Name _____ Date _____

Systems of Linear Equations in Word Problems Unit Review

Directions: Each question is a word problem about a system of two linear equations. Read what each variable stands for, and give ordered pairs in the order the question names.

1. A school play sold 120 tickets in all. Adult tickets cost \$7 and student tickets cost \$4, and ticket sales came to \$630. Let a be the number of adult tickets and s the number of student tickets. Which system models this situation?

A. $a + s = 630$ and $7a + 4s = 120$
B. $a + s = 120$ and $7a + 4s = 630$
C. $a + s = 120$ and $11(a + s) = 630$
D. $a + s = 120$ and $4a + 7s = 630$

2. A coffee shop mixes beans that cost \$12 per pound with beans that cost \$18 per pound to make 30 pounds of a blend. The beans in the blend cost the same in all as 30 pounds at \$14 per pound. Let x be the pounds of \$12 beans and y the pounds of \$18 beans. Which system models the blend?

A. $x + y = 30$ and $18x + 12y = 420$
B. $x + y = 30$ and $12x + 18y = 420$
C. $x + y = 30$ and $12x + 18y = 14$
D. $x + y = 14$ and $12x + 18y = 30$

3. Gym A charges \$40 to join plus \$25 per month. Gym B charges \$10 to join plus \$31 per month. Let m be the number of months and c the total cost in dollars. Which system can be solved to find when the two gyms cost the same?

A. $c = 40 + 25m$ and $c = 31 + 10m$
B. $c = 25 + 40m$ and $c = 31 + 10m$
C. $c = 65m$ and $c = 41m$
D. $c = 40 + 25m$ and $c = 10 + 31m$

4. An animal shelter has 33 dogs and cats in all, and the number of dogs is 3 more than twice the number of cats. With d dogs and c cats, this gives $d = 2c + 3$ and $d + c = 33$. What is the best first step to solve this system by substitution?

A. Multiply $d + c = 33$ by 2 to get $2d + 2c = 33$.
B. Replace d in $d + c = 33$ with $2c + 3$, to get $2c + 3 + c = 33$.
C. Set $2c + 3$ equal to 33 to get $c = 15$.
D. Replace c in $d + c = 33$ with $2c + 3$, to get $d + 2c + 3 = 33$.

5. A food truck sold 64 drinks on Saturday. Small drinks cost \$2 and large drinks cost \$3, and the drink sales came to \$157. How many large drinks did the truck sell?

_____ large drinks

6. At a bakery, 3 muffins and 2 scones cost \$13, and 5 muffins and 2 scones cost \$19. Let m be the price of one muffin and s the price of one scone, in dollars. Which ordered pair (m, s) solves the system?

A. $(m, s) = (6, -2.5)$
B. $(m, s) = (3, 2)$
C. $(m, s) = (2, 3)$
D. $(m, s) = (3, 4)$

7. A community garden has 48 tomato and pepper plants in all, and it has 3 times as many tomato plants as pepper plants. Let t be the number of tomato plants and p the number of pepper plants. Which ordered pair (t, p) gives the numbers of plants?

A. $(t, p) = (12, 36)$
B. $(t, p) = (16, 32)$
C. $(t, p) = (36, 12)$

8. For a one-day car rental, Company A charges $30 plus $0.20 per mile, and Company B charges $45 plus $0.10 per mile. For how many miles driven do the two companies charge the same amount?

_____ miles

9. A juice maker mixes a drink that is 10% fruit juice with a drink that is 40% fruit juice. The result is 60 liters of a drink that is 20% fruit juice. How many liters of the 40% drink are in the mix?

_____ liters

10. A kayaker paddles 24 miles downstream in 2 hours, then 24 miles back upstream in 4 hours. Let b be her paddling speed in still water and c the speed of the current, both in miles per hour, so her speed is $b + c$ downstream and $b - c$ upstream. What is the speed of the current?

_____ miles per hour

11. Two candles burn at steady rates. Candle A is 12 inches tall and burns 0.5 inch per hour, and candle B is 9 inches tall and burns 0.25 inch per hour. With t hours and a height of h inches, the system $h = 12 - 0.5t$ and $h = 9 - 0.25t$ has the solution $(t, h) = (12, 6)$. What does this solution mean?

A. After 6 hours, both candles are 12 inches tall.

B. After 12 hours, candle A is 6 inches taller than candle B.

C. After 12 hours, both candles are 6 inches tall.

D. Candle A burns out after 12 hours, and candle B burns out after 6 hours.

12. Lina has $50 saved and adds $4 each week. Marco has $30 saved and also adds $4 each week. Let w be the number of weeks from now and d the dollars saved. Which statement about when they will have the same amount saved is true?

A. After 20 weeks, when the $20 gap is gone.

B. Every week: the system has infinitely many solutions, because both add $4 a week.

C. Never: the system has no solution, because both add $4 a week and Lina always has $20 more.

D. After 5 weeks, because $20 \div 4 = 5$.

13. A club reports that it sold 50 tickets, some at $9 and the rest at $6, for a total of $380. Let a be the number of $9 tickets and s the number of $6 tickets. Solving $a + s = 50$ and $9a + 6s = 380$ gives $a = 80/3$. What does this tell you about the report?

A. The report has an error, because no whole numbers of tickets fit both facts.

B. The system has no solution, so the club sold no tickets.

C. The club sold 27 tickets at $9 and 23 tickets at $6.

D. The club sold 26 tickets at $9 and 24 tickets at $6.

14. Two phone plans charge by the gigabyte. Plan 1 costs $c = 20 + 5g$ dollars and Plan 2 costs $c = 35 + 2g$ dollars, where g is the number of gigabytes used in a month. Which statements are true? Select the two true statements.

☐ A. Plan 1 costs less than Plan 2 when 8 gigabytes are used.

☐ B. At 5 gigabytes, each plan costs $45.

☐ C. The plans never cost the same.

☐ D. The plans cost the same when 5 gigabytes are used.

☐ E. Plan 2 costs less than Plan 1 when 2 gigabytes are used.