A.A.7: Writing Linear Systems 2: Analyze and solve verbal problems whose solution requires solving systems of linear equations in two variables

1 Three times as many robins as cardinals visited a bird feeder. If a total of 20 robins and cardinals visited the feeder, how many were robins?
1) 5 2) 10 3) 15 4) 20

2 Jamie is 5 years older than her sister Amy. If the sum of their ages is 19, how old is Jamie?
1) 5 2) 7 3) 12 4) 14

3 The ratio of Tariq's telephone bill to Pria's telephone bill was 7:5. Tariq's bill was $14 more than Pria's bill. What was Tariq's bill?
1) $21 2) $28 3) $35 4) $49

4 Two numbers are in the ratio 2:5. If 6 is subtracted from their sum, the result is 50. What is the larger number?
1) 55 2) 45 3) 40 4) 35

5 Sal keeps quarters, nickels, and dimes in his change jar. He has a total of 52 coins. He has three more quarters than dimes and five fewer nickels than dimes. How many dimes does Sal have?
1) 13 2) 18 3) 20 4) 21

6 At a concert, $720 was collected for hot dogs, hamburgers, and soft drinks. All three items sold for $1.00 each. Twice as many hot dogs were sold as hamburgers. Three times as many soft drinks were sold as hamburgers. The number of soft drinks sold was
1) 120 2) 240 3) 360 4) 480

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Answer Section

1 ANS: 3

$$\begin{matrix} c = 20 - r \\ r = 3c \end{matrix}. \quad \begin{matrix} r = 3(20 - r) \\ r = 60 - 3r \\ 4r = 60 \\ r = 15 \end{matrix}$$

PTS: 2 REF: 010104a

2 ANS: 3

$$\begin{matrix} j + a = 19 \\ a = j - 5 \end{matrix}. \quad \begin{matrix} j + a = 19 \\ j + (j - 5) = 19 \\ j = 12 \end{matrix}$$

PTS: 2 REF: 060201a

3 ANS: 4

$$\begin{matrix} 5t = 7p \\ p = t - 14 \end{matrix}. \quad \begin{matrix} 5t = 7p \\ 5t = 7(t - 14) \\ 5t = 7t - 98 \\ t = 49 \end{matrix}$$

PTS: 2 REF: 080412a

4 ANS: 3

$$2l = 5s. \quad \begin{matrix} l + s - 6 = 50 \\ s = 56 - l \end{matrix}. \quad \begin{matrix} 2l = 5s \\ 2l = 5(56 - l) \\ 2l = 280 - 5l \\ l = 40 \end{matrix}$$

PTS: 2 REF: 060004a

5 ANS: 2

$$\begin{matrix} n + d + q = 52 \\ q = d + 3 \\ n = d - 5 \end{matrix}. \quad \begin{matrix} n + d + q = 52 \\ (d - 5) + d + (d + 3) = 52 \\ 3d - 2 = 52 \\ d = 18 \end{matrix}$$

PTS: 2 REF: 080606a

6 ANS: 3

$h + b + s = 720 \quad h + b + s = 720 \quad s = 3b$

$h = 2b \quad . \quad 2b + b + 3b = 720 . \quad s = 3(120)$

$s = 3b \quad b = 120 \quad s = 360$

PTS: 2 REF: 089916a