 | 1. $∆HPS≅$ \_\_\_\_\_\_\_\_\_\_
 |  |

$∆XYZ≅∆MNL$

|  |  |  |
| --- | --- | --- |
| 1. $m∠Y=$ \_\_\_\_\_\_\_
 | 1. $m∠M=$ \_\_\_\_\_\_\_\_
 |  |
| 1. $YX=$ \_\_\_\_\_\_\_
 | 1. $\overbar{YZ}≅$ \_\_\_\_\_\_\_
 |  |
| 1. $∆LNM≅$ \_\_\_\_\_\_\_\_
 | 1. $∆YXZ≅$ \_\_\_\_\_\_\_\_\_
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| 1. $EFCD≅GHAB$

x = \_\_\_\_\_\_\_\_ | 1.

Image result for congruent triangle

|  |
| --- |
| x = \_\_\_\_\_\_\_ |
| y = \_\_\_\_\_\_\_ |

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| 1. $∆HJK≅∆TRS$

|  |
| --- |
| a = \_\_\_\_\_\_\_ |
| b = \_\_\_\_\_\_\_ |

 | 1. $MNPQ≅LHJK$

|  |
| --- |
| x = \_\_\_\_\_\_\_ |
| y = \_\_\_\_\_\_\_ |

 |
| 1. Suppose $∆ABC≅∆EFD$, $∆EFD≅∆GIH$, $m∠A=90°$, and $m∠F=20°$. What is $m∠H$?
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**Algebra Challenge**

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| 1.

What is the measure of the missing angle?40 is the same as which expression?40 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = 17x – ySolve the system of equations you just wrote by substitution, elimination, or graphing.Eq 1: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Eq 2: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_x = \_\_\_\_\_\_\_\_\_\_\_\_ y = \_\_\_\_\_\_\_\_\_\_\_\_Check your answers! Plug in x and y 😊 | 1.

What is the measure of the missing angle?Use the triangle sum theorem to write an equation for the top triangle.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ + \_\_\_\_\_\_\_ = 180Solvex = \_\_\_\_\_\_\_\_28 is the same as which expression?28 = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Plug in the value of x to solve for yy = \_\_\_\_\_\_\_\_ |