

Activity - Pack the Truck

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Directions: You are in charge of 1 expedition truck, in which you will carry yourself and 3 other team members on a 4-month (120-day) expedition. You must take into account 6 important packing rules:

1. You cannot pack more than the carrying capacity of the truck (or the truck will get stuck in desert sand).
2. You cannot overload the roof rack (or it will collapse and cause an accident).
3. You cannot put people on the roof rack (they could fall off).
4. You cannot put gas cans inside the truck (the smell of gas is not safe or pleasant for passengers).
5. You must pack the truck emergency kit near the rear door (in an emergency, the tire-jack and flashlight must be accessible).
6. You must bring enough food for each person each day in the field.

Carrying capacity of your truck and other weight information are listed below. Use this information to answer the questions. Show your calculations under each question.

Weight limitations

Truck carrying capacity	4000 pounds
Roof rack carrying capacity	200 pounds

Weight of a team member and personal supplies

Body weight of 1 person	150 pounds
Baggage for 1 person	100 pounds
Tent for 1 person	20 pounds
1 day of food for 1 person	5 pounds

Weight of equipment

Jackhammer	400 pounds
Excavation tools	150 pounds
4 filled gas cans	200 pounds
Truck emergency kit	20 pounds
Medical kit	20 pounds

Questions

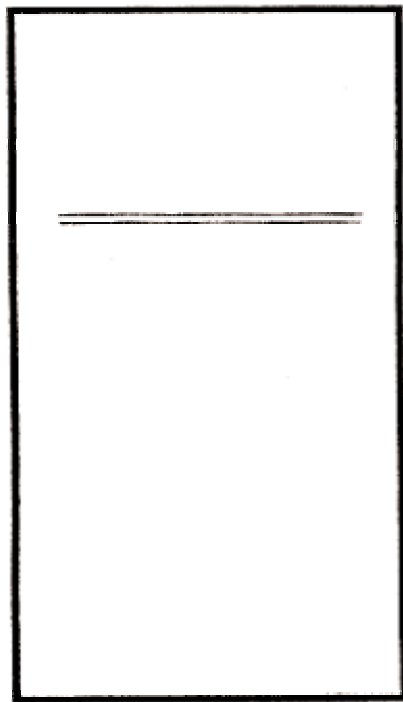
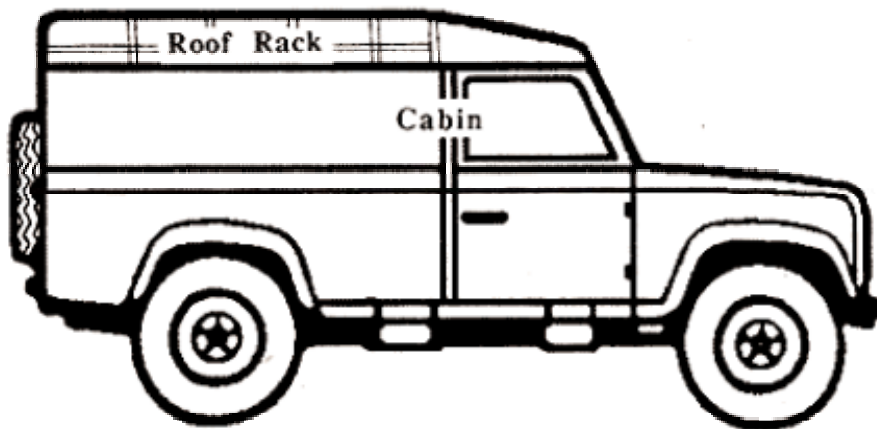
1. What is the weight of 1 team member?

2. What is the weight of 1 team member with his/her baggage, a tent, and enough food to last the 4-month (120-day) expedition?
(HINT: First you need to multiply the weight of food used in one day by one person (5 pounds) by 120 days. Then add this total food weight needed for one person to the weight of the person, the baggage, and the tent)

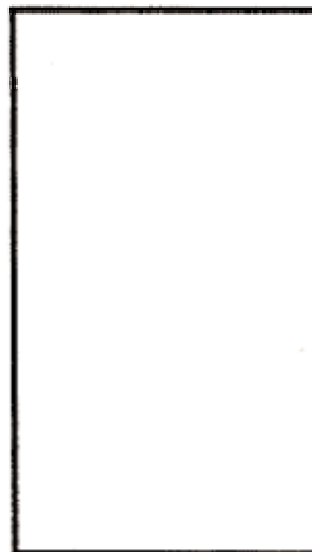
3. What is the total weight of the people in your truck with all personal baggage, person tents, and enough food for the 4-month expedition?
(HINT: Since there are 4 people in your truck, multiply by 4 the total weight you calculated for one person in question 2)

4. The only optional piece of equipment for the expedition is the jackhammer, which might help if the rock around a fossil is very hard. All the other equipment items are essential to bring (excavation tools, extra gas, and special kits). Can you bring the jackhammer, or is it too heavy when all other supplies essential to the survival of the team are packed? (HINT: Calculate the total weight of all equipment and add it to the weight calculated in questions 3 and see if it exceeds the carrying capacity of the truck.)

5. Sketch the passengers and the items that you will bring on the plan for the inside of the truck (cabin) and for the roof rack. Make sure you have not violated any of the 6 packing rules.



Cabin



Roof

Extra Challenge:

6. The fieldwork is over and your team has discovered many heavy fossils. You know that it takes 5 days to return home from the field, so you put this weight of food back in the truck, (Hint: $5 \text{ days} \times 4 \text{ persons} \times 5 \text{ pounds of food per day} = 100 \text{ pounds}$) If our truck returns from the field with the team and all of the personal gear and equipment that were originally packed, what is the maximum weight of the fossils that your truck could bring home?