

**Rate Problems (1A15)**

Often, **rate** refers to how long it takes for an event to happen.

**How many miles would a car traveling at 50 miles per hour travel in 5 hours?**

$$\textcircled{1} \quad \frac{50 \text{ miles}}{1 \text{ hour}} = \underline{\hspace{2cm}}$$

$$\textcircled{2} \quad \frac{50 \text{ miles}}{1 \text{ hour}} = \frac{\hspace{2cm}}{5 \text{ hours}}$$

$$\textcircled{3} \quad \frac{50 \text{ miles}}{1 \text{ hour}} = \frac{x \text{ miles}}{5 \text{ hours}}$$

$$\textcircled{4} \quad \begin{array}{ccc} 50 \text{ miles} & & x \text{ miles} \\ & \swarrow \quad \searrow & \\ & 1 \text{ hour} & 5 \text{ hours} \end{array}$$

$$50(5) = 1x$$

$$250 = x$$

$$\textcircled{250 \text{ miles} = x}$$

- $\textcircled{1}$  Begin by writing the rate as a fraction. Leave space for the fraction that will complete the proportion.
- $\textcircled{2}$  Match the units of the other value from the question with the units, top or bottom, from the rate that it goes with.
- $\textcircled{3}$  Fill in a variable for what the question is asking you to find.
- $\textcircled{4}$  Cross-multiply, then solve for  $x$

1) Anthony can write 5 songs in 30 minutes. His friend Dan can write the same number of songs in 45 minutes. How long will it take them write 5 songs together?

- A. 75
- B. 37.5
- C. 18
- D. 5

2) Rob can bake 12 trays of lasagna in 3 hours. His sister Navassa can bake the same number of trays of lasagna in 90 minutes. If they work together, how many hours will it take them to bake 12 trays of lasagna?

- A. 4.5
- B. 4
- C. 2.25
- D. 1

3) Domingo can paint 3 paintings in 3 hours. Lourdes can paint 3 paintings in 6 hours. If they work together, how many paintings can they paint in 2 hours?

- A. 6
- B. 5
- C. 4
- D. 3

4) Rafael can eat 6 slices of cheese pizza in half of an hour. Michelangelo can eat 6 slices of cheese pizza in 15 minutes. If they eat together, how long will it take them to consume 6 slices of cheese pizza?

- A. 7.5
- B. 10
- C. 15
- D. 22.5

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- 5) Alvin can put together 17 puzzles in 1 hour. It takes Theodore three times as long to put the same number of puzzles together. Working together, how many hours will it take them to put together 34 puzzles?
- A. 4  
B. 2  
C. 1.5  
D. 1
- 6) A train is traveling from Louisville to Coopertown at a speed of 100 miles per hour. If the distance between Louisville and Coopertown is 540 miles, at what time will the train reach Coopertown if it leaves Louisville at 12pm?
- A. 5:40 pm  
B. 5:24 pm  
C. 5:20 pm  
D. 5:12 pm
- 7) Alicia's mother works in an office 3 miles from home. Alicia leaves home and walks toward her mother's office at a speed of 2 miles per hour at the same time her mother leaves her office and walks toward home at a rate of 4 miles per hour. If Alicia and her mother take the exact same route, in how many minutes will they meet?
- A.  $\frac{1}{2}$   
B. 10  
C. 15  
D. 30
- 8) Maria is driving 300 miles from Oxford to Cardiff at a speed of 45 mph. If Joelle leaves Cardiff for Oxford at the same time that Maria leaves Oxford and drives at a speed of 5 mph, how long will it take the two cars to meet?
- A. 6 hours  
B. 4 hours  
C. 3 hours  
D. 2 hours
- 9) Two players are on opposite sides of a 120 yard soccer field. If both players run toward each other at speeds of 1.25 feet per second, in how many seconds will they meet?
- A. 72  
B. 60  
C. 48  
D. 36
- 10) Two trains leave from opposite sides of the same train track at the exact same time and are scheduled to reach each other in 135 minutes. If one train travels at a speed of 120 mph and the other travels at a speed of 80 mph, what is the total distance between them before they depart?
- A. 27,000 miles  
B. 8100 miles  
C. 900 miles  
D. 50 miles
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- 11) Leslie purchased one package of trail mix with 25% walnuts and another package with 5% walnuts. When Leslie combined the two packages, she had 8oz of trail mix with 15% walnuts. How many ounces of trail mix were in the package that was 25% walnuts?
- A. 0.4  
B. 2  
C. 4  
D. 5.4
- 12) Graham mixes 2 cups of 20% whole wheat flour with 3 cups of 2% whole wheat flour. What percent of the final mixture of flour is whole wheat?
- A. 4.6%  
B. 9.2%  
C. 6%  
D. 92%
- 13) Leon is building a house with lumber he purchased from two separate companies. Company A's lumber was 10% elm and Company B's lumber was 50% elm, and Leon's house consists of 10 tons of wood, of which 42% is elm, then how many tons wood did he buy from Company A?
- A. 8  
B. 5  
C. 4.2  
D. 2
- 14) David is making 20 pounds fruit salad to sell at a picnic with  $\frac{1}{4}$  pineapples and  $\frac{3}{4}$  watermelon. If pineapples cost \$2 per pound and watermelons cost \$.60 per pound, what is the least amount David can charge per pound of his fruit salad if he wants to recover his costs?
- A. \$2.6  
B. \$.95  
C. \$.85  
D. \$.65
- 15) Lisa is making a snack mix with  $\frac{1}{2}$  pretzels and  $\frac{1}{2}$  potato chips. If pretzels cost \$3 per pound and potato chips cost \$.74 per pound, how much will Lisa's snack mix cost per pound?
- A. \$3.75  
B. \$1.87  
C. \$1.63  
D. \$1.5
- 16) If a train travels 100 miles in 20 minutes, what is its speed?
- A. 5 miles per hour  
B. 100 miles per hour  
C. 300 miles per hour  
D. 500 miles per hour
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