| **tRANSPORTATION PROBLEMS WORKSHEET** | NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_•cLASS period: \_\_\_\_\_ |
| --- | --- |
| **Scenario**You are a Logistics Manager for BSK Warehouse & Distribution. Your company provides storage and shipping services for several vendors located throughout the U.S. from their headquarters in Memphis, TN. As the Logistics Manager, you are responsible for:* Read a mileage table to ensure that truck drivers are calculating the required info on their route planning forms
* Use proportions to calculate driving times and rates
* Determine distance formulas in order to plan most efficient routes for distribution
* Use odometer readings to calculate scheduled maintenance

At the end of each activity, make sure to complete the appropriate section in the Trucker’s Log (attached).**Activity 1 – Using a Mileage Table**Your drivers are making deliveries in the Tri-State area today. Use the mileage table to answer the following questions about your driver’s routes.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | Memphis,TN | Jackson, TN | Olive Branch, MS | Little Rock, AR | Mt. Vernon | Salem |
| Memphis | 0 | 86 | 26 |  137 | 62 | 81 |
| Jackson, TN | 86 | 0 | 88 |  222 | 82 | 70 |
| Olive Branch, MS | 26 | 88 | 0 |  161 | 69 | 46 |
|  Little Rock, AR | 137 | 222 | 161 |  0 | 45 | 67 |

.1. Driver leaves distribution center in Memphis and drives to the first stop in Little Rock. How many miles is this?
2. From Little Rock driver heads to Olive Branch. How many miles is this?
3. From Olive Branch driver heads to Jackson. How many miles is this?
4. From Jackson driver heads back to the distribution center in Memphis. How many total miles did the driver drive?
 | **Objective(s)**Use mileage tables, proportions, distance formula, and odometer readings to solve truck driving, delivery, and maintenance problems.**TN State Standards**Components of Supply Chain Management #13 - …Calculate the costs for various shipments using different shipping methods.**Academic Integration**Algebra I – Mr. Jac RonaiA1.A.CED.A.2 Create equations in two or more variables to represent relationships between quantities; graph equations with two variables on coordinate axes with labels and scales.**Aspects of Industry**Management and Finance**Time**(2) 50-minute Class Periods – rollover to homework if necessary**Grade** Each question is worth 5 pts for a total of 80 pts. |

### **Activity 2 – Using Proportions to Calculate Driving Time and Rates**

Another trip planning task as a truck driver is to compute the drive time for each leg of the delivery route. One method used to calculate drive time and driving rates is a proportion.

1. Suppose you are driving from Memphis to Little Rock, a distance of 137 miles. If you average 60 miles per hour (mph), approximately how long will the trip take you?
	1. If you leave Memphis at 7:30 am, what time will you arrive in Little Rock?
2. At 9:45 am, you leave your stop in Olive Branch and drive to Jackson, TN, a distance of 88 miles. If you drive 65 mph, approximately how long will it take you to get from Olive Branch to Jackson? What time will you arrive in Jackson?
3. Due to road construction, the 137-mile trip from Memphis to Little Rock took 4 hours. What was your average mph for this trip?

**Activity 3 – Using the Distance Formula**

1. If you drive 195 miles for 3 hours, what is your average rate of speed (mph) for this trip?
2. On Monday, you left the distribution center in Memphis at 8:00 am and drove 212 miles to your delivery stop in Nashville, arriving at 11:00 am. What was your average rate of speed for this trip?
3. If you drive at a rate of 60 mph for 105 miles, how long will it take you to get to your stop? (Write your answer in hours and minutes.)
4. From Knoxville, you drive 391 miles to return to the distribution center in Memphis. If the trip takes you 5 hours and 46 minutes, what was your rate of speed for this trip? (Round to the nearest whole number.)

**Activity 4 – Using Odometer Readings to Schedule Maintenance**

1. Trucks receive oil changes approximately every 7500 miles. If the driver’s truck received an oil change at 53218 miles, when is it due for its next oil change? If the odometer reads 60283 miles, how many more miles can this truck be driven before the next oil change?
2. Trucks receive safety inspections approximately every 15,000 miles. If the driver’s truck received a safety check at 45262 miles, when is it due for the next safety inspection? If the odometer reads 59424 miles, how many more miles can this truck be driven before the next inspection?
3. Truck brakes are replaced every 20,000 miles. If the brakes were replaced on the driver’s truck at 62435 miles, when is it due for new brakes? If the odometer reads 79862 miles, how many more miles can the truck be driven before it is due to have the brakes replaced?