Simultaneous Equations: Three Unknowns

Workout
Question

1(a) x = 7   y = 1   z = 4

1(b) x = 3   y = 5   z = 2

1(c) x = −2   y = 3   z = 1

1(d) x = 9   y = −1   z = 3

1(e) x = −2   y = 2   z = 3

1(f)   x = 9   y = 6   z = 11

Question

2(a) x = 4   y = 2   z = 1

2(b) x = −1   y = 4   z = 2

2(c) x = 5   y = −3   z = 1

2(d) x = 10   y = 3   z = −1

2(e) x = −5   y = 7   z = 3

2(f)   x = 1   y = 3   z = 2

2(g) x = 1.5   y = 2.5   z = −1

2(h) x = 1.2   y = −0.1 z = −0.2

2(i) x = 2   y = −1   z = −0.5

Question

3(a) x = 8   y = 4   z = 11

3(b) x = 7   y = 6   z = 4

3(c) x = −0.2   y = −0.35   z = 1.125

Apply

1(a) 4x + 2y + z = 310,   x + 4y + 4z = 240,   2x + 2y + 5z = 270

1(b) ruler: 60p   pencil: 25p   pen: 20p

Q2   Three unique equations are needed. 9x + 3y + 6z = 93 is a multiple of 3x + y + 2z = 31

3(a) 0.8x + 0.6y + 0.2z = 96 (x 5)
      4x + 3y + z = 480

3(b) 0.5x + 0.75y + 0.25z = 100 (x 4)
      2x + 3y + z = 400

3(c) 0.9x + 0.8y + 0.5z = 126 (x 10)
      9x + 8y + 5z = 1260

3(d) 160 as x = 40   y = 100   z = 20

4(a) 10x + 30y + 60z = 2920
       x + 3y + 6z = 292

4(b) x − y − z = 48

4(c) 10(2x) + 30(3y) + 60(z + 8) = 6800
      20x + 90y + 60z + 480 = 6800
      20x + 90y + 60z = 6320
      2x + 9y + 6z = 632

4(d) x = 100   y = 40   z = 12

5(a) 450x + 375y + 75z = 4725 (divide by 75)
      6x + 5y + z = 63

5(b) 600x + 300y + 225z = 6525
      8x + 4y + 3z = 87

5(c) 675x + 375x + 150z = 6900
      9x + 5y + 2z = 92

5(d) x = £8   y = £2   z = £5