

Activity: Warehouse Packing and

Loading Calculations

**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Class \_\_\_**

***Objective****: Students will be able to calculate area and volume, convert inches and feet, and compute percentages to accurately solve problems involving packing pallets and loading trucks.*

***Workplace Scenario:*** *You are a supervisor at BSP Warehouse and Distribution, Inc. Your warehouse provides storage and distribution services for several vendors throughout the Midwest. One of your primary responsibilities is to train and supervise the shipping and receiving clerks who work at your warehouse. This week you are training Julie, a new employee, on the packing and loading procedures for outbound shipments. You tell Julie that when customer orders are received, warehouse pickers use forklifts, hand trucks, and wheeled bins to retrieve the products from warehouse racks. The products are then brought to the packing zone of the warehouse to be scanned and packed on pallets. Cases are stacked on pallets in a variety of patterns, depending on the size and weight of the cartons and other product requirements.*

***Directions****: Complete the following Warehouse Packing and Loading calculations. After you have completed assignment, turn it in and take the Quiz. Assignment is worth* ***60 points*** *– Quiz is worth* ***40 points.***

**Part I: Packing Pallets – Calculating Area**

*You received the following packing orders. Make all the required calculations to pack the pallets for these orders.*

1. You receive a packing order for 400 cases of item #103. The case dimensions for this item are 12” L x 15” W x 10” H. The maximum case stacking height for this product is 8 cases.
   1. What is the total number of cases you can fit on one layer of a 48” x 40” pallet?
   2. If you stack the cases 8 high, how many total cases can you load on one pallet?
   3. How many pallets will you need for this order?
2. You receive a packing order for 240 cases of item #104. The case dimensions for this item are 24” L x 20” W x 20” H. The maximum pallet height for the truck delivering this order is 7 feet.
   1. What is the total number of cases you can fit on one layer of a 48” x 40” pallet?
   2. How many cases high can you stack this order on a pallet?
   3. How many total cases will you stack on one pallet?
   4. How many pallets will you need for this order?
3. You receive a packing order for 480 cases of item #105. The case dimensions for this item are 15” L x 10.5” W x 8” H. The maximum pallet height for the truck delivering this order is 7 feet.
   1. What is the total number of cases you can fit on one layer of a 36” x 36” pallet?
   2. How many cases high can you stack this order on a pallet?
   3. How many total cases will you stack on one pallet?
   4. How many pallets will you need for this order?
4. You receive a packing order for 360 cases of item #106. The case dimensions for this item are 18.5” L x 12.5” W x 15” H. The maximum case stacking height for this product is 5 cases.
   1. What is the total number of cases you can fit on one layer of a 48” x 40” pallet?
   2. How many total cases will you stack on one pallet?
   3. How many pallets will you need for this order?

**Part II: Packing Pallets – Calculating Weight**

*Perform the weight calculations for each of the following packing orders.*

1. You receive a packing order for 400 cases of item #203. You pack 80 cases each on 5 pallets. Each case weighs 24 lbs. and each pallet weighs 45 lbs. The maximum loaded pallet weight for this order is 2000 lbs.
2. What is the weight of one loaded pallet?
3. Is the weight of the load safe?
4. What is the total load weight for the entire order?
5. You receive a packing order for 240 cases of item #204. You pack 16 cases each on 15 pallets. Each case weighs 43.5 lbs. and each pallet weighs 45 lbs. The maximum loaded pallet weight for this order is 1500 lbs.
6. What is the weight of one loaded pallet?
7. Is the weight of the load safe?
8. What is the total load weight for the entire order?
9. You receive a packing order for 480 cases of item #205. You pack 80 cases each on 6 pallets. Each case weighs 25 lbs. and each pallet weighs 45 lbs. The maximum loaded pallet weight for this order is 2000 lbs.
10. What is the weight of one loaded pallet?
11. Is the weight of the load safe?
12. What is the total load weight for the entire order?
13. You receive a packing order for 360 cases of item #206. You pack 40 cases each on 9 pallets. Each case weighs 36.3 lbs. and each pallet weighs 45 lbs. Maximum loaded pallet weight for this order is 1500 lbs.
14. What is the weight of one loaded pallet?
15. Is the weight of the load safe?
16. What is the total load weight for the entire order?

**Part III: Loading Trucks – Volume and Weight**

1. Your company has the following trucks available for outgoing shipments. Calculate the total volume for each truck.
   1. Truck A: 28-foot truck will hold a maximum of 12 standard pallets. It has a weight limit of 20,000 lbs. The interior load dimensions for this truck are 27’ L x 7’ W x 6.5 H.
   2. Truck B: 42-foot truck will hold a maximum of 20 standard pallets. It has a weight limit of 38,000 lbs. The interior load dimensions for this truck are 41’ L x 7’ W x 7.5’ H.
   3. Truck C: 53-foot tractor trailer will hold a maximum of 26 standard pallets It has a weight limit of 45,000 lbs. The load dimensions for this truck are 52’ L x 7.5’ W x 8’ H.
2. Find the volume and weight of one loaded pallet and the entire order for each of the following.
   1. An order has 12 full pallets and each pallet contains 40 cases. Each case weighs 35.5 lbs. and each empty pallet weighs 45 lbs. The dimensions for each loaded pallet are 48” L x 40” W x 66” H
   2. An order has 20 full pallets and each pallet contains 36 cases. Each case weighs 47.3 lbs. and each empty pallet weighs 45 lbs. The dimensions for each loaded pallet are 48” L x 40” W x 78” H.
   3. An order has 24 full pallets and each pallet contains 100 cases. Each case weighs 18.2 lbs. and each empty pallet weighs 45 lbs. The dimensions for each loaded pallet are 48” L x 40” W x 84” H
3. Find the percent of capacity for each of the following.
   1. You load truck A with the order in #2a above. What percent of the truck’s weight capacity would the order require? What percent of the truck’s volume capacity would the order require?
   2. You load truck B with the order in #2b above. What percent of the truck’s weight capacity would the order require? What percent of the truck’s volume capacity would the order require?
   3. You load truck C with the order in #2c above. What percent of the truck’s weight capacity would the order require? What percent of the truck’s volume capacity would the order require?