



MBARI - WBS

PROJECT TITLE	Sample
PROJECT MANAGER	

WBS NUMBER	TASK TITLE	TASK RESOURCES
1	Project Requirements	
1.1	Assemble requirements and verify	
1.1.1	Decision on Equilibration vs Extraction	ME, EE, SE, SciTech
1.2	Design new system architecture block diagram	ME, EE, SE, SciTech
1.3	Concept of operations	
1.3.1	Mooring operations	ME, EE, SE, SciTech
1.3.2	Wave glider operations	ME, EE, SE, SciTech
1.4	Build system engineering specifications	
1.4.1	Detailed Technical Specifications	ME, EE, SE, SciTech
2	Concept Design	
2.1	Systems block diagram - updated	ME, EE, SE, SciTech
2.2	Research Components	
2.2.1	Valves	ME, SciTech
2.2.2	Computer	EE, SE
2.2.3	Communications	EE, SE
2.2.4	Wave glider available configurations (w power)	ME, EE
2.2.5	Components still TBD for eval	ME, EE, SE, SciTech
2.3	Revised system documents	
2.3.1	Power budget calcs/spreadsheet	ME, EE, SE
2.3.2	System weight and balance spreadsheet	ME, EE, SE, SciTech
2.3.3	Revised System Specifications	ME, EE, SE, SciTech
2.4	Preliminary Test Plans	
2.4.1	Bench testing	ME, EE, SE, SciTech
2.4.2	Tank testing	ME, EE, SE, SciTech
2.4.3	At sea testing	ME, EE, SE, SciTech
2.5	Concept design review	

2.5.1	Science slides	Sci Tech w/ PI
2.5.2	Integrated System design	ME, EE, SE, SciTech
2.5.3	ME detail slides	ME
2.5.4	EE detail slides	EE
