Geometry  **Proof Practice Worksheet**  Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Given:** $\frac{4x + 6}{2}$ = 9

 **Prove:** *x* = 3

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
|  |  |

2. **Given:** $\frac{2}{3}\left(x-2\right)+1=7$

 **Prove:** $x=11$

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
|  |  |

3. **Given:** $3x-4\left(x+6\right)=3x$

 **Prove:** $x=-6$

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
|  |  |

4. **Given:** $-2x-\frac{3}{8}\left(x-4\right)=-\frac{1}{4}\left(x+3\right)-x$

 **Prove:** $x=2$

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
|  |  |

4. Write a reason for each step.

 HJ  HI  IJ

 7x  3  (2x  6)  (3x  3)

 7x  3  5x  3

 7x  5x  6

 2x  6

 x  3

****

5. **Given:** *BC* = *DE*

 **Prove:** *AB* + *DE* = *AC*

|  |  |
| --- | --- |
|  **Statements** | **Reasons** |
| **1.** *BC* = *DE* | **1.** |
| **2.**  | **2.** Segment Addition Postulate |
| **3.** *AB* + *DE* = *AC* | **3.**  |

****

6. **Given:** *Q* is between *P* and *R*,

 *R* is between *Q* and *S*, *PR* = *QS*.

 **Prove:** *PQ* = *RS*

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
| **1.** *Q* is between *P* and *R*. *R* is between *Q* and *S* | **1.**  |
| **2.** *PQ* + *QR* = *PR* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **2.** Segment Addition Postulate |
| **3.** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | **3.** Given |
| **4.** *PQ* + *QR* = *QR* + *RS* | **4.**  |
| **5.** *QR* = *QR* | **5.** |
| **6.** *PQ* = *RS* | **6.**  |

****7. **Given:** $\overbar{AB}$ ≅$\overbar{DE}$

 *B* is the midpoint of $\overbar{AC}$.

 *E* is the midpoint of $\overbar{DF}$.

**Prove:** $\overbar{BC}$ ≅$\overbar{EF}$

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
| **a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **a.** Given |
| **b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_****\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **b.** Definition of Midpoint |
| **c.** *AB* = *DE, AB = BC, DE = EF* | **c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **d.** *BC* = *DE* | **d. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **e.** *BC* = *EF* | **e. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **f. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | **f. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

8. Given: N is the midpoint of , Q is the midpoint of , and .

 Prove: 

Write a justification for each step.

Proof:

 1. N is the midpoint of . 1.

 2. Q is the midpoint of . 2.

 3.  3.

 4.  4.

 5.  5.

 6.  6.

 7.  7.

9. Complete the following proof:

3

2

4

1

**Given**:

**Prove**: 

**Proof:**

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
| **1.** **2.**  $∠1 and ∠2 are vertical angles.$**3.** $∠3 and ∠4 are vertical angles$**4.** ; **5.**  | **1.** **2.** **3.** **4.** **5.**  |



10. Given: $∠ABC≅∠CBD$

 Prove: $\vec{BC}$ bisects $∠ABD$

|  |  |
| --- | --- |
| **Statements** | **Reasons** |
| **1.** **2.**  $m∡ABC=m∡CBD$**3.** $\vec{BC}$ is an angle bisector**4.**  | **1.** **2.** **3.** **4.**  |