

1. Write a justification for each step. Choose from the following reasons.

Addition Property of Equality

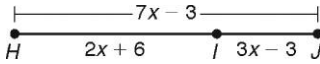
Division Property of Equality

Segment Addition Postulate

Simplify

Substitution Property of Equality

Subtraction Property of Equality



$HJ = HI + IJ$

$7x - 3 = (2x + 6) + (3x - 3)$

$7x - 3 = 5x + 3$

$7x = 5x + 6$

$2x = 6$

$x = 3$

Write the letter of each property next to its definition. The letters *a*, *b*, and *c* represent real numbers.

2. If $a = b$, then $b = a$. _____

A. Addition Property of Equality

3. If $a = b$, then $ac = bc$. _____

B. Subtraction Property of Equality

4. $a = a$ _____

C. Multiplication Property of Equality

5. If $a = b$, then $a + c = b + c$. _____

D. Reflexive Property of Equality

6. If $a = b$, and $b = c$, then $a = c$. _____

E. Symmetric Property of Equality

7. If $a = b$, then $a - c = b - c$. _____

F. Transitive Property of Equality

For 18-19, use deductive reasoning to solve the equation. Use the Properties of Equalities from above to justify each step.

8. $14 = 3x - 4$

Given

9. $9 = 17 - 4x$

Given

$18 = 3x$

$-8 = -4x$

$6 = x$

$2 = x$

$x = 6$

$x = 2$

Reasons for the Statements Worksheet

name _____ per _____ date _____

Below are some of the statements you may find in proofs. Write in the reason that explains how statement 1 leads to statement 2.

For example:				
Statement	Reason		Statement	Reason
1. $x + 3 = -10$	1. Given	Solution →	1. $x + 3 = -10$	1. Given
2. $x = -13$	2. _____?		2. $x = -13$	2. Subtraction Property of Equality

10.

Statement	Reason
1. $2(x + 5) = 26$	1. Given
2. $2x + 10 = 26$	2. _____

11.

Statement	Reason
1. $CD = 7$	1. Given
2. $3(CD) = 21$	2. _____

12.

Statement	Reason
1. $m\angle C = 60^\circ$	1. Given
2. $m\angle C + 5^\circ = 65^\circ$	2. _____

13.

Statement	Reason
1. $y = 3$	1. Given
2. $x + y = 5$	2. Given
3. $x + 3 = 5$	2. _____

14.

Statement	Reason
1. $x + y = z + y$	1. Given
2. $x = z$	2. _____

15.

Statement	Reason
1. $12x = 60$	1. Given
2. $x = 5$	2. _____

16.

Statement	Reason
1. $x = 125$	1. Given
2. $125 = x$	2. _____

17.

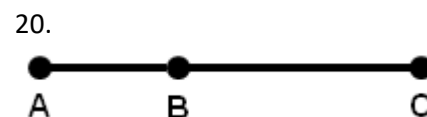
Statement	Reason
1. $x = y,$ $y = z$	1. Given
2. $x = z$	2. _____

18.

Statement	Reason
1. $m\angle A = m\angle B$	1. Given
2. $m\angle B = m\angle A$	2. _____

19.

Statement	Reason
1. $AB = BC$	1. Given
2. $BC = CD$	2. Given
3. $AB = CD$	3. _____



Statement	Reason
1. $A, B,$ and C are collinear	1. Given
2. $AB + BC = AC$	2. _____

21.

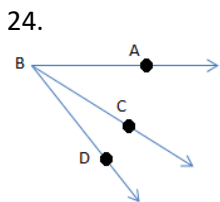
Statement	Reason
1. $AC + CD = BD + CD$	1. Given
2. $AC = BD$	2. _____

22.

Statement	Reason
1. $m\angle ABC = m\angle XYZ$	1. Given
2. $m\angle XYZ = m\angle ABC$	2. _____

23.

Statement	Reason
1. $2(AC) = BD$	1. Given
2. $AC = \frac{1}{2}(BD)$	2. _____



Statement	Reason
1. C is in the interior of $\angle ABD$	1. Given
2. $m\angle ABC + m\angle CBD = m\angle ABD$	2. _____

25.

Statement	Reason
1. $\angle 1$ is supplementary to $\angle 2$, $\angle 3$ is supplementary to $\angle 2$	1. Given
2. $\angle 1 \cong \angle 3$	2. _____ _____ _____ _____

26.

Statement	Reason
1. $\angle D$	1. Given
2. $m\angle D = m\angle D$	2. _____

27.

Statement	Reason
1. $GH - 5 = 23$,	1. Given
2. $GH = 28$	2. _____

28.

Statement	Reason
1. $m\angle A = m\angle B$	1. Given
2. $m\angle B = m\angle A$	2. _____

29.

Statement	Reason
1. $m\angle F = m\angle G$	1. Given
2. $m\angle G = m\angle H$	2. Given
3. $m\angle F = m\angle H$	3. _____

30.

Statement	Reason
1. $\angle 1$ and $\angle 2$ are complementary angles	1. Given
2. $m\angle 1 + m\angle 2 = 90^\circ$	2. _____

31.

Statement	Reason
1. $\angle 1$ and $\angle 2$ form a linear pair	1. Given
2. $m\angle 1 + m\angle 2 = 180^\circ$	2. _____