SOLUTION TO 10.13.3.41

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Question: A bag contain 24 balls of which x balls are red, $2x$ are white and $3x$ are blue. A ball is selected at random, What is the probability that it is

a) not red ?
b) white ?

Solution: Total number of balls

$$= x + 2x + 3x = 24 \tag{1}$$
$$\implies 6x = 24 \tag{2}$$
$$\implies x = 4 \tag{3}$$

Let A,B and C be events of choosing red,white and blue ball respectively.Let X be a Random variable such that

Parameter	Value	Description
X	0	Red ball
	1	White ball
	2	Blue ball

a) $A' = B + C$
Required probability:

$$\Pr(A') = \Pr(B + C) \tag{4}$$
$$= \Pr(B) + \Pr(C) \tag{5}$$
$$\because \Pr(BC) = 0 \tag{6}$$
$$= \frac{8}{24} + \frac{12}{24} \tag{7}$$
$$= \frac{1}{3} + \frac{1}{2} \tag{8}$$
$$= \frac{5}{6} \tag{9}$$

b) Required probability:

$$\Pr(B) = \frac{2x}{24} \tag{10}$$
$$= \frac{1}{3} \tag{11}$$