ALBERT

Name _____ Date _____

Systems of Equations Word Problems Worksheet

Grade 8 · Common Core 8.EE.C.8c

> Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.

Practice

Builds the skill step by step.

1. Two numbers have a sum of 20 and a difference of 6. Find the larger and the smaller number.

2. A farm has 12 animals, all chickens and cows. Together they have 32 legs. How many cows are there?

3. Pens cost 2 dollars each and notebooks cost 3 dollars each. Mia buys 7 items for 17 dollars. How many notebooks does she buy?

4. Gym A charges 20 dollars a month plus 5 dollars per class. Gym B charges 35 dollars a month plus 2 dollars per class. For how many classes in a month do they cost the same?

5. A theater sells 100 tickets. Adult tickets cost 10 dollars and student tickets cost 6 dollars. Sales total 800 dollars. Which system models a adult tickets and s student tickets?

   A. $a + s = 100$ and $10a + 6s = 800$

   B. $a + s = 800$ and $10a + 6s = 100$

   C. $10a + s = 100$ and $a + 6s = 800$

   D. $a - s = 100$ and $10a - 6s = 800$

6. Line 1 passes through (0, 1) and (2, 5). Line 2 passes through (0, 3) and (1, 5). Do the lines intersect?

7. One number is 3 times another. Their sum is 48. Find the larger number.

8. Theo has 15 coins, all dimes and nickels, worth 1.10 dollars in all. How many dimes does he have?

9. Sam is 4 years older than Lee. Their ages add to 30. How old is Sam?

10. Rental A costs 30 dollars plus 0.20 dollar per mile. Rental B costs 50 dollars plus 0.10 dollar per mile. At how many miles do they cost the same?

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On Level

Grade-level practice.

1. A concert sells 250 tickets. Adult tickets cost 12 dollars and child tickets cost 8 dollars. Ticket sales total 2,640 dollars. How many adult tickets were sold?

2. Line 1 passes through (1, 2) and (3, 8). Line 2 passes through (0, 5) and (2, 3). Where do the lines intersect?

3. A boat travels 24 miles downstream in 2 hours and the same 24 miles upstream in 3 hours. What is the boat's speed in still water?

4. A 10-pound mix of nuts and raisins costs 48 dollars. Nuts cost 6 dollars per pound and raisins cost 3 dollars per pound. How many pounds of nuts are in the mix?

5. A 20-question test is worth 100 points. Some questions are worth 3 points and the rest are worth 8 points. How many 8-point questions are there?

6. Plan A costs 15 dollars a month plus 0.25 dollar per text. Plan B costs 25 dollars a month plus 0.15 dollar per text. Which plan is cheaper for someone who sends more than 100 texts a month?

   A. It depends on the month

   B. Plan B

   C. They cost the same

   D. Plan A

7. A rectangle has a perimeter of 46 centimeters. Its length is 5 centimeters more than its width. Find the length.

8. Line A passes through (0, 0) and (4, 2). Line B passes through (0, 6) and (6, 0). Where do the lines intersect?

9. Kayla has 3 times as many stickers as Jo. If Kayla gives Jo 10 stickers, they will have the same number. How many stickers does Kayla have now?

10. At the school store, 4 pencils and 2 erasers cost 3.20 dollars. 2 pencils and 3 erasers cost 2.80 dollars. How much does one eraser cost?

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Challenge

Multi-step and word problems that stretch it.

1. Line 1 passes through (−1, −4) and (2, 5). Line 2 passes through (0, 2) and (3, 8). Where do the lines intersect?

2. Line 1 passes through (1, 1) and (3, 5). Line 2 passes through (0, 4) and (2, 8). Do the lines intersect?

3. A plane flies 1,200 miles in 3 hours with a tailwind and the same 1,200 miles in 4 hours against it. What is the wind speed?

4. A chemist mixes a 20% acid solution with a 50% acid solution to make 30 liters of a 40% solution. How many liters of the 50% solution does she use?

5. A zoo sells 40 tickets. Adult tickets cost 5 dollars and child tickets cost 2 dollars. Sales total 128 dollars. Ana writes $x + y = 128$ and $5x + 2y = 40$. What is wrong?

   A. She should write $5x - 2y$ instead of $5x + 2y$.

   B. She should divide each equation by 7.

   C. Nothing is wrong.

   D. She swapped the totals; it should be $x + y = 40$ and $5x + 2y = 128$.

6. Where do the lines $y = 0.4x + 3$ and $y = -0.6x + 8$ meet?

7. Phone A costs 600 dollars plus 30 dollars a month. Phone B costs 300 dollars plus 45 dollars a month. After how many months are the total costs equal, and what is that total?

8. The digits of a two-digit number add to 11. Reversing the digits makes the number 27 greater. What is the original number?

9. Two hikers start 18 miles apart and walk toward each other. They meet after 3 hours. One walks 2 miles per hour faster than the other. How fast does the faster hiker walk?

10. Tank A holds 200 liters and drains 8 liters per minute. Tank B holds 50 liters and fills 7 liters per minute. When will they hold the same amount, and how much will that be?