Problem 1 - Jefferson's Method

A bullet train system assigns trains to certain routes based on the daily ridership of each route. The system runs 50 trains.

Routes	A	B	C	D
Ridership	$150,000$	$240,000$	$35,000$	$175,000$

The following questions will walk you through apportionment under Jefferson's method.

1. Start by finding the standard divisor and the standard quotas for each route.

   Standard divisor: _____

Routes	A	B	C	D
Standard quota				

2. Under Jefferson's method, each state is apportioned its lower quota.

Routes	A	B	C	D	$Total$
Lower quota					

3. Notice that the total above is not 50. If the total is less than 50, pick a divisor slightly lower than the one you just used to calculate the quotas, and recalculate the quotas. If the total is more than 50, pick a divisor slightly higher than the one you just used to calculate the quotas, and recalculate the quotas.

Routes	A	B	C	D	$Total$
New lower quota					

   Keep repeating this step, adjusting the divisor until the lower quotas add up to 50.

Routes	A	B	C	D	$Total$
New lower quota					

Routes	A	B	C	D	$Total$
New lower quota					

Routes	A	B	C	D	$Total$
New lower quota					

Routes	A	B	C	D	$Total$
New lower quota					

Problem 2 - Jefferson's Method

A free clinic has a rota of 112 doctors which it needs to assign to four six-hour shifts. It decides to apportion the doctors using Jefferson's method, based on the number of patients treated in each shift.

Shifts	Morning	Afternoon	Night	Swing
Patients	2050	4500	5550	1900

The following questions will walk you through apportionment under Jefferson's method.

1. Start by finding the standard divisor and the standard quotas for each shift.

   Standard divisor: _____

Shifts	Morning	Afternoon	Night	Swing
Standard quota				

2. Under Jefferson's method, each state is apportioned its lower quota.

Shifts	Morning	Afternoon	Night	Swing	*Total*
Lower quota					

3. Notice that the total above is not 112. If the total is less than 112, pick a divisor slightly lower than the one you just used to calculate the quotas, and recalculate the quotas. If the total is more than 112, pick a divisor slightly higher than the one you just used to calculate the quotas, and recalculate the quotas.

Shifts	Morning	Afternoon	Night	Swing	*Total*
New lower quota					

   Keep repeating this step, adjusting the divisor until the lower quotas add up to 50.

Shifts	Morning	Afternoon	Night	Swing	*Total*
New lower quota					

Shifts	Morning	Afternoon	Night	Swing	*Total*
New lower quota					

Shifts	Morning	Afternoon	Night	Swing	*Total*
New lower quota					

Shifts	Morning	Afternoon	Night	Swing	*Total*
New lower quota					

Problem 3 - Adams' Method

A bullet train system assigns trains to certain routes based on the daily ridership of each route. The system runs 50 trains.

Routes	A	B	C	D
Ridership	$150,000$	$240,000$	$35,000$	$175,000$

The following questions will walk you through apportionment under Adams' method.

1. Start by finding the standard divisor and the standard quotas for each route.

   Standard divisor: _____

Routes	A	B	C	D
Standard quota				

2. Under Adams' method, each state is apportioned its upper quota.

Routes	A	B	C	D	$Total$
Upper quota					

3. Notice that the total above is not 50. If the total is less than 50, pick a divisor slightly lower than the one you just used to calculate the quotas, and recalculate the quotas. If the total is more than 50, pick a divisor slightly higher than the one you just used to calculate the quotas, and recalculate the quotas.

Routes	A	B	C	D	$Total$
New upper quota					

   Keep repeating this step, adjusting the divisor until the lower quotas add up to 50.

Routes	A	B	C	D	$Total$
New upper quota					

Routes	A	B	C	D	$Total$
New upper quota					

Routes	A	B	C	D	$Total$
New upper quota					

Routes	A	B	C	D	$Total$
New upper quota					

Problem 4 - Adams' Method

A free clinic has a rota of 112 doctors which it needs to assign to four six-hour shifts. It decides to apportion the doctors using Adams' method, based on the number of patients treated in each shift.

