Date Completed: _____
Mentor Initials: _____

Rates

1. Between 10:30 am and 11:50 am, 15,520 visitors entered Knott's Berry Farm Amusement Park. Between 10:30 am and 11:50 am, an average of how many visitors per minute entered the park?

A) 25
B) 40
C) 110
D) 194

2. When Jamal began a driving trip, his car's odometer read 58 miles. After Jamal drove for 2 hours and 20 minutes, the odometer read 215 miles. Which of the following values is closest to Jamal's average driving speed, in miles per hour, during those 2 hours and 20 minutes?

A) 42
B) 48
C) 49
D) 67

3. At 9:00 am, Ella leaves Seattle in her car traveling south on I-5 toward Portland at an average speed of 62 mph. At precisely the same time, Jared leaves Portland in his car traveling north on I-5 towards Seattle at an average speed of 55 mph. The driving distance from Seattle to Portland is 180 miles. At what time, to the nearest minute, will they drive past each other on I-5?

A) 10:12 am
B) 10:31 am
C) 10:32 am
D) 10:33 am

4. Joana runs at a rate of 7 miles per hour. At that rate, how many miles will she run in 10 minutes?

A) $\frac{2}{3}$
B) $\frac{6}{7}$
C) $1\frac{1}{6}$
D) $1\frac{1}{3}$

5. A certain sports car has a maximum speed of 185 miles per hour. Which of the following is an expression for this maximum speed, approximately, in meters per second?
(Note: 1 mile ≈ 1609 meters)

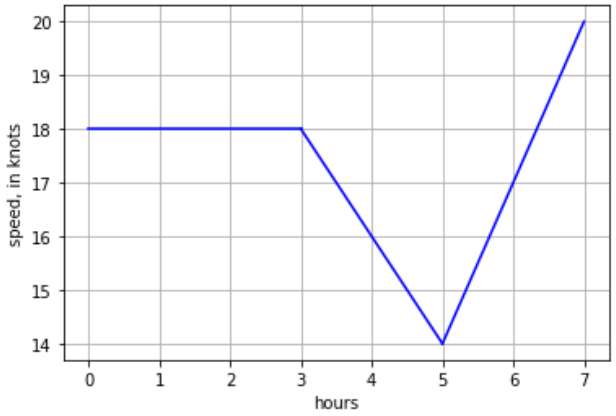
A) $\frac{185(1609)}{3600}$

B) $\frac{185(3600)}{1609}$

C) $\frac{185(1609)}{36000}$

D) $\frac{60(1609)}{3600}$

6. The graph below gives the speed, in *knots* (nautical miles per hour), of a cruise ship during a 7-hour period. Which of the following values is closest to the rate of change, in knots per hour, of the speed of the ship between hours 5 and 7?



A) 3
B) 6
C) 9
D) 11

7. A truck sprang a leak in its radiator, which held 350 ounces of fluid when it started to leak. Assuming the truck continues driving at 40 miles per hour and its radiator leaks 3 ounces of fluid per minute, approximately how many *miles* will the truck travel before the radiator is empty?

A) 8.8
B) 11.6
C) 44.2
D) 77.8

8. Chrissy and Mathias are side by side when they begin to run at the same time in the same direction around a track. Chrissy runs at a constant rate of 40 seconds per lap, while Mathias runs at a constant rate of 60 seconds per lap. How many seconds after beginning to run will Chrissy have run exactly 1 more lap than Mathias?

A) 20
B) 50
C) 80
D) 120

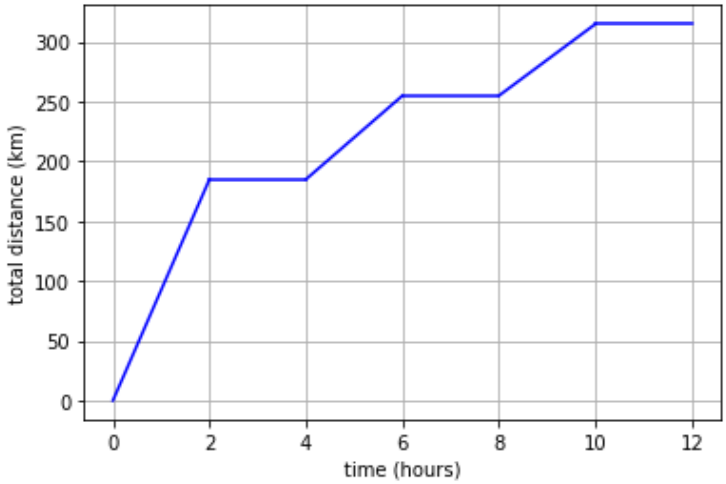
9. Hector ran at a rate of 6 miles per hour for 20 minutes and then walked at a rate of 3 miles per hour for 5 minutes. Which of the following gives the average rate, in miles per hour, at which he traveled over this 25-minute period?

A) $\frac{9}{25}$
B) $\frac{27}{5}$
C) $\frac{6}{50}$
D) $\frac{20}{15}$

10. Felix and Fernanda started a landscaping job together. When Felix stopped, he had completed $\frac{1}{3}$ of the job. When Fernanda stopped, she had completed $\frac{3}{5}$ of the job. Then Mandy completed the rest of the job in 3 hours. Assume that Felix, Fernanda, and Mandy all worked at the same rate. Which of the following values is closest to the number of hours it would have taken 1 of them to complete the entire job alone?

A) 16.38
B) 18.56
C) 22.16
D) 45.00

11. Ari traveled to 3 locations during a workday. Ari remained at each location a whole number of hours. The graph below shows the relationship between time, in hours, into her workday and total distance, in kilometers, traveled. Which of the following values is closest to Ari's average speed, in kilometers per hour, for the parts of the workday when she was traveling?



A) 40
B) 50
C) 65
D) 75

12. When Maria walks from class to home, she burns 4 calories per minute, and when she rides her bike from class to home, she burns 5 calories per minute. She walks for w minutes and rides her bike for b minutes for a combined total of 620 calories burned. Which equation represents this situation?

A) $\frac{1}{4}w + \frac{1}{5}b = 620$

B) $4w + 5b = 620$

C) $\frac{1}{4}w + \frac{1}{5}b = 5580$

D) $4w + 5b = 5580$

13. Gabriella and Tatiana each ran 8 laps (3,200 meters) around a 400-meter track without stopping. Gabriella ran at a constant speed of 300 meters per minute. Tatiana ran at a constant speed of 250 meters per minute. Both Gabriella and Tatiana began running at the same instant. How many laps did Tatiana have left to run when Gabriella had completed her run?

A) $\frac{2}{3}$

B) $1\frac{1}{3}$

C) 2

D) $2\frac{2}{3}$

14. The speed of one motorcycle exceeds 3 times the speed of another motorcycle by 20 mph. The speed of the slower motorcycle is g mph. Which of the following expressions represents the speed of the faster motorcycle, in miles per hour?

A) $\frac{1}{3}g + 20$

B) $\frac{1}{3}g - 20$

C) $3g + 20$

D) $20g + 3$

15. Christina and Robby plan to attend a concert in TulsA) Christina will drive 285 km to Tulsa at a constant speed of 90 km/hr, stopping one time for a 20-minute break. Robby will start 445 km from Tulsa and will drive at a constant speed of 110 km/hr for 90 minutes. He will take a 45-minute break and then drive to Tulsa at a constant speed of 85 km/hr. To the nearest tenth of an hour, Robby must leave how much earlier than Christina in order for them to arrive in Tulsa at the same time?

A) 1.9
B) 2.0
C) 3.4
D) 3.5