Math Contest: Word Problems

Solve each problem. Show your work and circle your final answer.

1. How many ounces of pure water must be added to 40 ounces of a 25% juice solution to make a 20% juice solution?

2. A coffee shop mixes beans that cost $6 per pound with beans that cost $9 per pound to make 30 pounds of a blend that costs $7 per pound. How many pounds of the $9 beans are used?

3. 12 liters of a 30% acid solution are mixed with 8 liters of a 55% acid solution. What percent acid is the resulting mixture?

4. How many pounds of peanuts that cost $4 per pound should be mixed with 12 pounds of cashews that cost $10 per pound to make a mix that costs $7 per pound?

5. A chemist has 6 liters of a 15% acid solution. How many liters of pure acid must be added to make a 40% acid solution?

6. The ages of three brothers are consecutive integers, and the sum of their ages is 42. How old is the oldest brother?

7. A father is 36 years old and his son is 6. In how many years will the father be 3 times as old as his son?

8. Jo is 4 years more than twice as old as Max. The sum of their ages is 40. How old is Jo?

9. Ann is 3 times as old as Bea. Ten years ago, Ann was 7 times as old as Bea. How old is Ann now?

10. The average age of 4 people in a room is 25. When a fifth person enters, the average age becomes 28. How old is the fifth person?

11. A mother was 26 years old when her daughter was born. Now the mother is exactly 3 times as old as her daughter. How old is the daughter?

12. Twin sisters are each 4 years younger than their older brother. The sum of the ages of all three is 49. How old is the brother?

13. The ages of Alex and Bella are in the ratio 3 to 5. In 10 years, the ratio of their ages will be 2 to 3. How old is Bella now?

14. A father is 28 years older than his son. In 7 years, the father will be 3 times as old as his son. How old is the son now?

15. Pablo is 6 years older than Quinn. Four years ago, Pablo was twice as old as Quinn. How old is Pablo now?

16. A moving walkway is 90 meters long and moves at 1.5 meters per second. Lena steps onto the beginning of the walkway and walks forward on it at 1.5 meters per second. How many seconds does it take her to reach the end?

17. A car travels 150 miles in 2.5 hours. At this same rate, how many minutes will it take the car to travel 50 miles?

18. A 330-mile trip took 6.5 hours, including a 30-minute stop for lunch. What was the car's average speed, in miles per hour, while it was moving?

19. A train 100 meters long and a train 150 meters long travel toward each other on parallel tracks at 20 meters per second and 30 meters per second. How many seconds pass from the moment the fronts of the two trains meet until the backs of the two trains have passed each other?

20. Two runners start together at the same point on a 400-meter circular track and run in the same direction, one at 5 meters per second and the other at 3 meters per second. After how many seconds will the faster runner be exactly one lap ahead?