

Answer on Question #44036 – Math – Algebra

Answer using the Venn Diagram.

1. In a certain supermarket 100 people were ask on the preferred brand of shampoo they like to be use:

6 preferred "Palmolive", "Sunsilk", "Dove"

14 preferred "Palmolive" and "Sunsilk"

16 preferred "Palmolive" and "Dove"

15 preferred "Sunsilk" and "Dove"

34 preferred "Palmolive"

42 preferred "Dove"

50 preferred "Sunsilk"

How many people preferred:

- a. Exactly two types of brand?
- b. At most 3 types of brand?
- c. At least 2 types of brand?
- d. None of the 3 brand?
- e. "Palmolive" brand only?
- f. "Sunsilk" brand only?
- g. "Dove" and "Sunsilk" brand?
- h. "Dove" or "Sunsilk" brand?
- i. "Palmolive" or "Sunsilk" brand?
- j. "Palmolive" and "Sunsilk" brand?

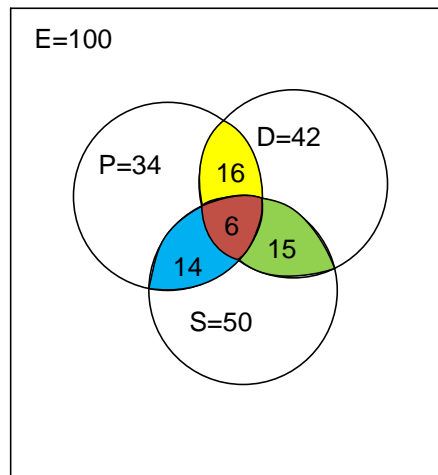
Solution.

Notation: E - set of all people were ask

D- set of people preferred "Dove"

P- set of people preferred "Palmolive"

S- set of people preferred "Sunsilk"



a. People preferred exactly two types of brand:

$$14 + 15 + 16 - 3 \cdot 6 = 27$$

b. People preferred at most 3 types of brand:

$$6$$

c. People preferred at least 2 types of brand:

$$14 + 15 + 16 - 2 \cdot 6 = 33$$

d. People preferred none of the 3 brand:

$$100 - (34 + 42 + 50 - 14 - 15 - 16 + 6) = 13$$

e. People preferred "Palmolive" brand only:

$$34 - 14 - 16 + 6 = 10$$

f. People preferred "Sunsilk" brand only:

$$50 - 14 - 15 + 6 = 27$$

g. People preferred "Dove" and "Sunsilk" brand:

$$15$$

h. People preferred "Dove" or "Sunsilk" brand:

$$42 + 50 - 15 = 77$$

i. People preferred "Palmolive" or "Sunsilk" brand:

$$34 + 50 - 14 = 70$$

j. People preferred "Palmolive" and "Sunsilk" brand:

$$14$$