

Pushing Tin

Name KEY Date _____ Block _____

Imagine you are an air traffic controller. It is your job to guide the pilots in each of the following scenarios. You will have to fill in the blanks and draw vector diagrams to complete each scenario. Assume all directions are given counter clockwise from east.

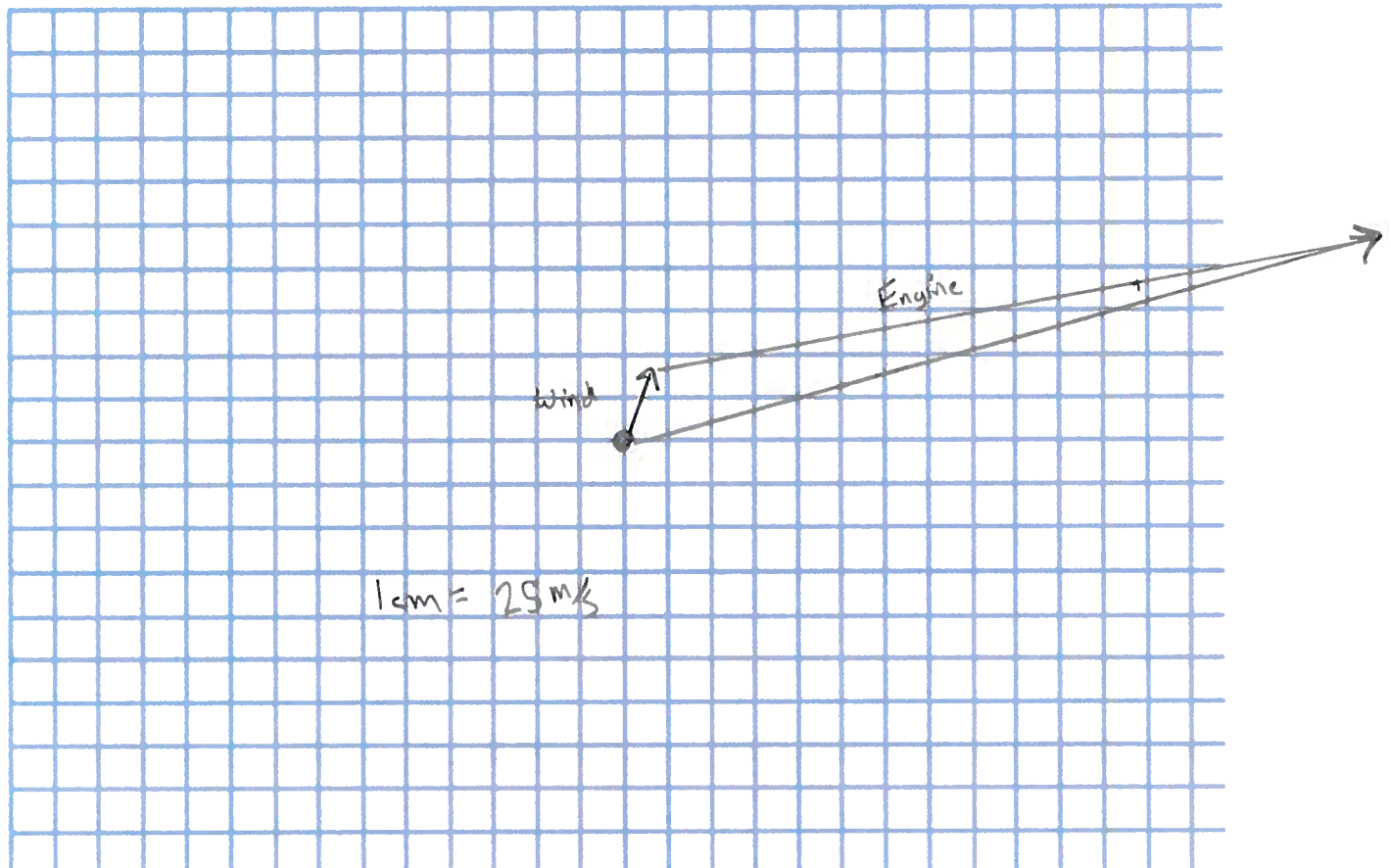
Scenario #1

UA114 - Hello Tower this is United Airlines Flight 114 we were hoping you could give us an ETA on our trip to Newark Liberty International Airport.

Tower - Roger UA114, I have the wind speed at 25 m/s directed at 70 degrees. What is your current bearing and engine speed?

