Q1: List the part number for every part that is shipped by more than one supplier.

$$\pi_{\text{pnum}}(\sigma_{\text{snum1}\neq\text{snum2}}(\text{Shipments} \bowtie_{\text{snum1}\neq\text{snum2}} (\text{Shipments})))$$

Q2: Find the average weight of all parts.

$$\rho(\text{Parts}, \pi_{\text{AVG(weight)}}(\text{Parts}))$$

Q3: For each part list the part number and the total quantity in which that part is shipped and order the results in descending order of the total quantity shipped. Name the total quantity shipped in the result as total Shipped.

$$\rho(\text{TotalQuantity}, \pi_{\text{pnum, SUM(quantity) AS total\_shipped}}(\text{Shipments}))\sigma_{\text{total\_shipped}>0}(\text{TotalQuantity})$$

Q4: List only the names of those suppliers who ship a part that weighs more than 200.

$$\pi_{\text{sname}}(\sigma_{\text{weight}>200}(\text{Suppliers} \bowtie_{\text{snum}} (\text{Shipments} \bowtie_{\text{pnum}} (\text{Parts}))))$$

Q5: List the names of those cities in which both a supplier and a job are located.

$$\pi_{\text{city}}(\text{Suppliers}) \cap \pi_{\text{city}}(\text{Jobs})$$

Q6: List the names of those jobs that receive a shipment from supplier number S1.

$$\pi_{\text{jname}}(\text{Jobs} \bowtie_{\text{jnum}} (\sigma_{\text{snum}='S1'}(\text{Shipments})))$$

Q7: List the names of those parts that are not shipped to any job.

$$\pi_{\text{pname}}(\text{Parts} - \pi_{\text{pname}}(\text{Parts} \bowtie_{\text{pnum}} (\text{Shipments})))$$

Q8: List the names of those suppliers who ship part number P2 to any job.

$$\pi_{\text{sname}}(\sigma_{\text{pnum}='P2'}(\text{Suppliers} \bowtie_{\text{snum}} (\text{Shipments})))$$

Q9: List the names of those suppliers who ship at least one red part to any job.

$$\pi_{\text{sname}}(\sigma_{\text{color}='RED'}(\text{Suppliers} \bowtie_{\text{snum}} (\text{Shipments} \bowtie_{\text{pnum}} (\sigma_{\text{color}='RED'}(\text{Parts})))))$$

Q10: List the part number for every part that is shipped more than once (the part must be shipped more than one time).

$$\pi_{\text{pnum}}(\sigma_{\text{count}>1}(\rho(\text{count}, \pi_{\text{pnum, COUNT(pnum)}}(\text{Shipments}))))$$