Systems of Equations with Three Variables Worksheet

Solve the following linear systems of equations.

1. $6x + 2y - 4z = 15$
   $-3x - 4y + 2z = -6$
   $4x - 6y + 3z = -5$

2. $2a - 5u + 3y = -4$
   $6a + 5u - y = 8$
   $-u - 4y = -28$

3. $-8x - 8y + 8z = 104$
   $7x - 4y + 7z = 8$
   $-x - 8y - z = 76$

4. $2p + q - r = -17$
   $p + 5q - 3r = -13$
   $-2p = 28 - 3p - 6r$

5. $-5x + 8y - 4z = 38$
   $6y + 3z = -9$
   $-2z = 10$

6. $3x + 4y + 5z = -3$
   $5x - 2y - 3z = 25$
   $9x - y + 4z = -12$

7. $-b - c = -25 + 3a$
   $6a + c = 10 + 5b$
   $2a + b + 3c = 14$

8. $6c + 4v - z = -31$
   $c + v + 6z = 14$
   $-v - 6z = -20$

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Answers

1 $6x + 2y - 4z = 15$
$-3x - 4y + 2z = -6$
$4x - 6y + 3z = -5$

$x = \frac{8}{17}, y = -\frac{1}{2}, z = -3\frac{5}{17}$

2 $2a - 5u + 3y = -4$
$6a + 5u - y = 8$
$-u - 4y = -28$

$a = -1, u = 4, y = 6$

3 $-8x - 8y + 8z = 104$
$7x - 4y + 7z = 8$
$-x - 8y - z = 76$

$x = -4, y = -9, z = 0$

4 $2p + q - r = -17$
$p + 5q - 3r = -13$
$-2p = 28 - 3p - 6r$

$p = -6\frac{5}{7}, q = 2\frac{3}{14}, r = 5\frac{11}{14}$

5 $-5x + 8y - 4z = 38$
$6y + 3z = -9$
$-2z = 10$

$x = -2, y = 1, z = -5$

6 $3x + 4y + 5z = -3$
$5x - 2y - 3z = 25$
$9x - y + 4z = -12$

$x = 3, y = 7, z = -8$

7 $-b - c = -25 + 3a$
$6a + c = 10 + 5b$
$2a + b + 3c = 14$

$a = 7, b = 6, c = -2$

8 $6c + 4v - z = -31$
$c + v + 6z = 14$
$-v - 6z = -20$

No solution