2.5.5	SE detail slides	SE
3	Preliminary Design	
3.1	Systems block diagram - updated	
3.2	Research Components	
3.2.1	Valves	ME, SciTech
3.2.2	Computer	EE, SE
3.2.3	Communications	EE, SE
3.2.4	Wave glider available configurations (w power)	ME, EE, SE, SciTech
3.2.5	Components still TBD for eval	ME, EE, SE, SciTech
3.3	Revised system documents	
3.3.1	Power budget calcs/spreadsheet	ME, EE, SE, SciTech
3.3.2	System weight and balance spreadsheet	ME, EE, SE, SciTech
3.3.3	Revised System Specifications	ME, EE, SE, SciTech
3.4	Equilibrator / Extractor Design	
3.4.1	Equilibrator / Extractor Tube Design	ME, SciTech
3.4.2	Intake design	ME, SciTech
3.4.3	Air Sampler Design	ME, SciTech
3.4.4	Internal Flow Design	ME, SciTech
3.4.4	Licor 460/480 Purchase (or alternative)	Sci Tech
3.5	Communications Sub-system Design	
3.5.1	Communications Housing Design	ME
3.5.2	Internal Electronics - Wiring Diagram	EE
3.5.3	Internal Electronics Rack	ME, EE
3.5.4	Communications Elex Purchase w. Antennea	EE, SE
3.5.5	Connectors Purchase	ME, EE
3.6	Main Electronics Design	
3.6.1	Housing	ME
3.6.2	Component rack	ME, EE
3.6.3	Computer Selection	EE, SE
3.6.4	Power Supply (possible custom for fit and power)	EE, SE(maybe)
3.6.4	Connectors Purchase	ME, EE
3.7	Power System Design	
3.7.1	Battery Selection	ME, EE, SE
