



LineUp With Math™

Math-Based Decisions in Air Traffic Control

Student Workbook B

- Resolving Air Traffic Conflicts by **Changing Route**
 - **2 planes**, each at the same speed
 - Worksheets for Simulator problems 2-1, 2-2, 2-3



- Simulator at: www.atcsim.nasa.gov



American 12, cleared
direct MINAH to
Modesto.

Investigator: _____

An Airspace Systems
Program Product

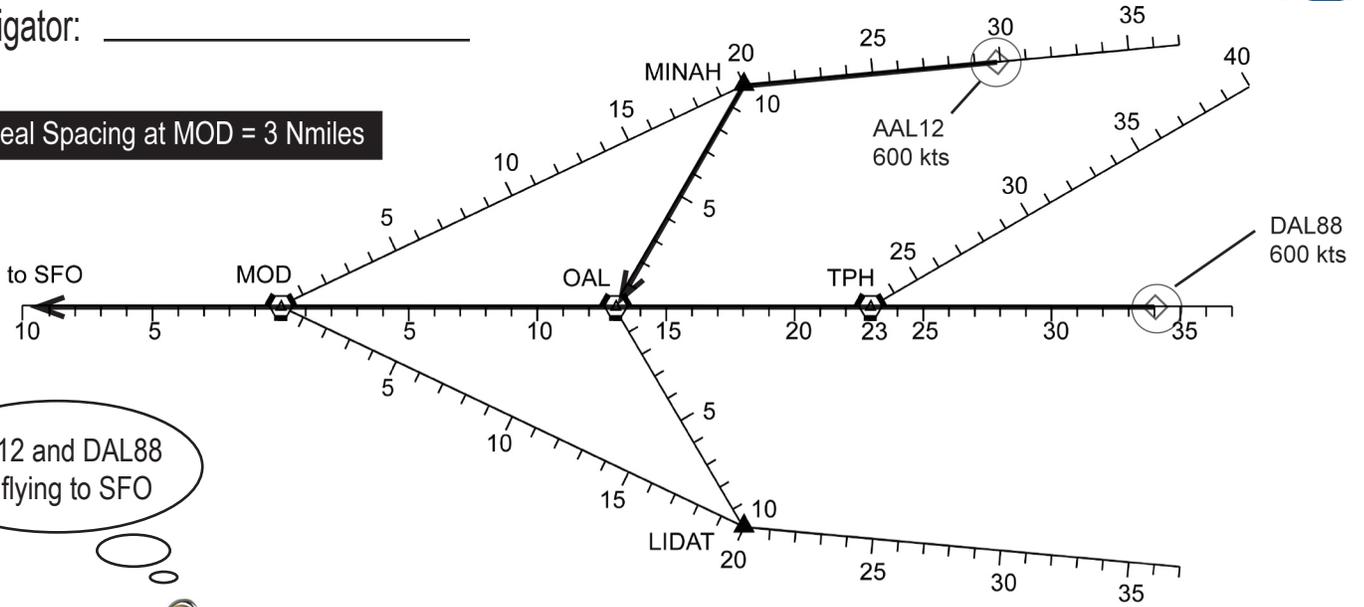


Problem 2-1



Investigator: _____

Ideal Spacing at MOD = 3 Nmiles



AAL12 and DAL88 are flying to SFO



Understand the Situation

- 1 The plane speeds are: Same Different
- 2 The plane routes intersect first at:

Predict Aircraft Positions

- 3 Which plane is closer to OAL? (This plane has a "headstart".) "Headstart" = nautical miles
- 4 Which plane will arrive first at OAL? Spacing = nautical miles
- 5 When that plane arrives at OAL, the spacing will be the same as different from the "headstart".

Check Separation

- 6 Will the spacing at OAL be at least the minimum separation of 2 nautical miles? Yes No
- 7 How much extra spacing is needed to have the ideal spacing of 3 nautical miles? nautical miles
- 8 What could the controller do to achieve at least ideal spacing?

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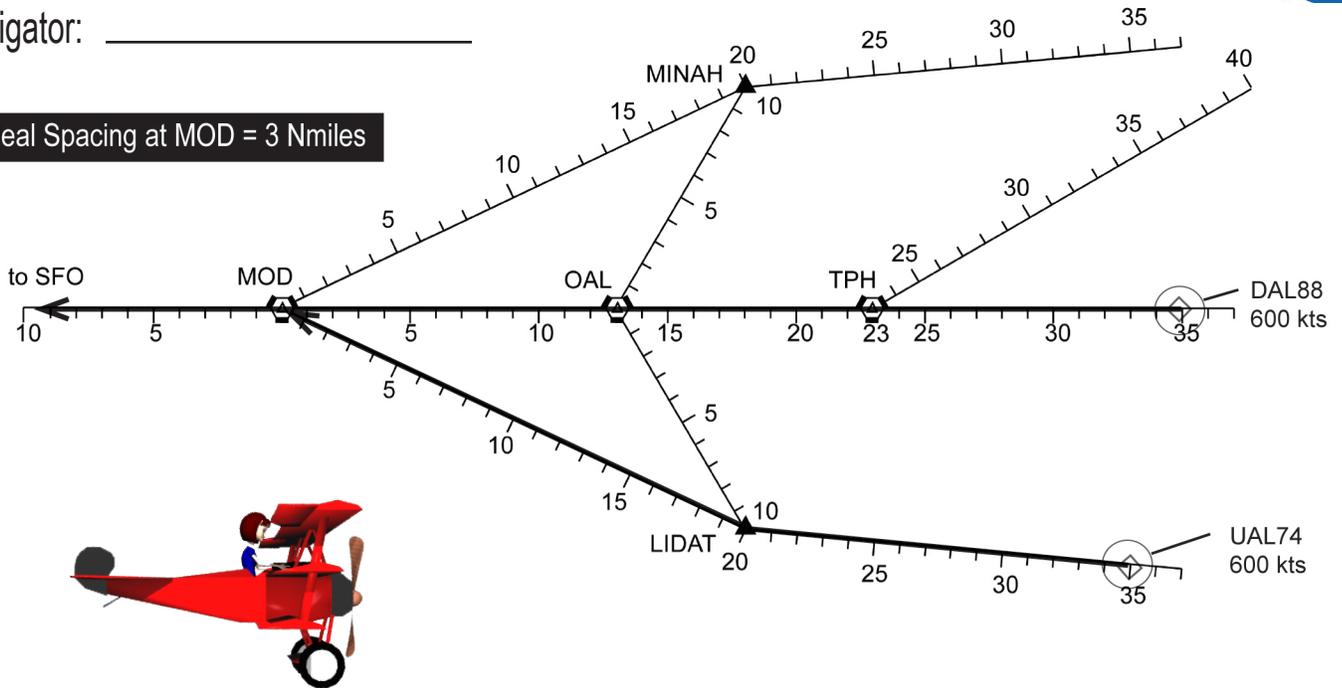


