For each of the questions below, Write out the equations and determine whether they give you a “tent’ solution or a ‘book’ solution. Show all working out and reasoning for answers.

a)

$12x - 8y + 4z = -8$

$5x - 9y + 4z = -5$

$2x + 10y - 4z = 2$

$7x + y = -3$
$7x + y = -3$

Book solution as the planes where they intersect are the same

b)

$6x + 4y - 4z = 12$

$8x + 4y + 14z = 32$

$7x + 4y + 5z = 32$

$-2x - 18z = -20$
$x + 9z = 0$

Tent solution as its a parallel equation

c)

$4x - 3y + 3z = 7$

$4x + 7y - z = 2$

$12x + y + 5z = 16$

$-10y + 4z = 5$
$20y + 2z = -10$

$-50y = 25$
$y = -0.5$
Tent

d)

$13x + 3y - 4z = 7$

$3x + y - 3z = -4$

$7x + y - 2z = 3$

$x = 1$
$y = 2$
$z = 3$
Tent

e)

$5x + 2y + 2z = 12$

$9x + 16y + 4z = 6$

f)

$x + y - z = 21$

$7x + 9y - 17z = 35$

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

g)

$2x - 3y + 5z = 21$

$7x - 5y + 2z = 9$

$5x - 2y - 3z = 12$

h)

$3x - 2y + 2z = 4$

$5x + 7y - 5z = -9$

$8x + 5y - 3z = -5$

$-31y + 25z = 47$
$31y - 25z = -47$
Book

Practice 1

Moana is making tiny bunches of flowers to go in the boys' buttonholes for the school ball. She has 15 rosebuds, 60 fern leaves and 80 lavender sprigs. She makes three different designs, and wants to use up all the flowers.

- Design A needs 2 rosebuds, 4 fern and 12 lavender sprigs.
- Design B needs 4 rosebud, 8 fern leaf and 24 lavender sprig.
- Design C needs 3 rosebuds, 6 fern leaves and 18 lavender sprigs.

1. Write 3 equations to represent this situation.
   $2x+4y+3z=15$
   $4x+8y+6z=60$
   $12x+24y+18z=80$
2. Moana tried to solve this system of equations on her calculator, but she got "MA ERROR" Explain fully why this occurred, and describe the relationship between these 3 planes.
   All the equations are parallel with different constants hence no intersections between them.

Practice 2

Moana is making tiny bunches of flowers to go in the boys' buttonholes for the school ball. She has 15 rosebuds, 60 fern leaves and 45 lavender sprigs. She makes three different designs, and wants to use up all the flowers.

- Design A needs 1 rosebuds, 4 fern and 3 lavender sprigs.
- Design B needs 2 rosebud, 8 fern leaf and 6 lavender sprig.
- Design C needs 3 rosebuds, 12 fern leaves and 9 lavender sprigs.

1. Write 3 equations to represent this situation.

$x+2y+3z=15$

$4x+8y+12x=60$

$3x+6y+9z=45$

2. Moana tried to solve this system of equations on her calculator, but she got “MA ERROR” Explain fully why this occurred, and describe the relationship between these 3 planes.

all the equations are the same (inc constants) meaning all the planes are also the same