

Modes of Transportation

The General Rule of Thirty and Some Zeroes

I can carry about 35 pounds in my backpack. Soldiers aim for a maximum pack weight of about 45 pounds for long marches. A child or older person might not want to carry more than 10 or 15 pounds. Let's assume an average person can carry 30 pounds all day.

We can add zeroes to that number to compare other modes of transportation:

30 pounds - a walking **human being** - up to double that for a smooth, level trail.

300 pounds - a **horse** carrying five bushels of corn, or one cowboy plus a saddle, blanket, rope, canteen, rifle, bullets, and a few other small things.

3000 pounds - a pickup truck today, or the horse-drawn **wagon** of one pioneer family, let's say the clothing, tools, and other supplies for a family of 4-6 people.

30,000 pounds - a **canal boat** in the old days, or an 18-wheel **truck** on the road today. To avoid road damage, trucks are legally limited to 80,000 total pounds - including truck, spare tires, toolkit, cargo, driver, sandwich, coffee, etc. Most trucks, however, are full long before they reach the weight limit.

300,000 pounds - the largest cargo **airplane** for a short distance. To go farther, planes need more fuel, so average load is more like 250,000 pounds.

3,000,000 pounds - a **river barge** or 60-car mixed **train**. Like other modes on this list, trains and river boats vary widely in sizes and capacities, so this is also just an average figure, but it is in the right ballpark.

30,000,000 pounds - 120-car **unit coal train** or "handysize" **ship**. A handysize ship can dock in most ocean ports in the world even at low tide. A 120-car coal train can supply a large power plant for one day.

300,000,000 pounds - large **container ship**. This kind of ship hauls big steel boxes that can be loaded onto a truck or train. A standard container is 20x8x8.5 feet. It can hold 48,000 pounds. Most containers weigh less, because they carry things like potato chips, shoes, or chairs, which fill the box without reaching the weight limit. A big container ship holds 15,000 TEUs (20-ft equivalent units). A "Panamax" is a ship that barely fits through the Panama Canal. It can hold only about 5000 containers or 150,000,000 pounds. That's why the biggest container ships have to stay in one ocean all their lives! A **Great Lakes ore boat** holds roughly as much as a Panamax ship. The **Great Lakes** are a globally unique resource, because huge ships are a cheap way to move coal and iron ore to the steel mills in Chicago, Detroit, and other cities.

1. How many horses were needed to carry the load from one canal boat? _____
2. How many pickup trucks are needed to carry the load from one jumbo jet? _____
3. How many old wagons would it take to move the coal from a new unit train? _____
4. How many river barges would be filled by the load from one Panamax ship? _____