Problem 2-2



Investigator: _____

Ideal Spacing at MOD = 3 Nmiles



1

Fill in the table to determine if the 2 planes have the ideal spacing where the routes meet.

Where do the routes meet?	Headstart Nmiles	Spacing at MOD, Nmi	Is Spacing at MOD Ideal?	Additional spacing required for Ideal Spacing (3 Nmi)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/> Nmi

2

If the spacing is NOT at least Ideal, enter the flight plan change you will use to get more spacing at MOD.

Plane: Route change: To: To:

CAUTION Be sure to mark out the old route and darken the new route.

This is so you won't use the wrong route by mistake when you check your solution.

3

To check your new route, fill in the following table.

Where do the routes meet?	Lead Plane?	Headstart Nmiles	Spacing at OAL, Nmi	Spacing at MOD, Nmi	Is Spacing at MOD Ideal?
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

If Yes, Congratulations! If No, try again!

End of Worksheet



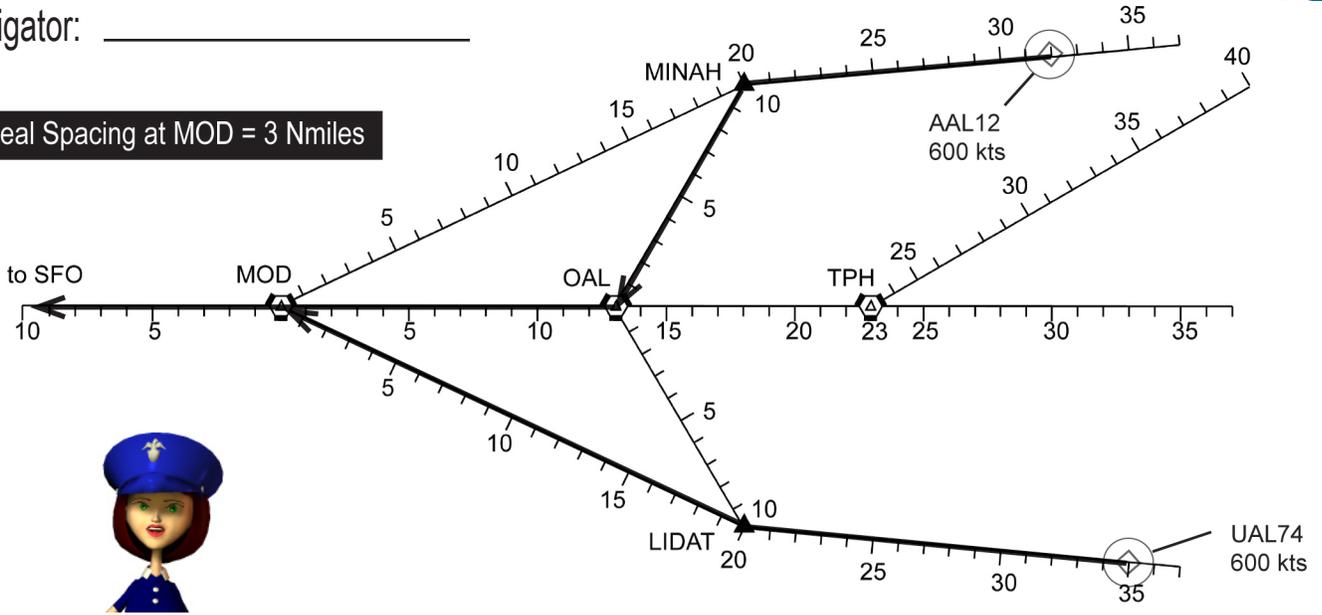


Problem 2-3



Investigator: _____

Ideal Spacing at MOD = 3 Nmiles



1

What is the spacing at MOD? nautical miles

2

Why?

3

Does the spacing equal the ideal? Yes No

4

If the spacing is NOT the ideal spacing, enter the flight plan change you will use to solve the problem.

Plane: New Route:

CAUTION Be sure to mark out the old route and darken the new route.

This is so you won't use the wrong route by mistake when you check your solution.

5

What is the new spacing at MOD? nautical miles

6

Why?

7

Is the new spacing now ideal (3 nautical miles)?

Yes No

If Yes, Congratulations!
If No, try again!

End of Worksheet