UA114 - We have a current heading of 10 degrees and an engine speed of 250 m/s.

Draw the plane and the two velocity vectors acting on it. Add the two vectors together and determine what the resultant velocity is. Don't forget to come up with a scale.



Tower - OK UA114 we have your resultant velocity as 263 m/s directed at 15 degrees counter clockwise from east. You are 45 km from Newark so you should be here in approximately 3 minutes.

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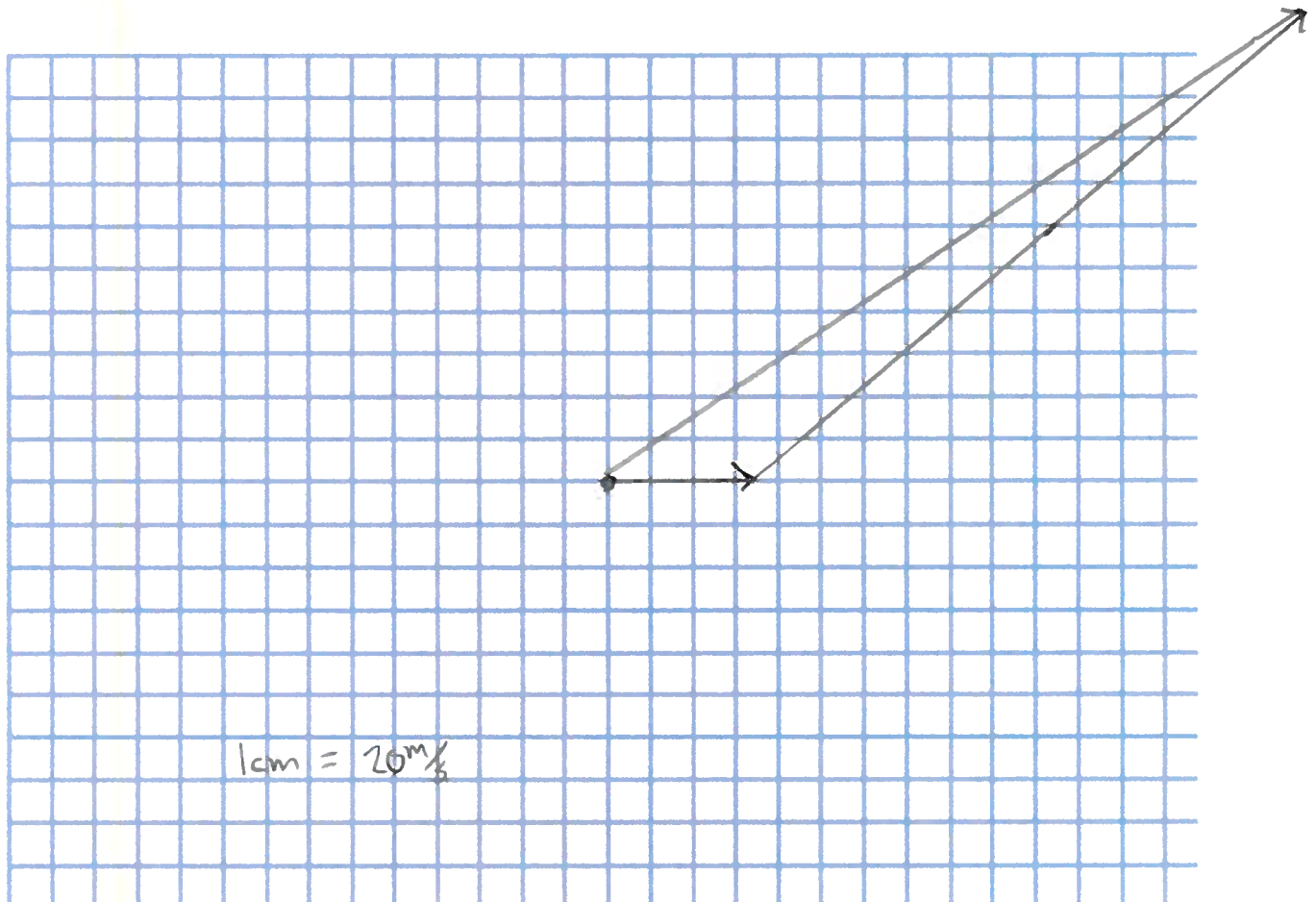
Scenario #2

DA23 - Hello Tower this is Delta Airlines flight 23. We're having some visibility issues and were hoping you could help us determine our direction of travel.

