Linear Motion (Unit Rates Review) – Worksheet #1

1) Jane ran a 3500-meter race in 20 minutes. What was her average speed?
   \[ d = rt \]
   \[ \frac{3500}{20} = \frac{r \times 20}{20} \]
   \[ r = 175 \text{ meters/minute} \]

2) Hank set the cruise control at 62 miles per hour. After 1.5 hours, what distance had he traveled?
   \[ d = rt \]
   \[ d = 62(1.5) \]
   \[ d = 93 \text{ mi} \]

3) Judy gets on the treadmill and sets the pace at 8 miles per hour. She wants to run 22 miles. How long will it take her?
   \[ d = rt \]
   \[ \frac{22}{8} = \frac{8t}{8} \]
   \[ t = 2.75 \text{ hr} \]

4) Jimmy spent 20 minutes typing a 3,000 word essay. What’s his typing speed?
   \[ \frac{3,000 \text{ words}}{20 \text{ min}} = 150 \text{ words/minute} \]

5) A ball is rolling at a rate of 2.85 feet per second. If it continues to roll for 45 seconds, how far will it have rolled?
   \[ d = rt \]
   \[ d = 2.85(45) \]
   \[ d = 128.25 \text{ ft} \]

6) If the speed of light is approximately 300,000 kilometers per second, how long will it take for light to travel 800,000 kilometers?
   \[ d = rt \]
   \[ \frac{800,000}{300,000} = \frac{300,000 t}{300,000} \]
   \[ t = 2.6 \text{ seconds} \]

7) The school purchases 16 reams of colored paper for $56. What’s the unit rate?
   \[ \frac{\$56}{16 \text{ reams}} = \$3.50/\text{ream} \]

8) Joe’s car gets 450 miles on just 12 gallons of gas. What is the car’s gas mileage?
   \[ \frac{450 \text{ miles}}{12 \text{ gallons}} = 37.5 \text{ miles/gallon} \]
9) A train is traveling at 34 miles per hour. How long until the train has traveled 100 miles? 
\[ D = rt \]
\[ \frac{100}{34} = \frac{34t}{34} \]
\[ \approx 2.9 \text{ hr} \]

10) Harold bought 5 pounds of bananas for $2.60. What is the unit price per pound?
\[ \frac{2.60}{5 \text{ pounds}} = \frac{\$0.52}{\text{ pound}} \]

11) Big John finished the 200-meter dash in 32 seconds. What was his average speed?
\[ D = rt \]
\[ 200 = r \cdot \frac{32}{32} \]
\[ 6.25 = r \]

12) The 18-ounce jar of salsa costs $2.34. What is the price per ounce?
\[ \frac{2.34}{18 \text{ oz}} = \frac{\$0.13}{\text{ oz}} \]

13) A plane traveling at 216 miles per hour is in the air for 8 hours. How far did it travel?
\[ D = rt \]
\[ d = 216(8) \]
\[ d = 1,728 \text{ mi} \]

14) Bill was on the treadmill for 30 minutes. He had run 4 miles in that time. What was his average speed?
\[ D = rt \]
\[ \frac{4}{\frac{30}{60}} \text{ OR } \frac{4}{0.5} \]
\[ r = 0.13 \frac{\text{ mi}}{\text{ min}} \]
\[ r = 8 \frac{\text{ mi}}{\text{ hr}} \]

15) A 20-lb bag of cat food costs $21.00. What is the unit price?
\[ \frac{21.00}{20 \text{ lb}} = \frac{\$1.05}{\text{ lb}} \]

16) Danny wants to visit his mom, who lives 186 miles away. How fast must he go to get there in 3 hours?
\[ D = rt \]
\[ 186 = r \cdot \frac{3}{3} \]
\[ r = 62 \frac{\text{ mi}}{\text{ hr}} \]