3.7.2	Charging System	ME, EE, SE
3.7.3	Housing	ME
3.7.4	Component rack	ME, EE
3.7.5	Computer Selection and purchase	EE, SE
3.7.6	Power Management Board	EE, SE(maybe)
3.7.7	Connectors Purchase	ME, EE

3.8	Calibration System	
3.8.1	Bench Test of Licor stability with Temp	Me, Sci Tech
3.8.2	Results into look up table for SE to implement (TBD)	ME, SciTech
3.8.3	Design of Calibration Gas system	ME
3.8.4	Purchase gas tank	SciTech
3.8.5	Purchase gas components	SciTech
3.9	Preliminary Design Review	
3.9.1	Science slides	Sci Tech w/ PI
3.9.2	Integrated System design	ME, EE, SE, SciTech
3.9.3	ME detail slides	ME
3.9.4	EE detail slides	EE
3.9.5	SE detail slides	SE
3.9.6	Updated Test Plans	ME, EE, SE, SciTech
3.1	Purchase long lead items	ME, EE, SE, SciTech
4	Critical Design Update Drawings and Build	
4.1	Systems block diagram - update per Prelim review	
4.2	Purchase Components	
4.2.1	Valve(s)	ME, SciTech
4.2.2	Computer	EE, SE
4.2.3	Communications	EE, SE
4.2.4	Components still TBD for assembly and test	ME, EE, SE, SciTech
4.2.5	Materials for build, assembly and test	ME, EE, SE, SciTech
4.3	Revise system documents per Prelim review	
4.3.1	Power budget calcs/spreadsheet	ME, EE, SE, SciTech
4.3.2	System weight and balance spreadsheet	ME, EE, SE, SciTech
4.3.3	Revised System Specifications	ME, EE, SE, SciTech