Tower - Roger DA23, I have the wind speed at ⁴⁰10 m/s directed at 0 degrees. What is your current bearing and engine speed?

DA23 - We have a current heading of 40 degrees and an engine speed of 200 m/s.

Draw the plane and the two velocity vectors acting on it. Add the two vectors together and determine what the resultant velocity is. Don't forget to come up with a scale.



Tower - OK DA23 we have your resultant velocity as directed at 35 degrees.

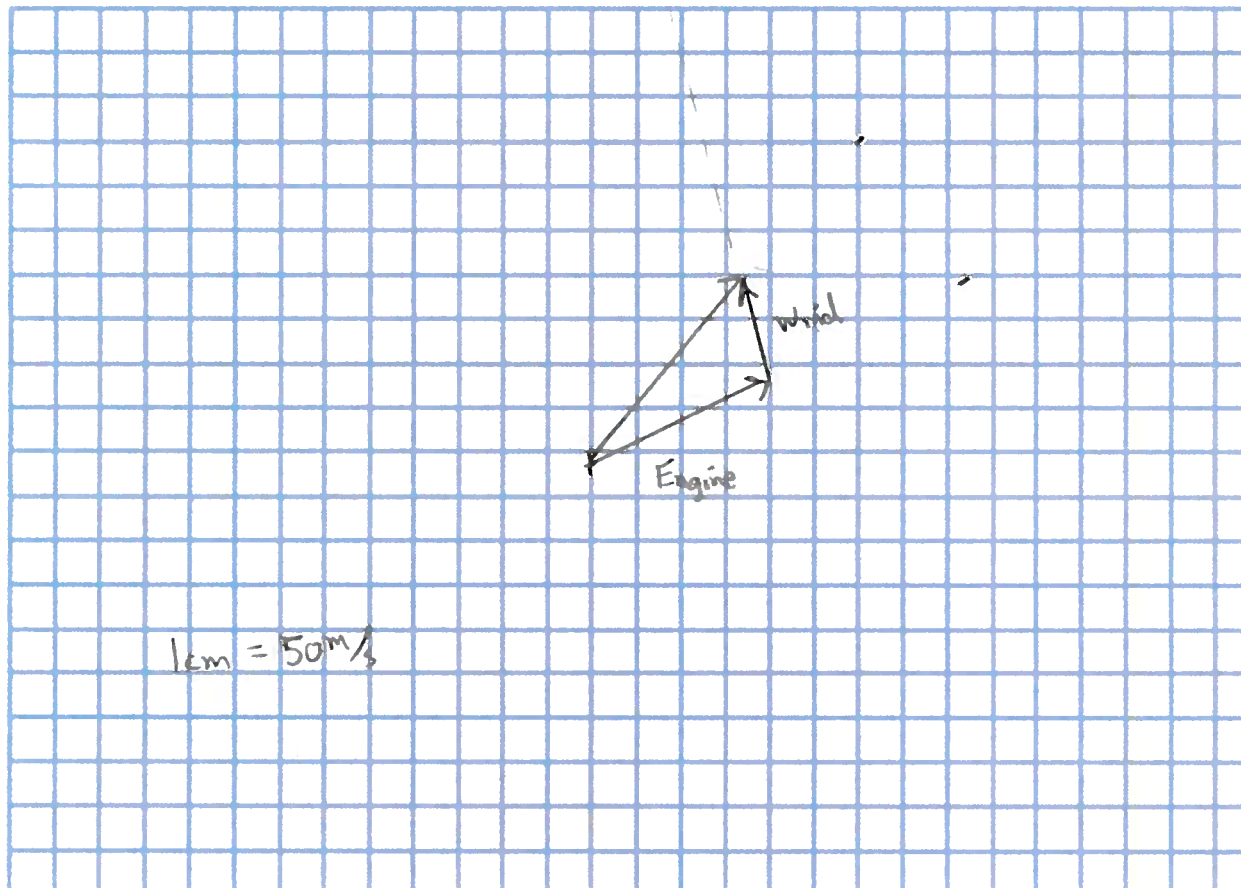
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Scenario #3

Tower - CESSNA008 according to our radar we have your resultant velocity as 150 m/s @ 50 degrees. Could you tell us your engine speed and bearing so we can determine the wind speed in your location?

CESSNA008 - Roger Tower, our engine speed is 130 m/s and our bearing is 25 degrees.

Use the information in the above dialog to determine the wind speed and direction.



Tower - Thanks CESSNA008, according to our calculations the wind speed in your location is 75 m/s @ 105 degrees.

