Name KEY Date

1.4 Extra Practice

In Exercises 1–3, solve the system using the elimination method. (work below)

1. $x + 2y - 3z = 11$
$2x + y - 2z = 9$
$4x + 3y + z = 16$
$(2, 3, -1)$

2. $x - y + 3z = 19$
$-2x + 2y - 6z = 9$
$3x + 5y + 2z = 3$
$\varnothing$

3. $x + y - z = -9$
$2x - 3y + 2z = 13$
$3x - 5y - 6z = -15$
$(-2, -3, 4)$

In Exercises 4–6, solve the system of linear equations using the ~~substitution~~ elimination method.

4. $x + y + z = 4$
$x + y - z = 4$
$3x + 3y + z = 12$
$\mathbb{R}$

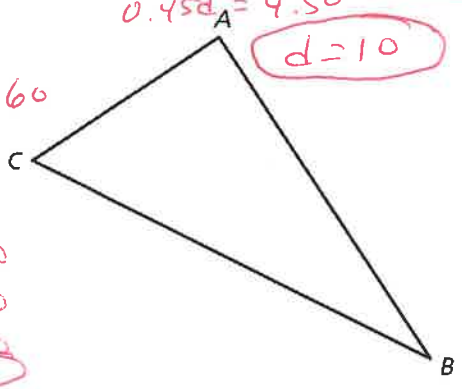
5. $2x + 3y - z = 9$
$x - 3y + z = -6$
$3x + y - 4z = 31$
$(1, 0, -7)$

6. $x + 2y - 5z = -12$
$2x + 2y - 3z = -2$
$3x - 4y - z = 11$
$(4, -\frac{1}{2}, 3)$

7. You find \$6.60 on the ground at school, all in nickels, dimes, and quarters. You have twice as many quarters as dimes and 42 coins in all. How many of each type of coin do you have?

$0.05n + 0.10d + 0.25q = 6.60$
$2d = q$
$n + d + q = 42$
$n + 3d = 42$
$0.05n + 0.60d = 6.60$
$-0.05n - 0.15d = 210$
$0.45d = 4.50$
$d = 10$
$q = 20$
$n = 12$

8. If $\angle A$ is three times as large as $\angle B$, and $\angle B$ is 30° smaller than $\angle C$, what are the measures of angles A, B, and C?



$\angle A = 3(x-30)$
$\angle B = x - 30$
$\angle C = x$
$\angle A = 90, \angle B = 30, \angle C = 60$
$3(x-30) + (x-30) + (x) = 180$
$3x - 90 + x - 30 + x = 180$
$5x - 120 = 180$
$5x = 300$
$x = 60$

9. Find the values of a, b, and c so that the linear system shown has (3, –2, 1) as its only solution. Explain your reasoning.

$3x + 2y - 7z = a$
$x + 3y + z = b$
$4x - 2y - z = c$

$a = -2, b = -2, c = 15$
$3(3) + 2(-2) - 7(1) = -2$
$3 + 3(-2) + 1 = -2$
$4(3) - 2(-2) - 1 = 15$

10. Determine which arrangement(s) of the integers –1, 2, and –3 produce a linear system with a solution that consists of only integers. Justify your answer.

$2x + 3y + z = 4$
$\_\_\_\_x + \_\_\_\_y + \_\_\_\_z = -11$
$x + 2y - 7z = -35$

$-1, 2, -3$ or $1, -3, 2$
$(-2, 1, 5)$
$(-25, 16, 6)$

① $1+2$ $-2x-4y+6z=-22$
$2x+y-2z=9$
$-3y+4z=-13$
$3(y+5z=-2)$
$3y+15z=-6$
$19z=-19$
$z=-1$

$2+3$ $-4x-2y+4z=-18$
$4x+3y+z=16$
$y+5z=-2$
$y+5(-1)=-2$
$y=3$
$x+6+3=11$
$x=2$

② $1+2$ $2x-2y+6z=38$
$-2x+2y-6z=9$
$0=47$
$\emptyset$

③ $1+2$ $-2x+2y+2z=18$
$2x-3y+2z=13$
$-5y+4z=31$
$5(y+18z=69)$
$5y+90z=345$
$94z=376$
$z=4$

$2+3$ $6x-9y+6z=39$
$-6x+10y+12z=30$
$y+18z=69$
$y+72=69$
$y=-3$
$x-3-4=-9$
$x=-2$

④ $1+2$ $x+y+z=4$
$-x-y+z=-4$
$2z=0$
$z=0$

$2+3$ $-3x-3y=12$
$3x+3y=12$
$0=0$
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⑤ $1+2$
$2x+3y-z=9$
$-2x+6y-2z=12$
$10(9y-3z=21)$
$-9(10y-7z=49)$
$90y-30z=210$
$-90y+63z=441$
$33z=-231$
$z=-7$

$2+3$ $-3x+9y-3z=18$
$3x+y-4z=31$
$10y-7z=49$
$10y+49=49$
$10y=0$
$y=0$
$x+0-7=-6$
$x=1$

⑥ $1+2$
$-2x-4y+10z=24$
$2x+2y-3z=-2$
$-2y+7z=22$
$14y-7z=-28$
$12y=-6$
$y=-\frac{1}{2}$

$2+3$ $6x+6y-9z=-6$
$-6x+8y+2z=-22$
$14y-7z=-28$
$-7-7z=-28$
$-7z=-21$
$z=3$

$x-1-15=-12$
$x=4$