1. Multiplying a column vector $\vec{v}_1$ by a real number c_1

   a) scales each entry in $\vec{v}_1$ by c_1 algebraically, but has no geometric interpretation
   b) keeps $\vec{v}_1$ on the same line through the origin and stretches or shrinks it according to the value of c_1.
   c) creates the diagonal of the parallelogram formed by $\vec{v}_1$ and c_1
   d) has no algebraic nor geometric interpretation
   e) none of the above

2. What do the collection of column vectors $c_1 \begin{bmatrix} 1 \\ 1 \end{bmatrix} + c_2 \begin{bmatrix} 2 \\ 2 \end{bmatrix}$, for c_1 and c_2 real, have in common?

   a) They are vectors of the form $\begin{bmatrix} c_1 + 2c_2 \\ c_1 + 2c_2 \end{bmatrix}$
   b) They create the diagonals of parallelograms
   c) They form all of $\mathbb{R}^2$
   d) both a) and b)
   e) both a) and c)

3. For two column vectors $\vec{v}_1$ and $\vec{v}_2$, $\{c_1\vec{v}_1 + \vec{v}_2$ so that c_1 is real$\}$ is

   a) a collection of vectors whose tips lie on the line parallel to $\vec{v}_1$ and through the tip of $\vec{v}_2$
   b) a collection of vectors whose tips lie on the line parallel to $\vec{v}_2$ and through the tip of $\vec{v}_1$
   c) a collection of vectors who end on the line connecting the tips of $\vec{v}_1$ and $\vec{v}_2$
   d) has no geometric interpretation
   e) none of the above

4. Notice that $-1 \begin{bmatrix} 1 \\ 4 \\ 7 \end{bmatrix} + 2 \begin{bmatrix} 2 \\ 5 \\ 8 \end{bmatrix} = \begin{bmatrix} 3 \\ 6 \\ 9 \end{bmatrix}$. More generally, what do the collection of column vectors $c_1 \begin{bmatrix} 1 \\ 4 \\ 7 \end{bmatrix} + c_2 \begin{bmatrix} 2 \\ 5 \\ 8 \end{bmatrix}$, for c_1 and c_2 real, have in common?

   a) the line connecting the tips of $\begin{bmatrix} 1 \\ 4 \\ 7 \end{bmatrix}$ and $\begin{bmatrix} 2 \\ 5 \\ 8 \end{bmatrix}$
   b) the plane formed by $\begin{bmatrix} 1 \\ 4 \\ 7 \end{bmatrix}$ and $\begin{bmatrix} 2 \\ 5 \\ 8 \end{bmatrix}$
   c) a non-linear curve

d) a non-linear surface

e) none of the above

5. A coffee shop offers two blends of coffees: House and Deluxe. Each is a blend of Brazil, Colombia, Kenya, and Sumatra roasts. The percentages for each blend are shown in the table below.

	House	Deluxe
Brazil	30%	40%
Columbia	20%	30%
Kenya	20%	20%
Sumatra	30%	10%

Suppose that the shop has 36 lbs of Brazil roast, 26 lbs of Columbia roast, 20 lbs of Kenya roast, and 18 lbs of Sumatra roast in stock. Set up an augmented matrix to determine how much of the House and Deluxe blends should be made in order to completely use up the stock of coffee at hand - assume that the coefficient matrix for the system acts on a column vector $\begin{bmatrix} \text{lbs House} \\ \text{lbs Deluxe} \end{bmatrix}$

6. Up to this point in this class, multiplying two column vectors $\vec{v}_1$ and $\vec{v}_2$

a) keeps $\vec{v}_1$ on the same line through the origin and stretches or shrinks it according to the value of $\vec{v}_2$.

b) forms the diagonal of the parallelogram formed by $\vec{v}_1$ and $\vec{v}_2$

c) multiplies componentwise

d) more than one of the above is true

e) has no algebraic nor geometric interpretation