4.4	Equilibrator / Extractor Build	
4.4.1	Equilibrator / Extractor Tube Build	ME, SciTech
4.4.2	Intake Build	ME, SciTech
4.4.3	Air Sampler Build	ME, SciTech
4.4.4	Internal Flow Build	ME, SciTech
4.5	Communications Sub-system Design	
4.5.1	Communications Housing Build	ME
4.5.2	Internal Electronics - Wiring Diagram Update	EE
4.5.3	Internal Electronics Rack Build	ME, EE
4.5.4	Communications Elex w. Antenna Test	EE, SE
4.5.5	Wiring Harness Build	ME, EE
4.6	Main Electronics Build	
4.6.1	Housing Build	ME
4.6.2	Component rack Build	ME, EE
4.6.3	Computer - Bench test	EE, SE
4.6.4	Power Supply - Build or Buy	EE, SE(maybe)
4.6.4	Wiring Harness Build	ME, EE
4.7	Power System Build	

4.7.1	Battery Purchase (may be done if long lead)	ME, EE, SE
4.7.2	Charging System - Build or Buy	ME, EE, SE
4.7.3	Housing Build	ME
4.7.4	Comonent rack build	ME, EE
4.7.5	Computer - Bench test	EE, SE
4.7.6	Power Management Board	EE, SE(maybe)
4.7.7	Wiring Harness Build	ME, EE
4.8	Callibration System	
4.8.1	Bench Test sub-system and environmental tests	Me, Sci Tech
4.8.2	ResultsSe code and test (TBD)	ME, SciTech
4.8.3	Assemble Gas system components	ME
4.8.4	Bench Test of Calibration Gas system	SciTech
4.9	Critical Design Review	
4.9.1	Science slides	Sci Tech w/ PI
4.9.2	Integrated System design	ME, EE, SE, SciTech
