Name:

Applying Properties of Real Numbers to Solve Equations

Identify the property necessary to validate each step to solving the equations.

1.	X – 3 = 7	1. Original Problem
2.	X + -3 = 7	2.
3.	(X + -3) + 3 = 7 + 3	3.
4.	X + (-3 + 3) = 7 + 3	4.
5.	X + 0 = 7 + 3	5.
6.	X = 7 + 3	6.
7.	X = 10	7.

8.	3(x + 4) = 5x – 7	8. Original Problem
9.	3(x) + 3(4) = 5x – 7	9.
10.	3x + 12 = 5x – 7	10.
11.	(3x + 12) – 12 = (5x – 7) – 12	11.
12.	(3x + 12) + -12 = (5x + -7) + -12	12.
13.	3x + (12 + -12) = 5x + (-7 + -12)	13.
14.	3x + 0 = 5x + (-7 + -12)	14.
15.	3x = 5x + (-7 + -12)	15.
16.	3x = 5x + -19	16.
17.	3x + -5x = (5x + -19) + -5x	17.
18.	3x + -5x = (-19 + 5x) + -5x	18.
19.	3x + -5x = -19 + (5x + -5x)	19.
20.	X(3 + -5) = -19 + x(5 + -5)	20.
21.	X(-2) = -19 + x(5 + -5)	21.
22.	-2x = -19 + x(5 +-5)	22.
23.	-2x = -19 + x(0)	23.
24.	-2x = -19 + 0	24.
25.	-2x = -19	25.
26.	-2x ÷ -2 = -19 ÷ -2	26.
27.	-2x * -1/2 = -19 * -1/2	27.
28.	-1/2 * -2x = -19 * -1/2	28.
29.	(-1/2 * -2)x = -19 * -1/2	29.
30.	1x = -19 * -1/2	30.
31.	X = -19 * -1/2	31.
32.	X = 19/2	32.
33.	19/2 = x	33.

Identify the property necessary to validate each step to solving the equations.

1. $X - 3 = 7$	1. Original Problem
2. $X + -3 = 7$	2. Definition of subtraction
3. $(X + -3) + 3 = 7 + 3$	3. Addition of equality
4. $X + (-3 + 3) = 7 + 3$	4. Associative of addition
5. $X + 0 = 7 + 3$	5. Inverse of addition
6. $X = 7 + 3$	6. Identity of addition
7. $X = 10$	7. substitution

8. $3(x + 4) = 5x - 7$	8. Original Problem
9. $3(x) + 3(4) = 5x - 7$	9. distributive
10. $3x + 12 = 5x - 7$	10. substitution
11. $(3x + 12) - 12 = (5x - 7) - 12$	11. Subtraction property of equality
12. $(3x + 12) + -12 = (5x + -7) + -12$	12. Definition of subtraction
13. $3x + (12 + -12) = 5x + (-7 + -12)$	13. Associative of addition
14. $3x + 0 = 5x + (-7 + -12)$	14. Inverse of addition
15. $3x = 5x + (-7 + -12)$	15. Identity of addition
16. $3x = 5x + -19$	16. substitution
17. $3x + -5x = (5x + -19) + -5x$	17. Addition of equality
18. $3x + -5x = (-19 + 5x) + -5x$	18. Commutative of addition
19. $3x + -5x = -19 + (5x + -5x)$	19. Associative of addition
20. $X(3 + -5) = -19 + x(5 + -5)$	20. distributive
21. $X(-2) = -19 + x(5 + -5)$	21. substitution
22. $-2x = -19 + x(5 + -5)$	22. Commutative of multiplication
23. $-2x = -19 + x(0)$	23. Inverse of addition
24. $-2x = -19 + 0$	24. Zero multiplication
25. $-2x = -19$	25. Identity of addition
26. $-2x \div -2 = -19 \div -2$	26. Division of equality
27. $-2x * -1/2 = -19 * -1/2$	27. Definition of division
28. $-1/2 * -2x = -19 * -1/2$	28. Commutative of multiplication
29. $(-1/2 * -2)x = -19 * -1/2$	29. Associative of multiplication
30. $1x = -19 * -1/2$	30. Inverse of multiplication
31. $X = -19 * -1/2$	31. Identity of multiplication
32. $X = 19/2$	32. substitution
33. $19/2 = x$	33. Symmetric of equality