Shifts	Morning	Afternoon	Night	Swing
Patients	2050	4500	5550	1900

The following questions will walk you through apportionment under Adams' method.

1. Start by finding the standard divisor and the standard quotas for each shift.

   Standard divisor: _____

Shifts	Morning	Afternoon	Night	Swing
Standard quota				

2. Under Adams' method, each state is apportioned its upper quota.

Shifts	Morning	Afternoon	Night	Swing	*Total*
Upper quota					

3. Notice that the total above is not 112. If the total is less than 112, pick a divisor slightly lower than the one you just used to calculate the quotas, and recalculate the quotas. If the total is more than 112, pick a divisor slightly higher than the one you just used to calculate the quotas, and recalculate the quotas.

Shifts	Morning	Afternoon	Night	Swing	*Total*
New upper quota					

   Keep repeating this step, adjusting the divisor until the lower quotas add up to 50.

Shifts	Morning	Afternoon	Night	Swing	*Total*
New upper quota					

Shifts	Morning	Afternoon	Night	Swing	*Total*
New upper quota					

Shifts	Morning	Afternoon	Night	Swing	*Total*
New upper quota					

Shifts	Morning	Afternoon	Night	Swing	*Total*
New upper quota					

Problem 5 - Webster's Method

A bullet train system assigns trains to certain routes based on the daily ridership of each route. The system runs 50 trains.

Routes	A	B	C	D
Ridership	$150,000$	$240,000$	$35,000$	$175,000$

The following questions will walk you through apportionment under Webster's method.

1. Start by finding the standard divisor and the standard quotas for each route.

   Standard divisor: _____

Routes	A	B	C	D
Standard quota				

2. Under Webster's method, each state is apportioned its quota rounded in the conventional way.

Routes	A	B	C	D	$Total$
Rounded quota					

3. Notice that the total above is not 50. If the total is less than 50, pick a divisor slightly lower than the one you just used to calculate the quotas, and recalculate the quotas. If the total is more than 50, pick a divisor slightly higher than the one you just used to calculate the quotas, and recalculate the quotas.

Routes	A	B	C	D	$Total$
New rounded quota					

   Keep repeating this step, adjusting the divisor until the rounded quotas add up to 50.

Routes	A	B	C	D	$Total$
New rounded quota					

Routes	A	B	C	D	$Total$
New rounded quota					

Routes	A	B	C	D	$Total$
New rounded quota					

Routes	A	B	C	D	$Total$
New rounded quota					

Problem 6 - Webster's Method

A free clinic has a rota of 112 doctors which it needs to assign to four six-hour shifts. It decides to apportion the doctors using Webster's method, based on the number of patients treated in each shift.

Shifts	Morning	Afternoon	Night	Swing
Patients	2050	4500	5550	1900

The following questions will walk you through apportionment under Webster's method.

1. Start by finding the standard divisor and the standard quotas for each shift.

   Standard divisor: _____

Shifts	Morning	Afternoon	Night	Swing
Standard quota				

2. Under Webster's method, each state is apportioned its quota rounded in the usual way.

Shifts	Morning	Afternoon	Night	Swing	*Total*
Rounded quota					

3. Notice that the total above is not 112. If the total is less than 112, pick a divisor slightly lower than the one you just used to calculate the quotas, and recalculate the quotas. If the total is more than 112, pick a divisor slightly higher than the one you just used to calculate the quotas, and recalculate the quotas.

Shifts	Morning	Afternoon	Night	Swing	*Total*
New rounded quota					

   Keep repeating this step, adjusting the divisor until the rounded quotas add up to 50.

Shifts	Morning	Afternoon	Night	Swing	*Total*
New rounded quota					

Shifts	Morning	Afternoon	Night	Swing	*Total*
New rounded quota					

Shifts	Morning	Afternoon	Night	Swing	*Total*
New rounded quota					

Shifts	Morning	Afternoon	Night	Swing	*Total*
New rounded quota					