3

speed time distance word problems

2012A   1. **Answer (D):** Because 20 seconds is $\frac{1}{3}$ of a minute, Cagney can frost $5 \div \frac{1}{3} = 15$ cupcakes in five minutes. Because 30 seconds is $\frac{1}{2}$ of a minute, Lacey can frost $5 \div \frac{1}{2} = 10$ cupcakes in five minutes. Altogether they can frost $15 + 10 = 25$ cupcakes in five minutes.

2013A

1. **Answer (C):** A 5-mile taxi ride costs $\$1.50 + 5(\$0.25) = \$2.75$.

2017B

2. **Answer (C):** Each lap took Sofia $\frac{100 \text{ m}}{4 \text{ m/s}} + \frac{300 \text{ m}}{5 \text{ m/s}} = 85$ seconds, so 5 laps took her $5 \cdot 85 = 425$ seconds, which is 7 minutes and 5 seconds.

2018B

2. **Answer (D):** Sam covered $\frac{1}{2} \cdot 60 = 30$ miles during the first 30 minutes and $\frac{1}{2} \cdot 65 = 32.5$ miles during the second 30 minutes, so he needed to cover $96 - 30 - 32.5 = 33.5$ miles during the last 30 minutes. Thus his average speed during the last 30 minutes was

$$\frac{33.5 \text{ miles}}{\frac{1}{2} \text{ hour}} = 67 \text{ mph.}$$

2007B   3. **Answer (B):** The student used $120/30 = 4$ gallons on the trip home and $120/20 = 6$ gallons on the trip back to school. So the average gas mileage for the round trip was

$$\frac{240 \text{ miles}}{10 \text{ gallons}} = 24 \text{ miles per gallon.}$$

2009B

3. **Answer (C):** The loss of 3 cans of paint resulted in 5 fewer rooms being painted, so the ratio of cans of paint to rooms painted is $3 : 5$. Hence for 25 rooms she would require $\frac{3}{5} \cdot 25 = 15$ cans of paint.

OR

If she used x cans of paint for 25 rooms, then $\frac{x+3}{30} = \frac{x}{25}$. Hence $25x + 75 = 30x$, and $x = 15$.

2014B

3. **Answer (E):** The fraction of Randy's trip driven on pavement was $1 - \frac{1}{3} - \frac{1}{5} = \frac{7}{15}$. Therefore the entire trip was $20 \div \frac{7}{15} = \frac{300}{7}$ miles.

2003A

4. (A) Mary walks a total of 2 km in 40 minutes. Because 40 minutes is 2/3 hr, her average speed, in km/hr, is $2/(2/3) = 3$.

2009A

4. **Answer (A):** Eric can complete the swim in $\frac{1/4}{2} = \frac{1}{8}$ of an hour. He can complete the run in $\frac{3}{6} = \frac{1}{2}$ of an hour. This leaves $2 - \frac{1}{8} - \frac{1}{2} = \frac{11}{8}$ hours to complete the bicycle ride. His average speed for the ride must be $\frac{15}{11/8} = \frac{120}{11}$ miles per hour.

2003B

5. (C) The area of the lawn is

$$90 \cdot 150 = 13{,}500 \text{ ft}^2.$$

Moe cuts about two square feet for each foot he pushes the mower forward, so he cuts $2(5000) = 10{,}000 \text{ ft}^2$ per hour. Therefore, it takes about $\frac{13{,}500}{10{,}000} = 1.35$ hours.