A.A.7: Writing Linear Systems 6: Analyze and solve verbal problems whose solution requires solving systems of linear equations in two variables

1 The sum of two numbers is 47, and their difference is 15. What is the larger number?

2 Michael is 25 years younger than his father. The sum of their ages is 53. What is Michael's age?

3 Ben has four more than twice as many CDs as Jake. If they have a total of 31 CDs, how many CDs does Jake have?

4 Pam is playing with red and black marbles. The number of red marbles she has is three more than twice the number of black marbles she has. She has 42 marbles in all. How many red marbles does Pam have?

5 Sam and Odel have been selling frozen pizzas for a class fundraiser. Sam has sold half as many pizzas as Odel. Together they have sold a total of 126 pizzas. How many pizzas did Sam sell?

6 At Genesee High School, the sophomore class has 60 more students than the freshman class. The junior class has 50 fewer students than twice the students in the freshman class. The senior class is three times as large as the freshman class. If there are a total of 1,424 students at Genesee High School, how many students are in the freshman class?

7 Josh and Mae work at a concession stand. They each earn $8 per hour. Josh worked three hours more than Mae. If Josh and Mae earned a total of $120, how many hours did Josh work?

8 Julia went to the movies and bought one jumbo popcorn and two chocolate chip cookies for $5.00. Marvin went to the same movie and bought one jumbo popcorn and four chocolate chip cookies for $6.00. How much does one chocolate chip cookie cost?

9 Jack bought 3 slices of cheese pizza and 4 slices of mushroom pizza for a total cost of $12.50. Grace bought 3 slices of cheese pizza and 2 slices of mushroom pizza for a total cost of $8.50. What is the cost of one slice of mushroom pizza?

10 The cost of 3 markers and 2 pencils is $1.80. The cost of 4 markers and 6 pencils is $2.90. What is the cost of *each* item? Include appropriate units in your answer.

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Answer Section

1 ANS:
31

$L + S = 47$

$L - S = 15$

$\quad 2L = 62$

$\quad\ L = 31$

REF: 060912ia

2 ANS:
14

$f + m = 53$

$f - m = 25$

$\quad 2m = 28$

$\quad\ m = 14$

REF: 061126ia

3 ANS:
9

$\quad b = 2j + 4 \quad 2j + 4 = 31 - j$

$b + j = 31 \qquad\quad 3j = 27$

$\quad b = 31 - j \qquad j = 9$

REF: 081119ia

4 ANS:
29

$b = 42 - r \quad r = 2b + 3$

$r = 2b + 3 \quad r = 2(42 - r) + 3$

$\qquad\qquad r = 84 - 2r + 3$

$\qquad\quad 3r = 87$

$\qquad\quad\ r = 29$

REF: 060812ia

5 ANS:
42

$s + o = 126. \ s + 2s = 126$

$\quad o = 2s \qquad s = 42$

REF: 080811ia

6 ANS:
202
$so = f + 60$ $j = 2f - 50$ $se = 3f$. $f + (f + 60) + (2f - 50) + 3f = 1424$

$$7f + 10 = 1424$$

$$f = 202$$

REF: 060917ia

7 ANS:
9

$$J - M = 3$$

$$8J + 8M = 120$$

$$8J - 8M = 24$$

$$16J = 144$$

$$J = 9$$

REF: 011115ia

8 ANS:
$0.50

$$1P + 2C = 5$$

$$1P + 4C = 6$$

$$2C = 1$$

$$C = 0.5$$

REF: 011003ia

9 ANS:
$2.00

$$3c + 4m = 12.50$$

$$3c + 2m = 8.50$$

$$2m = 4.00$$

$$m = 2.00$$

REF: 060806ia

10 ANS:
$m = 50¢, p = 15¢$. $3m + 2p = 1.80$. $9m + 6p = 5.40$. $4(.50) + 6p = 2.90$

$\quad\quad 4m + 6p = 2.90$ $4m + 6p = 2.90$ $\quad\quad 6p = .90$

$\quad\quad\quad\quad\quad 5m = 2.50$ $\quad\quad\quad\quad p = \$0.15$

$\quad\quad\quad\quad\quad m = \$0.50$

REF: 080837ia