

Grading Rubric: Play Mendel Advanced

ASSIGNMENT	UNSATISFACTORY (1 POINT)	SATISFACTORY (2 POINTS)	EXCELLENT (3 POINTS)
#1: Observe growth & record phenotypes	<ul style="list-style-type: none"> -Lab notebook does not include one or more of the outlined activities for this assignment -Completed activities include minimal detail or incorrect information 	Lab notebook includes: <ul style="list-style-type: none"> -Entries for all four outlined activities for this assignment -At least one drawing of each strain of Arabidopsis with labels and notes -Definition of some of the growth stages associated with Arabidopsis as well as some terms related to the growing process -Description of traits includes drawings or notes, but the two components are either not integrated or one is missing. 	Lab notebook includes: <ul style="list-style-type: none"> -Detailed entries for all four outlined activities for this assignment -Multiple accurate drawings of each strain of Arabidopsis throughout the assignment period with labels and notes integrated -Accurate description of the growth stage when each trait became visible -A comprehensive list of definitions of growth stages and terms related to the growing process
#2: Analyze inheritance	<ul style="list-style-type: none"> -Lab notebook and worksheet do not include one or more of the outlined activities for this assignment -Completed activities include minimal detail or incorrect information 	Lab notebook includes: <ul style="list-style-type: none"> -Definition of some genetic terms Student worksheet includes: <ul style="list-style-type: none"> -Calculations necessary to determine the ratio of mutant phenotypes for group and combined classroom data -A prediction and basic explanation of how combining data may change the ratio -An accurate conclusion about the inheritance of the mutation -Punnett square and associated questions are complete 	Lab notebook includes: <ul style="list-style-type: none"> -A comprehensive list of definitions of genetic terms Student worksheet includes: <ul style="list-style-type: none"> -Well organized data and complete calculations to determine the ratio of reference to mutant phenotypes -A prediction and thorough explanation of how combining data may change the ratio -An accurate conclusion about the inheritance of the mutation -An accurate Punnett square and correct answers to associated questions
#3: Observe Cross Outcome	<ul style="list-style-type: none"> -Lab notebook does not include one or more of the outlined activities for this assignment -Completed activities include minimal detail or incorrect information 	Lab notebook includes: <ul style="list-style-type: none"> -Entries for all four outlined activities for this assignment -Accurate calculations of the percentage/ratio of successful crosses -Basic drawing of cross results -Basic drawing of flower anatomy with most of the reproductive parts labeled and defined 	Lab notebook includes: <ul style="list-style-type: none"> -Detailed entries for all four outlined activities for this assignment -Accurate calculations with supporting data -Detailed drawing of both successful and unsuccessful crosses with labels and notes integrated -Detailed drawing of flower anatomy with all structures labeled and defined

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#4: Compare phenotypes	<ul style="list-style-type: none"> -Lab notebook does not include one or more of the outlined activities for this assignment -Completed activities include minimal detail or incorrect information 	<p>Lab notebook includes:</p> <ul style="list-style-type: none"> -Entries for all three outlined activities for this assignment -Drawings of four phenotypes include basic explanation of differences -Differences in phenotypes, or lack thereof, between the two types of crosses are noted with basic explanation. -Definition of some terms included 	<p>Lab notebook includes:</p> <ul style="list-style-type: none"> -Detailed entries for all three outlined activities for this assignment -Drawings of phenotypes that include labels and detailed explanation of traits -Differences in phenotypes, or lack thereof, between two types of crosses are explained in detail -Detailed definitions given for all terms
#5: Analyze F2 generation	<ul style="list-style-type: none"> -Lab notebook and worksheet do not include one or more of the outlined activities for this assignment -Completed activities include minimal detail or incorrect information 	<p>Lab notebook includes:</p> <ul style="list-style-type: none"> -Entries for two outlined activities for this assignment -Drawings of four phenotypes include basic explanation of differences -Differences in phenotypes, or lack thereof, between the two types of crosses are noted with basic explanation. <p>Student worksheet includes:</p> <ul style="list-style-type: none"> -Calculations necessary to determine the ratio of mutant phenotypes for group and combined classroom data -A prediction and basic explanation of how combining data may change the ratio -An accurate conclusion about the inheritance of the mutation -Punnett square and associated questions complete 	<p>Lab notebook includes:</p> <ul style="list-style-type: none"> -Detailed entries for all two outlined activities for this assignment -Drawings of phenotypes that include labels and detailed explanation of traits -Differences in phenotypes, or lack thereof, between two types of crosses are explained in detail <p>Student worksheet includes:</p> <ul style="list-style-type: none"> -Well organized data and complete calculations to determine the ratio of different phenotypes -A prediction and thorough explanation of how combining data may change the ratio -An accurate conclusion about the inheritance of the mutation -An accurate Punnett square and correct answers to associated questions
#6: Formulate research questions	<ul style="list-style-type: none"> -Lab notebook does not include one or more of the outlined activities for this assignment -Completed activities include minimal detail or incorrect information 	<p>Lab notebook includes:</p> <ul style="list-style-type: none"> -Entries for all three outlined activities for this assignment -A summary of student ideas that includes at least one well-thought out idea for a future investigation -A research question accompanied by a hypothesis that makes sense based on current student knowledge of the model system 	<p>Lab notebook includes:</p> <ul style="list-style-type: none"> -Detailed entries for all three outlined activities for this assignment -A summary of student ideas that includes multiple well-thought out ideas for future investigations -A well written research question and hypothesis for multiple future investigations