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Scenario #4

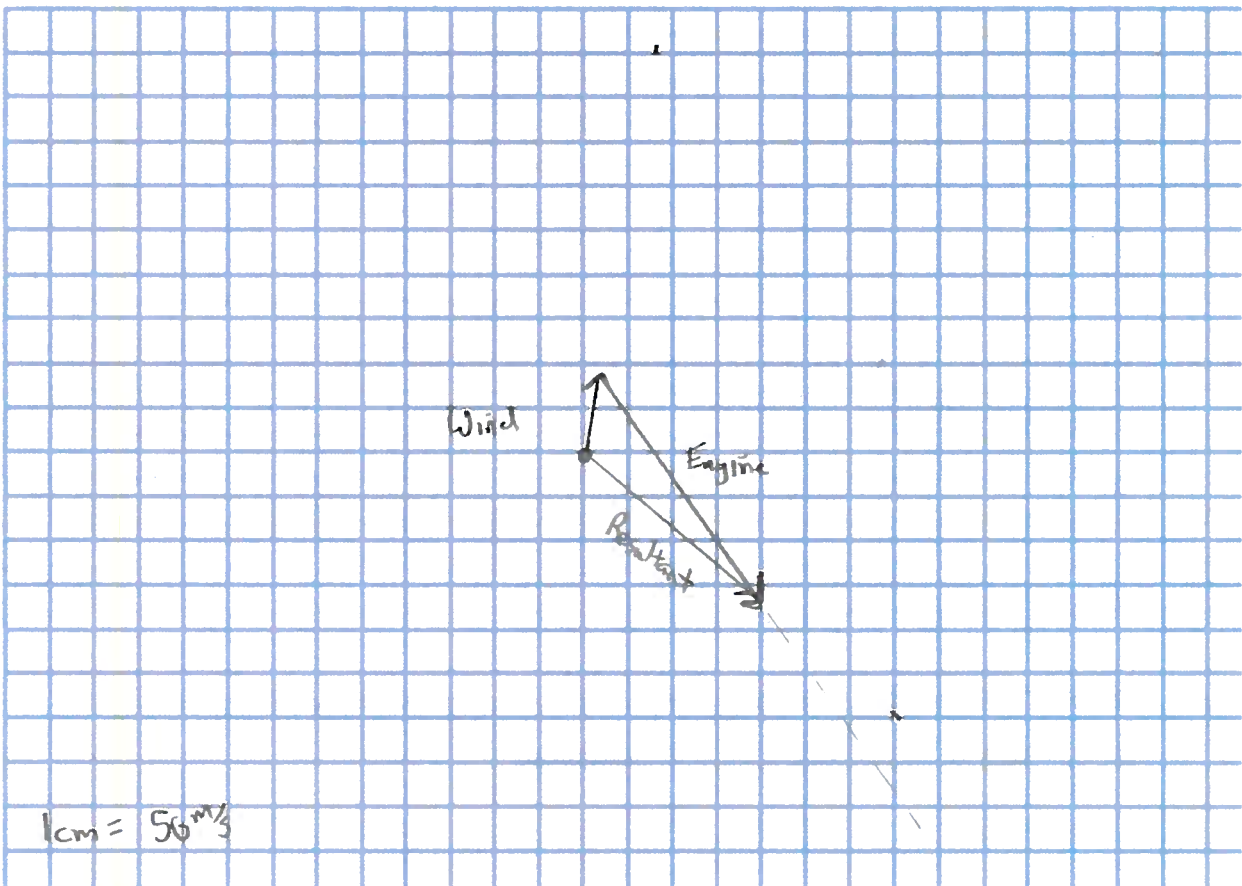
VA12 - This is Virginia Atlantic flight 12 coming in for final approach at Newark Liberty, do you copy Tower?

Tower - Roger VA12, we see you. You will be landing on runway #7 which has a bearing of 320 degrees from your current location. Your velocity when you hit the runway should be 150 m/s. The current wind speed is 50 m/s @ 80 degrees.

VA12 - Thanks Tower. Umm... we were never really good at Physics, so do you think you could figure out what our engine velocity and direction should be so that we don't all die?

Tower - Sure thing losers.

Use the information in the above dialog to determine the engine velocity and direction required to allow the plane to safely land on the runway.



Tower - OK, VA12 you engine velocity should be 175 m/s at 729° 305° degrees. Next time pay attention in class or we'll revoke your pilot's license.