4.9.3	ME detail slides	ME
4.9.4	EE detail slides	EE
4.9.5	SE detail slides	SE
4.9.6	Updated Test Plans	ME, EE, SE, SciTech
5	System Integration and Test	
5.1	Full System Integration	ME, EE, SE, SciTech
5.2	Dry Lab Testing - verify operation and software	ME, EE, SE, SciTech
5.3	Wet Testing - likely test in tank	ME, EE, SE, SciTech
5.4	Small Boat Test - overboard in sea water	ME, EE, SE, SciTech
5.5	System Integration to test Mooring	
5.5.1	Reconfigure for Mooring Space (TBD)	ME, EE, SE, SciTech
5.5.2	Dry Test	ME, EE, SE, SciTech
5.5.3	Wet Test - test tank or dock	ME, EE, SE, SciTech
5.5.4	Load for deployment	ME, EE, SE, SciTech
5.5.5	At sea deployment - duration ~ 6 mos.	ME, EE, SE, SciTech
6	Test Results Reporting	
6.1.	System Technical Publication	ME, EE, SE, SciTech
6.2	System Science Publication	ME, EE, SE, SciTech
7	Future Proposal - Wave Glider Deployment	
7.1	Proposal Abstract	ME, EE, SE, SciTech
7.2	Full Proposal	ME, EE, SE, SciTech

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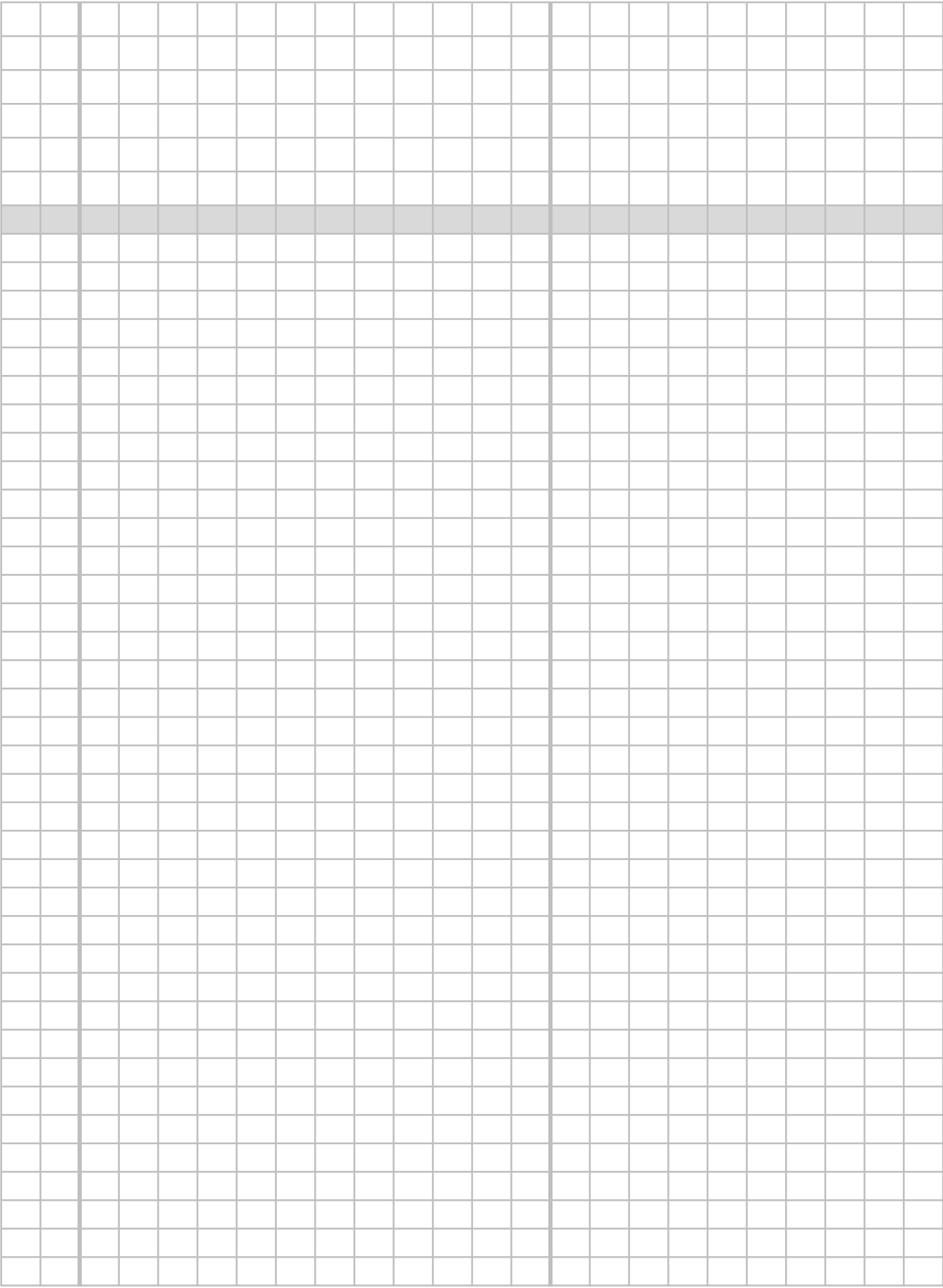
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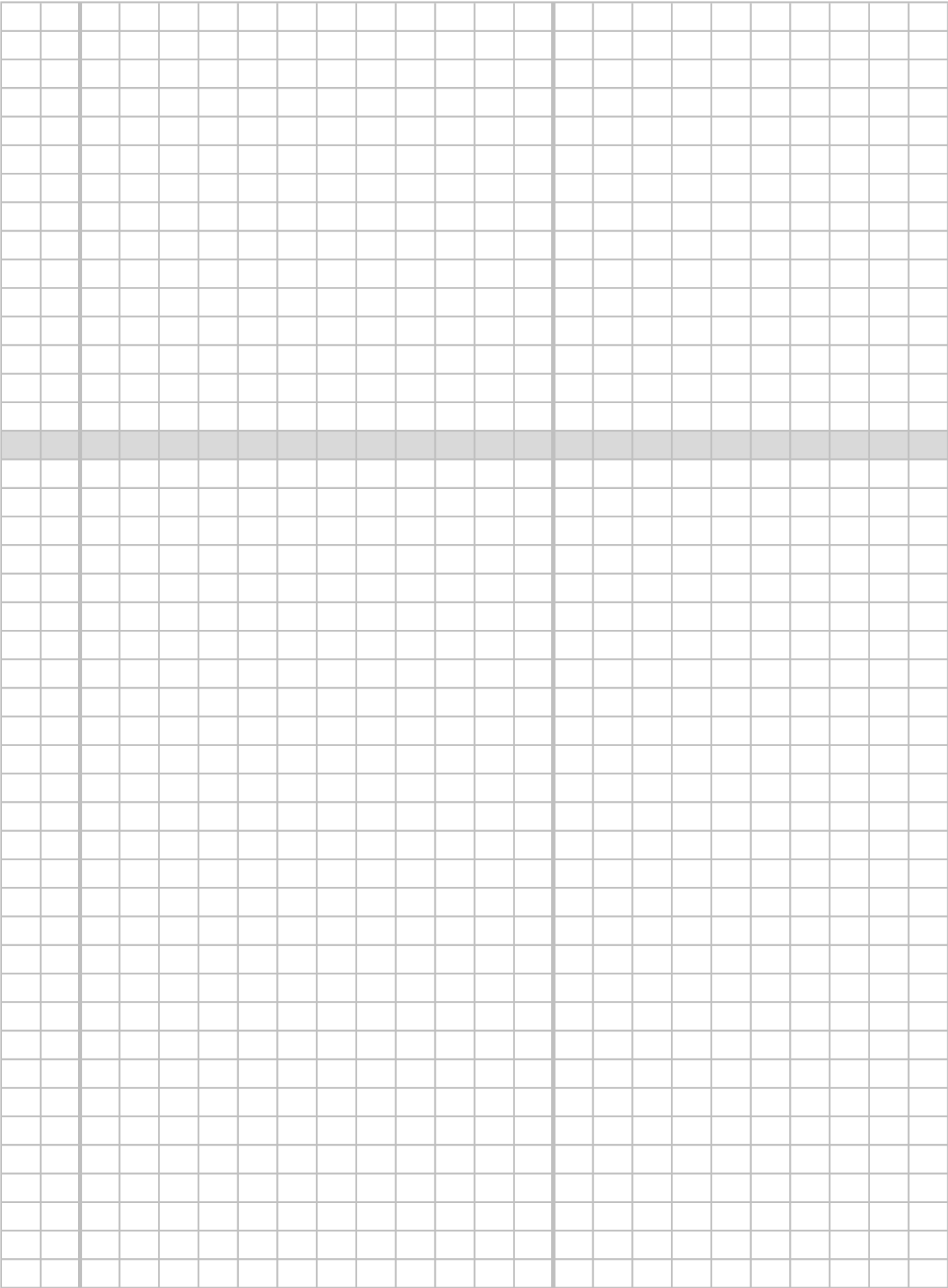
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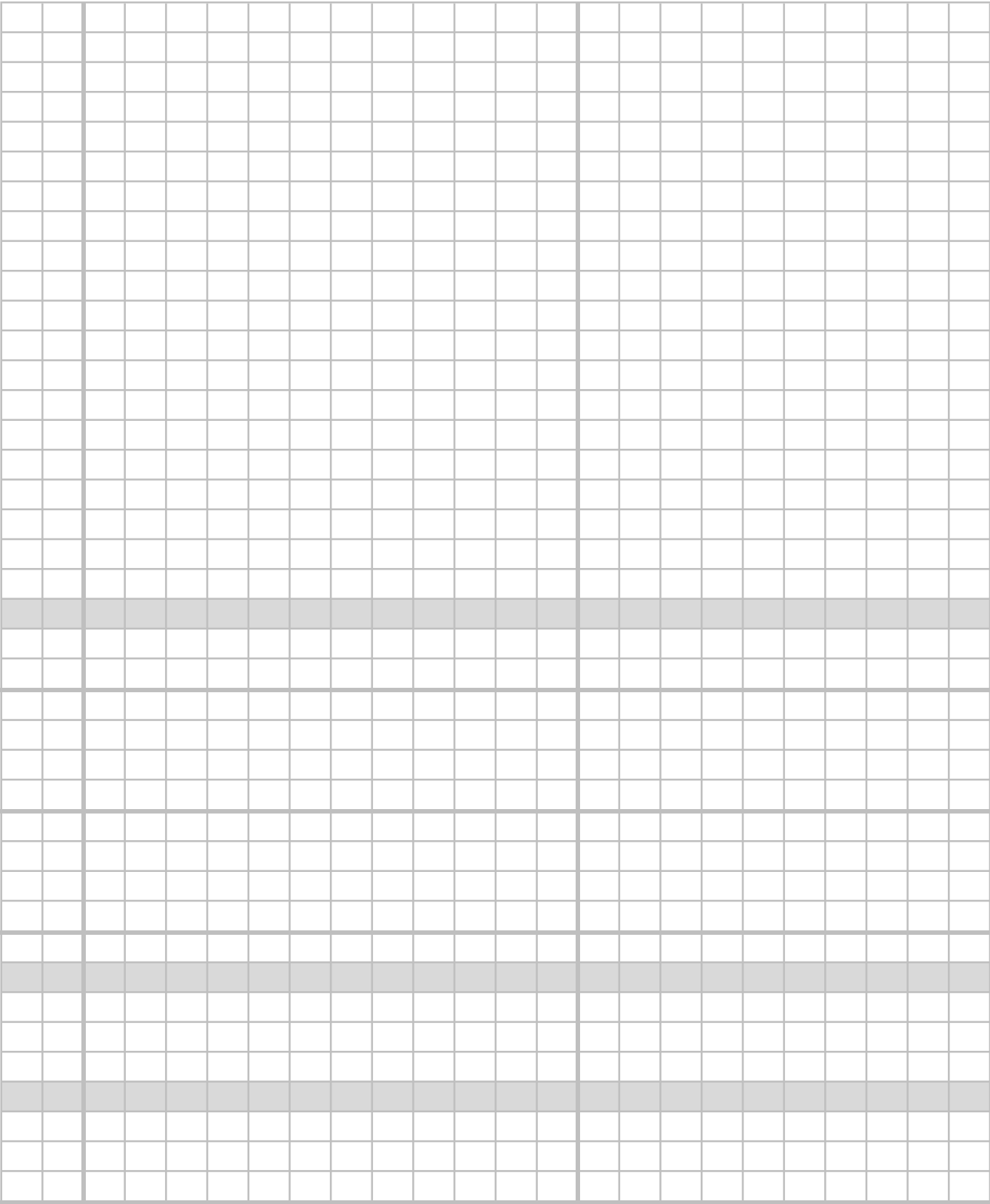
a Fassbender

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